

# The 4<sup>th</sup> International Symposium on “Traditional Foods from Adriatic to Caucasus”

*Northern Cyprus*



NEAR EAST UNIVERSITY



19-21 April, 2018

Hotel Acapulco & Convention Center

# ABSTRACT BOOK



ISBN no: 978-605-4265-51-0



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from Adriatic to Caucasus”

# Abstract Book

19-21 April 2018  
Kyrenia / Northern Cyprus

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# Abstract Book



**Typesetting-Cover Design** : Kadir Gürbüz GÜNER

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ISBN no: 978-605-4265-51-0

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## Foreword

Dear Participants,

*The 4th International Symposium on "Traditional Foods from Adriatic to Caucasus" is taking place on April 19-21, 2018 in Kyrenia/Turkish Republic of Northern Cyprus by the organisation of "Near East University" and "Namık Kemal University". ,*

*The cultural characteristics of societies arise as a consequence of the traditional accumulations over a long period of time. A society's nutritional culture is closely related to the way of life, therefore, the change in the way of life leads to the dietary culture to evolve over the time.*

*Traditional foods are shaped by the influence of geography, climate, agricultural production and the lifestyle of the society. Most importantly, the production of traditional foods is never ending process for hundreds of years in every culture. Each and every one of these foods is highly unique and shaped by hundreds of years of experience and culture. The existence of cultural wealth is very influential on traditional food products produced all over the world. Therefore, it is important to ensure the preservation and the maintenance of our traditional foods which are reflection of our social and cultural heritages.*

*In the symposium, including 99 oral and 280 poster presentations, in total 379) papers will be presented for two days. For oral presentations, two parallel sections will be held and the topics under 13 headings will be evaluated in the total number of 20 sections. We wish that it will be useful for professionals working in this area.*

*It goes without saying that many people have been involved in the organisation of this Symposium. First and foremost, we would like to thank to the Presidents of Near East University and Namık Kemal University for their supports in all stages of the organisation.*

*We sincerely thank to all participants who contributed and supported us by their valuable scientific opinions, , to colleagues from our departments who contributed to the success of the Symposium through their hardworking, and to all contributors and the sponsors which have been supporting us.*

*We wish you all a successful symposium!*



Prof. Dr. Sevinç YÜCECAN



Prof. Dr. Mehmet DEMİRCİ

Co-Chairmans of the  
Symposium Organizing Committee

# ***Oral Presentations***

## ***Geographical Indications of Traditional Foods***

***Abstract Reference : 556***

### **Protection of Traditional Foods with Geographical Indications**

Canan Ece Tamer<sup>1</sup>, Elif Koç<sup>1</sup>, Perihan Yolcu Ömeroğlu<sup>1</sup>, Tuğba Özdal<sup>2</sup>, Ömer Utku Çopur<sup>1</sup>

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The production and consumption of traditional foods is showing an upward trend in developed countries. Among the motivations, a reaction towards the standardization of industrial foods, the search of authenticity and an unconscious association of tradition with health promotion are playing primary roles, at individual level. Traditional foods are also viewed as a means of stability and enhancement of local scale economies. Geographical indications are defined as a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. The protection of a traditional product with geographical indications provides economic value for local communities and also promotes tradition and culture of the communities to new generations. The geographical indications are divided into protected designation of origin (PDO) and protected geographical indication (PGI), are registered and protected by the Turkish Patent Institute (TPE) in Turkey, which is affiliated to the Ministry of Science, Industry and Technology within the scope of Decree Law No. 555 dated 1995. There are 191 geographical registered products in Turkey. Gaziantep Baklavası, İzmir Şambali Desert, İzmir Boyozu, Aydın İnciri, Malatya Kayısısı are products registered in accordance with the European Union's Geographical Indication Legislation. In Europe, German beer, French and Italian wine and cheese, Swiss chocolates, Russian vodka are examples of products that were registered. The Ministry of Food, Agriculture and Livestock in Turkey conducts inspections on Geographical Indication registered products, by means of isotopic techniques such as nuclear magnetic resonance (NMR), DNA-based techniques (PCR), isotope ratio mass spectrometry (IRMS), chromatographic techniques (GC, LC, HPLC), immunological techniques (ELISA methods). In this presentation, geographical indication registration application requirements of traditional foods, registration processes, analyzes, scope of the protection right, use and control, national and international regulations on the subject both in Turkey and EU, and monitoring practices as well as analyzing methods will be explained in detail.

**Keywords :** Traditional Foods, Geographical Indications, Protected Designation of Origins (PDO), Protected Geographical Indication (PGI)



***Geographical Indications of Traditional Foods***

***Abstract Reference : 176***

**Denominations of origin and other product identification tools: are they a real blessing ? An attempt to get through a labyrinth starting from a preliminary revision of the situation in Italy**

L. Filippo D'Antuono<sup>1</sup>

<sup>1</sup>University Of Bologna

The European market of traditional / local food products is being characterised by a growing regulatory approach, which core is represented by the official IGP and DOP marks. Italy ranks first for the number of officially certified origin denomination products: besides the official EU certifications, many other origin denomination or identification labels do exist: De.Co. (denominazione di origine comunale), PAT (Produzioni agricole tradizionali) and private Slow Food "Presidi" and "Arca del Gusto" products. The items registered into the "Repertori volontari regionali delle risorse genetiche agrarie" must also be added. Many private labels then stress on aspects connected to different facets of the "traditionality" or "local" concepts.

In parallel, research projects were devoted to an attempt of setting an agreed definition of "Traditional food", aimed at: a) establishing the criteria for basic registration criteria; b) exploring the "traditionality" traits better understood by consumers and, therefore, potentially exploitable by manufacturers. Different approaches however indicate that the concept of "traditionality" is a modern construct, absent in local contexts, where value perception is still mainly based on direct experience and knowledge of native resources.

With this background, a systematic analysis of Italian origin certified or identified products is being envisaged, with the following aims: a) the complete revision of plant species and varieties included in the different registers; b) the individuation of duplicates and gaps; c) the developments of representative case studies on the basis of specific / varietal or geographical characters. The subsequent analyses are aimed at: examining the impacts of origin indication and certification on the in situ conservation of local types, and relations with the present status of ex-situ conservation; b) exploring their potential of development and sustainability of local products based on native resources; c) examining the relations of the present systems with local knowledge systems and coexistence with more flexible promotion tools.

A preliminary scheme and framework is presented, also in view of a possible cross-country cooperation.

**Keywords :** Traditional foods, origin certification and identification, landraces, genetic resources, local products, local knowledge systems

***Imitation and Adulteration of Traditional Foods***

***Abstract Reference : 68***

**Adulteration in pekmez and detection methods**

Gökhan Durmaz<sup>1</sup>, Yunus İzci<sup>1</sup>, Murat Yılmaztekin<sup>1</sup>, Mustafa Çam<sup>2</sup>

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<sup>2</sup>Erciyes University, Department Of Food Engineering, Kayseri, Turkey

Pekmez is a traditional food that is produced from juice of different fruits via evaporation of water. Pekmez can be produced from grape, mulberry, carob, date and several other fruits. No additive is allowed in the production of Pekmez according to the regulations of Turkey Republic. However some producers add sugar syrups to pekmez to decrease the production costs and make more profit. Some of these adulterations can be detected via a series of analyses but still some other type of adulterations difficult or impossible to detect with the current parameters declared in the regulations. Carbon isotope analysis is a powerful tool to detect the adulteration made with corn syrup which is the cheapest sugar source. Meanwhile fructose/glucose rate can also be helpful to find a clue about adulteration in some cases. However these parameters can be surpass by some producers by using C3 plant originated sugar syrups such as invert sugar obtained from beet. Due to the similar carbon isotope ratio and major sugar composition, this type of adulteration is impossible to detect by the above mentioned methods. SNIF-NMR (Site-Specific Natural Isotope Fractionation-NMR), FT-IR (Fourier transform-IR), raman spectroscopy and HPAE-PAD (High pressure anion exchange chromatography-pulsed amperometric detection) are promising techniques that have already been used some similar products like honey and maple syrups. While SNIF-NMR is an analytic tool to detect deuterium ratio, the other spectroscopic and chromatographic techniques gives information about the change in the amount of major or trace components of the samples with adulteration. However none of these has been accepted as a standard method by the authorities so far due to the lack of enough scientific data available. In our laboratory, HPAE-PAD method is being used to detect adulteration in grape pekmez with invert sugar. In this study, total invert sugar (containing as low as 0-0.2% sucrose) was produced by using a commercial invertase enzyme (beta-fructofuranosidase: EC 3.2.1.26). The resulting sugar syrup (70 Brix) added to authentic grape pekmez samples at different percentages to obtain adulterated pekmez samples. Trace amount of oligosaccharides formed during enzymatic hydrolysis of sucrose were detected as the marker of invert sugar addition to grape pekmez for the first time.

**Keywords :** pekmez,adulteration,sugar,syrup,HPAE-PAD

***Acknowledgments : This study was supported by TAGEM with the project ID; TAGEM-16/AR-GE/34 and Inonu University with the project ID; FDP-2017-861***

***Imitation and Adulteration of Traditional Foods***

***Abstract Reference : 156***

**Use of fluorescence spectroscopy for the analysis of dairy products**

Serap Durakli Velioglu<sup>1</sup>

<sup>1</sup>Namik Kemal University Faculty Of Agriculture, Food Engineering Department

Spectroscopic methods became popular in the analysis of food products. One of these methods, fluorescence spectroscopy, is considered as a promising tool in food analysis. It is a rapid, sensitive, and non-destructive technique offering spectral signatures of samples in a few seconds. Although fluorescence spectroscopy has been widely used in medical, biomedical and chemical applications, there are few studies in the literature for the analysis of foods, especially dairy products. It is known that the fluorescence spectra of the samples give valuable information about the molecules containing conjugated double bonds. Fluorescence spectroscopy presents an alternative for the analysis of dairy products since they contain several intrinsic fluorophores, including aromatic amino acids and nucleic acids, vitamin A and riboflavin and numerous other compounds. In the literature, there are studies employing fluorescence spectroscopy for the discrimination of dairy products according to their technological processes and geographic origin and also for the detection of adulteration of these products. This paper summarizes the studies using fluorescence spectroscopy for the analysis of dairy products.

**Keywords :** dairy products, analysis, fluorescence spectroscopy

***Imitation and Adulteration of Traditional Foods***

***Abstract Reference : 246***

**DETERMINATION OF FAT ADULTERATION IN YOGURT**

Nazife Nur Yazgan Karacaglar<sup>1</sup>, Tugba Bulat<sup>1</sup>, Ismail Hakki Boyaci<sup>1</sup>, Ali Topcu<sup>1</sup>

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Yogurt is a fermented dairy product first produced in Balkan and Middle Eastern countries. Although it is first produced by limited countries as a traditional product, since 1960s the popularity of yogurt significantly increased and began to produced in the worldwide. The raw material of the yogurt production is generally the cow's milk but other species' milk such as buffalo, goat and sheep also can be used. The milk fat is the valuable constituent of the milk and generally producers have the aim of adulteration of milk fat with cheaper non-milk based fats or oils. Adulteration is an illegal practice, but it may be used by some food producers and suppliers to increase profits. Adulteration of foods for economic gain is an important concern for consumers as it may affect consumer health, food safety, food quality, and loss of value in food products. Food safety problem has become a serious problem all over the world and this situation makes special interest for determination of adulteration. Raman, near-infrared (NIR) and Fourier Transform Infrared (FTIR) spectroscopies coupled with chemometric methods can be used to determine the fat adulteration in yogurt. For the determination of adulteration different yogurt samples, which contain different sources of fats or oils, were produced. For the fat adulterant commercial vegetable fat blends, margarine, corn and sunflower oil were used. The lipid fraction yogurt was extracted and characterized by Raman spectroscopy and by a portable NIR spectroscopy device in the region of 200-2000 cm<sup>-1</sup> and 1600-2400 nm, respectively. The spectral data were then preprocessed and principle component analyses (PCA) were performed. Raman spectral data showed better discrimination for the fat adulteration than NIR spectral data. Temperature effect was also studied at six different temperatures (25, 30, 40, 50, 60, and 70 °C), in order to obtain the best spectral information. Raman spectra collected at higher temperatures were more intense than those collected at lower temperatures. The performance of the chemometric methods with Raman spectroscopy were very promising and can be expected to provide a simple and quick way of detecting fat adulteration in yogurt.

**Keywords :** Yogurt adulteration, Milk fat, Raman Spectroscopy, Near-Infrared Spectroscopy, Chemometrics



***Imitation and Adulteration of Traditional Foods***

***Abstract Reference : 607***

**Detection of adulteration in meat and meat products via elemental composition**

H. Murat Velioğlu<sup>1</sup>

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Meat species have different amount of Ca, Mg, K, Zn, Cu, Na and Fe and this difference can be used in the studies focused on determination of adulteration. While meat is an expensive foodstuff, it is an attractive target for malpractices to make profit. According to the literature, ICP-MS and AAS have been widely used in elemental composition analysis. However, these methods are time consuming due to the sample preparing steps and also the equipment should be used by specialists. On the other hand, laser-induced breakdown spectroscopy (LIBS) is a rapid and practical technique for elemental analysis. Basically, LIBS analysis is conducted using high power laser energy that is focused on small volume of sample. This rapid and high energy load results a breakdown of the molecules into atoms and that produces characteristic light. LIBS spectrum that is generated by recording of the emission is used for the evaluation of the analysis. In the present paper, the use of LIBS in determination of adulteration in meat and meat products is summarized with the help of remarkable studies from the literature.

**Keywords :** Meat, LIBS, adulteration, elemental composition

***Innovation in Traditional Foods***

***Abstract Reference : 199***

**Optimization of exopolysaccharide production of six LAB strains isolated from yogurt and sourdough using RSM**

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The aim of this work was to optimize the culture conditions (incubation temperature, initial culture pH and incubation time) for exopolysaccharide (EPS) production of six lactic acid bacteria strains isolated from traditional yogurt and sourdough using Response Surface Methodology. The effects of three variables including pH (4.5, 5.5 and 6.5), temperature (30, 35 and 40 °C) and incubation time (18, 35 and 48 hours) concerning the final EPS yield (g L<sup>-1</sup>) were studied. In total, fifteen operational conditions were applied. The optimum culture conditions determined in order to maximize EPS production in MRS (De Man, Rogosa, Sharpe) broth were pH of 6.5 and 18 hours of incubation time. Even though the optimum incubation temperature could not be noticed easily, the data indicated that for most of the runs, around 35 °C incubation temperature resulted in higher EPS yields. Under the optimum conditions the EPS production yield was observed in the range from 14.8 to 42.5 g L<sup>-1</sup> depending on LAB strains used.

**Keywords :** Lactic acid bacteria, exopolysaccharides, response surface methodology, yogurt, sourdough

***Acknowledgments :*** This work was funded by The Scientific and Technological Research Council of Turkey (Project No:215O307).

***Innovation in Traditional Foods***

***Abstract Reference : 202***

**Using Seeding Technique in Synbiotic White Chocolate Including *Lactobacillus acidophilus*, Low DP Inulin and Maltitol**

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This study was performed to investigate the effect of various pre-crystallization techniques (tempering and  $\beta_v$  seeding) and seed concentrations (0.00-1.50 g/100 g) on some quality parameters [ $a_w$ , moisture content, hardness as texture, rheological, color (brightness, chroma, hue angle and whiteness index) and sensory properties] and process stability of *Lactobacillus acidophilus*, in sugar-free white chocolate samples including maltitol and inulin (DP <10). For this purpose, 9.00 log cfu/25 g *L. acidophilus* were inoculated into the white chocolate samples after conching process at 32°C. In the results, *L. acidophilus* was shown higher process stability in tempered samples (8.75 log cfu/25 g) than that of the seeded ones (8.13 - 7.68 log cfu/25 g) (P <0.05). Again, it was determined that the effect of pre-crystallization technique on hardness (5320 - 6210 g), yield stress (68.2 - 79.5 Pa), brightness [(-1.49) - (-1.55)] and sensory properties was not significant (P <0.05). Viscosity of chocolate samples were increased by seeding, whereas  $a_w$  values (0.260 - 0.305) and moisture content (0.59 - 0.98 g/100 g) were significantly decreased (P <0.05). In terms of *L. acidophilus* stability, using conventional tempering technique for pre-crystallization was concluded to have an advantage to develop synbiotic white chocolate including maltitol as bulk sweetener.

**Keywords :** white chocolate, pre-crystallization, synbiotic, maltitol, inulin

***Innovation in Traditional Foods***

***Abstract Reference : 93***

**Comparison of two different extraction methods for propolis wax**

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Bees have been in existence for over 100 mill years, and they generate products of good quality. Propolis is one of the most interesting product of bees that used for construction, repair and protection of beehives against microbial contamination and also to preserve inner temperature because of its biological activities. Propolis contain high amount of phenolic compounds and show antimicrobial, antioxidant activities. In this research, two different methods was used to extract propolis from raw propolis. For his purpose, 10 g raw propolis and 90 ml of 96 % ethanol were incubated at 60 °C for 24 h and this mixture was filtered after this process was performed, cold water (+4 °C) (method A) or heat treatment (70 °C) (method B) was used for extraction. The objective this study was to compare total phenolic content and volatile compounds of raw propolis and propolis extracts. Total phenolic compounds were quantified by Folin-Ciocalteu assay and volatile profile of raw propolis and extracts were determined by headspace technique coupled with gas chromatography-mass spectrometry. 34 metabolites were identified in propolis extracts and raw propolis. Moreover,  $\alpha$ -pinen,  $\gamma$ -Cadinene,  $\alpha$ -Muurolene and different components had significant contribution to volatile profile of propolis. The content of phenolic compounds in propolis extract that produced with method A (6060.00 mg GAE/kg) about two times more lower than propolis extract that used method B (14852.86 mg GAE/kg). This difference originate from various process such as using water or heat that used in raw propolis to obtain extracts.

**Keywords :** Propolis, Volatile, Phenolic, Extraction

***Acknowledgments :*** This study was supported by 117O869 TÜBİTAK Project (3001).



***Innovation in Traditional Foods***

***Abstract Reference : 100***

**THE EFFECT OF DIFFERENT PACKAGING METHOD AND MICROWAVE HEATING ON MICROBIOLOGICAL QUALITY OF “DÖNER” DURING COLD STORAGE**

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Döner is a traditional meat product which has a steadily increasing consumption rate, and which has been consumed all over the world. In previous years, döner was served only in local döner kebab restaurants after cooking. Nowadays, however, döner started to be sold also in fast-food restaurants, canteens, restaurants which do not have döner kebab wheeling oven, or in markets after packing. Due to the growth of the selling area and the marketing chain, some packaging methods are needed to be used to prevent material and economic losses while reaching to the consumer. For these purposes, in addition to traditional packaging (TP) method, modified atmosphere packaging (MAP) and vacuum packaging (VP) methods became frequently used methods. Sous vide technology (SV) is a kind of pasteurization technique which helps to prolong the shelf life of food products and it found its own place in the field of packaging. In the current study, the effects of TP, MAP, VP, and SV on the microbiological quality of döners during their storage at 4°C were investigated. Also, effect of microwave heating on the microbiological quality before consumption was studied. For these purposes, total mesophilic aerobic bacteria (TMAB), total psychophilic aerobic bacteria (TPAB), coliform, *Escherichia coli*, *Clostridium perfringens*, *Listeria monocytogenes*, *Staphylococcus aureus*, lactic acid bacteria (LAB), and total yeast and mold (TYM) counts were analyzed. While the initial TMAB, TPAB, LAB and TYM count results were 4.02, 2.94, <1.00 and <1.00 log kob/g for döners, they increased during storage and at the end of the storage period they reached to 5.92–6.18–2.20–4.08, 5.74–6.34–4.37–4.79, 6.70–7.78–6.00–5.18, 3.96–<1.0–<1.0–<1.0 log kob/g for the groups packed with TP (6th day), MAP (15th day), VP (19th day) and SV (99th day), respectively. Microwave heating significantly reduced the microbial load of döners ( $p < 0.05$ ). *L. monocytogenes* and *Cl. perfringens* were not observed while *S. aureus*, coliform and *E. coli* count results were below 2 log kob/g, 3 MPN/g and 3 MPN/g for all groups during storage, respectively. It was determined that the SV protected the microbial quality of döners 20, 6, and 5 times more than TP, MAP and VP, respectively.

**Keywords :** Traditional meat product, sous vide technology, traditional packaging, modified atmosphere packaging, vacuum packaging

***Acknowledgments :*** This project was supported by Ankara University coordinatorship of scientific research projects with the project number BAP-15B0443004

***Innovation in Traditional Foods***

***Abstract Reference : 291***

**The Use of St. Johns Wort (*Hypericum Perforatum*) in the Production of Ayran and Determination of the Amendments Made During Storage**

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Medical and aromatic plants and extracts from these plants, volatile oils are widely used in many sectors besides meeting human nutritional needs. *Hypericum* species have many biological activities such as antidepressant, antiviral, antibacterial, antioxidant, antiinflammatory and they are used as public medicine in many areas such as sleep enhancement, rheumatic pain treatment, wound healing, skin diseases treatment. *Hypericum perforatum* (St. Johns wort) among the *Hypericum* species is found in almost all regions of our country and is the most studied plant.

In this study, extraction of this plant, which is very common for its medicinal use, was carried out and added in different amounts. A mixture of 70% ethanol + 30% water was used as the solvent during extraction. Three kinds of drinking milk containing 0.1%, 0.2% and 0.3% of St. Johns wort extract were obtained in the study. Control group and obtained drinking milk samples were stored for 28 days and some physicochemical and microbiological analyzes were carried out on days 1, 7, 14, 21 and 28 of storage. According to findings; dry matter, water activity, titratable acidity and pH values decreased and salt values increased during the storage period.

In the microbiological analyzes performed, the total number of mesophilic bacterial groups increased statistically during the storage period, while no change was observed during the storage period in the yeast-mold and coliform groups. Sensory analyzes were applied to a panelist group consisting of 10 individuals and when the taste and general taste scores were taken into account, the samples with the highest likelihood of 0.1% yellow stigma extract were taken. During the storage period, general appreciation scores increased statistically. By this study, a functional product was produced by adding this plant which is not used by itself to a product that we consumed much in daily life, and tried to make its usage more widespread.

**Keywords :** *Hypericum perforatum* , extraction, ayran, storage.

***Innovation in Traditional Foods***

***Abstract Reference : 160***

**Production of pekmez under vacuum using a prototype developed for home appliance: Comparison with atmospheric application**

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Pekmez, a traditional food material produced in Turkey, is commonly consumed at breakfast and in bakery products in Mediterranean region. In this research, a kitchen appliance cooking equipment which can operate either under vacuum or at atmospheric pressure (traditional cooking) is aimed to be tested the performance on pekmez production. Vacuum cooking applications were carried out at constant temperature (75 °C) at three different times 55 min, 70 min and 85 min. Pekmez was also evaporated at atmospheric pressure for 45, 60 and 75 min to compare the quality of products produced by the vacuum cooking method. The effect of cooking conditions under vacuum and atmospheric pressure was determined by the following analysis; Brix (°Bx), color (CIE L\*, a\*, b\* and ΔE, Hue°) values, pH, HMF amount, total sugar and sensory evaluation.

The soluble solids content (Brix) of pekmez obtained under atmospheric and vacuum-pressure changed in range of 31.5 % to 73 % and 31 to 74.5 %, respectively. pH of samples were between 3,626 – 3,68. Pekmez samples produced with vacuum evaporation method had higher a\* values than atmospheric ones. The L\* and ΔE values decreased with increasing time. Hue° values of samples produced at atmospheric conditions were higher than vacuum ones. HMF content changed between 10.91 mg.kg<sup>-1</sup> and 204.45 mg.kg<sup>-1</sup>. HMF content increased with process times. HMF contents of vacuum evaporated samples were lower than atmospheric ones, at significant level. It was found that the sensory quality (general preference) of pekmez produced under vacuum conditions is more preferable than samples produced at atmospheric conditions. The reason for this is minimal burn and less flavor loss. The total sugar content of pekmez samples produced both under atmospheric and vacuum conditions showed us similar trend with Brix value.

**Keywords :** Pekmez, vacuum cooking, atmospheric cooking, quality, vacuum cooking prototype, home appliance equipment

***Innovation in Traditional Foods***

***Abstract Reference : 610***

**Determination of Sterol and Erythrodiol + Uvaol (Triterpenic Dialcohol) Amounts and Validation Studies in Refined Olive Oil by Capillary Column Chromatography**

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In this study, Sterol and Erythrodiol + Uvaol (Triterpenic Dialcohol) amounts were determined and total Sterol reproducibility and Erythrodiol and Uvaol reproducibility studies in refined olive oil were performed, validation studies were carried out with the obtained results.  $\alpha$ -cholestanol was added to refined olive oil and the oil sample was saponified with ethanolic potassium hydroxide, then the non-saponified materials were extracted with diethyl ether. The fraction of sterol and triterpenic dialcohols was separated from the other non-saponified materials by thin-layer chromatography on a basic silica gel plate. The sterol and triterpenic dialcohol band from the plate was converted to trimethylsilyl esters and analyzed by capillary column GC. The total sterol content of the sample refined olive oil was found between 1699,02 - 2457,88 mg / kg, the amount of erythrodiol and uvaol was between 2,02 and 3,28 %. The validation of obtained results were evaluated in accordance with the Turkish Food Codex-olive oil and olive pomace oil Communiqué (Communiqué No: 2010-35) and the obtained results are within the limits specified in communiqué.

**Keywords :** Olive oil, validation, sterol, GC

***Innovation in Traditional Foods***

***Abstract Reference : 180***

**TRADITIONAL YOGHURT WITH FUNCTIONAL PROPERTIES: “RS SUPPLEMENTED SALTED YOGHURT”**

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Yoghurt is a food that is obtained as a result of lactic acid fermentation, has high nutritional value and consumed by most people. Since the shelf life is limited, it is necessary to conserve under favorable conditions and to increase its durability in order to increase the shelf life. For this purpose yoghurt is filtered, thickened by baking or kneaded with salt and dried in the sun. Salted yoghurt is a kind of concentrated yoghurt. It has also known that winter yoghurt, autumn yoghurt, cooked yoghurt in our country. It is a good source of protein as well as a rich source of calcium, phosphorus and potassium minerals. RS (resistant starch) is not hydrolyzed even after 120 minutes of incubation. However, it is fermented by colonic microbiota. Recently, high dietary fiber content and fat replacement properties of the RS has been added foods to give functionality. In this study, salted yoghurt production was performed by conventional methods, adding RS at different ratio (2.5%, 5%, 7.5%, 10%) to two different milk fat ratios (0.15%, 1.5%) yoghurts. Some physical and chemical properties of the obtained yoghurts have been examined. According to the results obtained from the analyzes, pH of yoghurts didn't effect significantly ( $p < 0.05$ ), whereas titratable acidity, protein, fat, lactose and energy values was affected significantly ( $p < 0.05$ ) with RS addition. The RS addition at different ratios is significantly effective on the salt ratios, while the salt values of yoghurt with different milk fat ratios are not significantly affected ( $p < 0.05$ ).

**Keywords :** yoghurt, salted, resistant starch

***Acknowledgments :*** *This project was supported by General Directorate of Agricultural Research and Policies (TAGEM)*

***Mediterranean Diet***

***Abstract Reference : 608***

**Relation between diet and neurological diseases**

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The formation, development and functioning of nervous system are closely related with dietary habits of any individual. Proteins and lipids are particularly important in the meaning of development of the system, restoring of myelin sheath and metabolism of nervous cells. Sodium, potassium and other minerals taken by diet have significant importance on the functions of spinal fluid and stimulation of nervous cells. Additionally, the group B vitamins are crucial in the metabolism of nervous system. While the central nervous system uses glucose as a sole energy supply, regulation of blood sugar level has a great importance in order to maintain cognitive performance. Folic acid, vitamin B12 and B6 are important for single carbon metabolism and the lack of these vitamins may cause brain function disorders due to the inhibition of enzymatic reactions occurring in the presence of these vitamins as cofactors. Numerous studies express that Mediterranean diet can prevent certain health risks such as cancer and cardiovascular problems, and can improve cognitive health. Mediterranean diet could be formulized as; high consumption of green vegetables and fruits, consumption of olive oil as a sole fat source, preferring fish instead of red meat or poultry as an animal protein source. This balanced diet is also rich in antioxidants and other phytochemicals that is directly related with metabolism of nervous system. In the present paper, the effect of following Mediterranean diet on the cognitive health is summarized with significant literature findings.

**Keywords :** Mediterranean diet, cognitive health, phytochemicals

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 349***

**A Comparative Study on Frying Stabilities of Vegetable Oils with Different Unsaturation Degrees by Chemometric Approach**

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Frying is a one of the traditional food preparing methods performed at high temperatures using fats and oils. This study investigates the frying stabilities of different vegetable oils based on different degrees of unsaturation. Refined OPO, soybean oil (SBO), SBO/palm oil (PO) (70/30, m/m) and palm olein (POL) were subjected to 40 frying treatments with French fries, at 180 °C for 3 minutes. The oils were then evaluated for their polar compounds, polymer triglycerides, free fatty acid content, *p*-anisidin value, smoke point, viscosity, color index, fatty acid composition and iodine value. Results have shown that usage of OPO and POL have resulted in higher increases in polar compounds, polymer triglycerides, free fatty acid content and viscosity than the other oils during frying. Smoke points of them were lower than that of SBO at the end. Compared to the soybean based oils, increases in *p*-anisidin value almost stopped at 12<sup>th</sup> hour in these oleic-rich oils. Initial color index of OPO was higher than those of other vegetable oils and increased throughout the process. Linoleic and linolenic acid ratios decreased, leading to decreases in iodine values; whereas palmitic and stearic acid percentages relatively increased in all oils. PCA enabled the classification of different oils according to frying stability and HCA clustered the samples according to frying periods in addition to oil types.

**Keywords :** Frying, vegetable oils, stability, thermal oxidation

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 266***

**The Effect of Redox Potential on Ripening of UF White Cheese Produced with Single Strain of *Lactococcus lactis***

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White cheese is the most consumed cheese type in Turkey. It is produced by enzymatic coagulation method and followed by other high labor-intense steps. Nowadays, for saving workforce, increasing outcome-yield and automated production, the industry prefers to use ultrafiltration (UF) in white cheese production. UF cheese is usually consumed fresh and/or during ripening that is not longer than 4 months.

In the study, the effect of oxidation–reduction (redox) potential, which is one of the important physicochemical parameters that determines the microenvironment in cheese, on the ripening characteristics of UF white cheese was investigated. In the cheese production, a single strain of *Lactococcus lactis* subsp. *lactis* was used.

Sodium hydrosulfite (Na<sub>2</sub>H<sub>2</sub>O<sub>4</sub>) as the reducing agent and potassium iodate (KIO<sub>3</sub>) as the oxidizing agent were used in the cheese production. Three different cheese samples were produced: control (C), reduced (R) and oxidized (O). On the 7<sup>th</sup>, 30<sup>th</sup>, 60<sup>th</sup>, and 90<sup>th</sup> days of ripening, microbiological, biochemical and sensory analyses were performed.

On the 7<sup>th</sup> day of ripening, the redox potentials (as ORP value) of C, R and O cheeses were -311.2, -337.4 and 164.0 mV, respectively. The compositional results and pH values were different in cheese samples (P<0.05). C, R and O cheeses contained 9.14, 9.20 and 8.30 log CFU/g viable lactococci, respectively, at the beginning of ripening. On the 90<sup>th</sup> day of ripening, the number of viable lactococci in C and R cheeses were 7.34 and 5.78 log CFU/g, respectively. However, the starter lactococci in the oxidized cheese sample have lost their viability from the 60<sup>th</sup> day of ripening. It was determined that the redox potential affected the proteolysis by lactococcal strains. It was found that the reduced redox potential stimulated the peptidolytic activity of lactococci in the cheese. The redox potential of the cheese particularly affected the production of organic acids. The control and reduced cheeses were rated higher than the oxidized cheese by the panelists according to their sensory properties. As a result, it has been determined that low redox potential was required during cheese ripening to obtain a quality UF white cheese.

**Keywords :** Oxidation-reduction potential, ultrafiltered white cheese, proteolysis



***Modernisation and Industrialization of Traditional Food Production Processes***

***Abstract Reference : 271***

**Microwave Drying as an Alternative to Dry Meat Products and Its impact on DNA Integrity and SDS-PAGE Protein Profile**

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Tray drying is the traditional approach for drying of meat products. The meat is placed on metal trays allowing the circulation of hot air around the product. Since this traditional technique requires long drying times at high temperatures leading to high energy consumption, there is a need to develop novel strategies to reduce drying time, decrease energy consumption while minimizing changes in physical, chemical, nutritional and sensory characteristics of the food product under consideration. Relevant indicators of quality in meat processing is the analysis of changes on DNA integrity and the SDS-PAGE protein profile. DNA integrity is very important for PCR based meat authentication methods because it accurately allows for species identification. In this study it is proposed to evaluate salting beef followed by microwave drying (MD) and compare this approach with conventional air drying. Salting as a pretreatment before drying was carried out with NaCl or a combination of NaCl and KCl to evaluate the effect of sodium reduction. Microwave drying was selected because it is a much faster method that removes inside water at the same rate as the water on the surface making a more uniform process. Salting and MD of beef was compared to traditional tray drying in terms of SDS-PAGE protein profile and DNA integrity. Drying in general resulted in degradation of heavy-myosin in the SDS-PAGE protein profile, and salting with KCl increased intensity of some specific bands. In the PCR analysis of DNA, MD gave rise to smeared bands, whereas salting resulted in clearer bands connoting that DNA integrity could be altered due to different applications. KCl is recommended as a substitute for NaCl without adversely affecting protein profile and DNA quality. These results attained by processing beef suggest that Microwave Drying could be used as an alternative for the manufacturing of traditional low-sodium dry cured meat products such as pastırma.

**Keywords :** Microwave Drying, Tray Drying, Salting, Beef, SDS-PAGE protein profile, DNA

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 69***

**DIFFERENT TYPES OF COFFEE MAKING TECHNICS WITH COFFEE BEANS**

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There are hundreds of coffee tree types; thus, there are hundreds of coffee bean types, around the world. Coffee tree is a type of tree which is from *Coffea* taxonomic group that is from Rubiaceae family. The coffee tree remains green. It has dark green leaves, white fragrant flowers and fruits that look like cherries. On the other hand, there are only 3 types of coffee trees that are grown commonly around the world and the most commonly produced and traded types of coffee beans are Arabica (*Coffea arabica*) and Robusta (*Coffea canephora*) beans. Liberica kind is only produced in the Philippines in a very small amount; so, it is traded only a little. The most produced and traded sort of bean is Arabica. 80% of the beans that are produced around the world is Arabica and the rest 20% is Robusta. The production of Robusta mostly takes place in Africa and South Asian countries when Arabica is produced in all of the countries that produce coffee but mostly in South America. The common features of coffee beans are that they contain caffeine which is a bitter alkaloid and plenty of phenolic substance. Arabica type contains 1.5% caffeine, 6.5% phenolic substance , 16% fat and 7% sugar. While Robusta contains more caffeine and phenolic substance, it contains less fat and sugar compared to Arabica. Most of the coffee types of different tastes and making processes around the world are made from either Robusta or Arabica or the blend of those two types coffee beans. The manner of coffee making process affects the taste remarkably. Also, the grinding thickness is another factor. Thus, it is important to use beans that are ground suitable for the making manner to achieve the ultimate flavour and delight. This study will give information about the features of coffee beans and various coffee making technics; also, instant coffee, espresso, filter coffee, French press, Turkish and other types of coffee and the difference between them.

**Keywords :** coffee, coffee tree, coffee beans, caffeine

***Modernisation and Industrialization of Traditional Food Production Processes***

***Abstract Reference : 55***

**Should traditional food produced by heat treatment be industrialized?**

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Traditional foods can be defined as foods that have been consumed locally for an extensive period of time before the modernization and industrialization of the food supply. As expected most of these foods offer various health benefits since tradition hardly supports foods which are not palatable and healthy. However, recent findings have shown that traditional dishes may contain some compounds which are harmful to human health. For example, it was reported that molasses-like products may have high levels of 5-hydroxymethylfurfural (HMF), heavy metals and pesticide residues. It was also found that some traditional Turkish desserts like tulumba and halka contain potentially cancer-causing and neurotoxic chemical called acrylamide. Moreover, heterocyclic amines and polycyclic aromatic hydrocarbons (PAHs) may occur in cooked meat products (beef, chicken or fish). Source of these toxic compounds could be raw material, migration from food contact materials, wrong preparation, cooking or storage methods. Briefly, traditional foods do not mean totally healthy foods, these dishes could contain harmful substances. Therefore, safety precautions should be taken to eliminate or decrease these toxic compounds in such foods (especially produced by heat treatment) before industrialization. Otherwise, these foods might negatively affect consumers' health instead of improving their health conditions. This review aims to provide information about what are possible health risks associated with consumption of traditional foods and what can be done to solve these problems.

**Keywords :** Traditional Foods, Food Safety, Industrialization

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 339***

**Application of Nanotechnology in Dairy Products and Packaging**

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Nanotechnology is a promising technology that holds tremendous potential for many research fields. The main focus of nanotechnology is the design of new materials with improved functionality at nanoscale. It is well-known that materials exhibit different properties at nanoscale than other scales. Application of nanotechnology to foods has begun to draw attention for fabrication of new food products with desired properties that meet consumers demand and increased nutritional value. Engineered nanostructures with varying shapes have been used to deliver bioactive compounds with improved bioavailability, increase shelf life of foods, develop innovative pathogen detection methods and enhance food texture. In dairy products, nanotechnology has been widely employed to provide products with enhanced characteristics and functionality. To preserve bioactive compounds (i.e. nutrients, antioxidants, antimicrobials or flavorings) from adverse environmental effects and increase their bioavailability, nanoencapsulation is implemented and encapsulated compounds are incorporated in milk and dairy products such as yogurt, cheese, milk, ice cream or butter to achieve adequate intakes through consumption of food. Recent studies showed that sensory and physicochemical properties of dairy products can be enhanced with incorporation of nanoscale materials. In dairy product packaging, food safety can be ensured by nano-coating of products with active substances which are released in the package and inhibit growth of microorganisms while resulting in quality improvement. Moreover, the addition of nanomaterials derived from biomaterials in package films exhibits better gas barrier properties with improved resistance to humidity or temperature and allows less waste production. This review aims to highlight the potential use of nanoscale materials like nanoparticles, nanoemulsions or nanoliposomes in milk and traditional dairy products while explaining fabrication methods and recent advances in application of nanotechnology in food packaging.

**Keywords :** Nanomaterials, dairy products, encapsulation, nanotechnology, packaging

***Other Traditional Foods***

***Abstract Reference : 523***

**Intangible Cultural Heritage: Keskek (Germencik Sample)**

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Intangible Cultural Heritage by UNESCO; communities, groups and, in some cases, individuals, as a part of their cultural heritage, in the form of practices, representations, narratives, knowledge, skills and tools, materials and cultural spaces associated with them. Among the most important masterpieces prepared in the cases of gathering and gathering for traditional reasons such as weddings, festivals, funerals, hajj or military couples in many parts of Anatolia, keskek entered the list of 'Intangible Cultural Heritage' in 2011 with the decision of UNESCO .

Keskek is a traditional flavor that is obtained by thoroughly identifying wheat and meat together by beating together. In Western Anatolia, Thrace, Eastern Anatolia, Black Sea and Central Anatolia, Keskek shows differences according to the regions. In some regions lamb is made in some regions, veal in some regions, and chicken meat in some regions. The construction of your tongue is quite troublesome. In fact, it is a ceremonial dinner. The drums come to the table in the accompaniment of the zurnas and require a long preparatory process, a division of labor and solidarity as far as the table goes. In this article, information about keşkek is given and the reasons why it is a concrete cultural heritage are discussed

**Keywords :** Cultural heritage, keşkek, traditional food, Germencik

***Other Traditional Foods***

***Abstract Reference : 201***

**The Effect of Backslopping on the Diversity of Lactic Acid Bacteria at Tarhana Fermentation**

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Tarhana is one of traditional fermented food which is prepared at summer for consumption in winter by Anatolian people. Due to its desired aroma and health promoting properties, it needs to be produced large amounts. Therefore, continuous production of tarhana is required. Backslopping is a cycling of some parts of fermented food with fresh one which can stabilize and accelerate the fermentation. In this study, tarhana dough was backslopped when its pH reached to 3.7 at 25°C as 5, 10 and 15% (w/w) and this cycling system continued 7 times. At each backslopping the acidity level in 67% ethyl alcohol, the microbiological counts and the diversity of LAB both culture dependent and independently were subsequently determined. The acidity level of dough samples backslopped with 5, 10 and 15% level was averagely 16.56, 16.71 and 16.82 respectively. Also, the same dough samples included the LAB as 9.12 log CFU/g, the TAMB as 9.22 log CFU/g and the yeast as 6.79 log CFU/g. The LAB colonies were collected from the last three backslopping and identified within 16S rDNA sequencing. The LAB diversity of dough samples was determined by Denaturated Gradient Gel Electrophoresis (PCR-DGGE). Accordingly, *Lactobacillus delbrueckii subsp. bulgaricus*, *Streptococcus salivarius*, *Str. thermophilus*, *Lb. namurensis*, *Lb. fabifermentas*, *Lb. brevis* and *Lb. plantarum* species were found the stable fermenting flora at backslopping. On the other hand, within backslopping the fermentation time was shortened by 40%. As a conclusion, applying backslopping at the production of tarhana not only stabilize and standardize but also accelerated the fermentation. With this study, an expedited fermentation process was developed for the fermentation of tarhana which could be used for industrial production.

**Keywords :** Tarhana, Fermentation, Backslopping, Industrial production, LAB diversity

***Other Traditional Foods***

***Abstract Reference : 386***

**Problems with Traditional Molasses and Pomegranate Sour Production and Suggested Solutions**

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Molasses, one of the traditional products, which are produced by intensification after elimination of acidity by extraction of sweet products like fresh or dried grapes, figs, watermelon, apple, mulberry, carob, sugar corn or sugar cane, and named based on its raw material as grape molasses or carob molasses. Pomegranate Sour, which has a similar production method like molasses, is a traditional spicy product. In the production, after harvesting pomegranates (*Punica granatum*), their seeds are sorted out and crushed. After the obtained mash is clarified and intensified, the final product is called as pomegranate sour. Molasses and pomegranate sour productions are mostly made in houses. Homemade productions at uncontrolled conditions cause lots of problems and important changes in the final product quality parameters. Firstly pressing by feet is a non-sterile way of crushing. Secondly, uncontrolled overheating result in dark coloured and HMF content in homemade products. Thirdly, physically dust, dirt etc. or microbiological contamination due to an open system.

As a conclusion, physical, chemical and microbiological changes are formed and the final product quality parameters (flavour, aroma and nutritional value) are substantially affected. internal (water activity, pH, oxygen etc.) and external (temperature, time, relative humidity, etc.) factors should be under control throughout the entire processes of molasses and pomegranate sour. Above all, using and developing modern and controlled production methods make this traditional products healthier and more consumable.

**Keywords :** Traditional product, molasses, pomegranate sour, quality

***Other Traditional Foods***

***Abstract Reference : 404***

**Antioxidant Activities of Infused Elderberry Flowers**

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*Sambucus nigra* has been called 'kara mürver, mürver, melesir, patlangaç, patlangıç' among the people. It is often used for decoration in gardens and public parks. Mürver grows wild in Europe, Western and Central Asia and North Africa. Also in our country elderberries grow in İstanbul, Bolu, Kastamonu, Antalya, Hatay etc. The parts of (bark, leaves, flowers, fruits, roots) the tree have been used for traditional medicine. The flowers contain flavonoids, cyanogenic glycosides, triterpenes, phenolic acids, tannin, mucilage, pectin, and sugar. The aim of the research is to find the total phenolic content, total flavonoid content, pH, Brix, colour parameters and antioxidant activities of infused elderberries. Samples of *Sambucus nigra* dried flowers were infused at three different temperatures (65, 80, 95 °C) and three different times (3, 6, 9 minutes). 2 g of flower samples were weighed and infused in 200 ml water in a glass beaker. There was no significant difference found in the manner of color parameters except L\* values. The effect of time on the total phenolic content found significantly different ( $p < 0.01$ ) the highest was the 6 minutes samples ( $320.90 \pm 46.65$  mg catechin eq /L). The effect of time, temperature and 'time x temperature' interaction on the antioxidant activity were significantly different ( $p < 0.01$ ). The average antioxidant activities were  $78.54 \pm 4.516\%$  at 9 min. samples,  $80.05 \pm 2.40\%$  at 80 °C samples. It is considered that there is a need for studies on the optimization of process parameters in terms of determining the changes occurring in the functional components of Elderberry.

**Keywords :** Antioxidant, elderberry, infusion, total phenolic



*Other Traditional Foods*

*Abstract Reference : 336*

**TRADITIONAL AND FUNCTIONAL FOODS OBTAINED FROM GRAPES IN OUR COUNTRY**

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Our country has an important potential for growing grapes because of the suitability of ecological conditions. According to the recent data, the total grape production of our country was recorded as 4.011.000 tons and the vineyard area amounted to 468.000 ha. According to these figures; Turkey ranks 5th among world countries in terms of vineyard area, and ranks 6th in terms of production volume. Grapes obtained after harvest from vineyards are evaluated as table, must, raisin and wine. While the table grapes are consumed freshly; molasses, samsa, sucuk, pestil and köfter are made from the grapes of must and consumed fondly. Raisin grapes are consumed in our country as seedless and seedless dried grapes. Also dried grapes are remarkable as a high-income export product. Besides these; grape juice, vinegar, grape seed extract, grape seed oil has an important production share in Food and Cosmetic industries. Traditional foods obtained from grape are usually consumed in the country. However, it is very important to increase the amount of production for these foods and to create an added value in exports. Among the products obtained from grape must, the most consumed traditional food is molasses. Molasses; sweet and sour molasses according to taste status, according to whether it is solidified or not; can be prepared as solid and liquid molasses. When the proportions of chemical composition of molasses are examined, it is reported between 68-80 % the level of water soluble dry matter (%). Because of potassium, phosphorus, magnesium and calcium are high values, it is reported that it is an important food for healthy nutrition. In addition, the high level of antioxidant activity of molasses is also beneficial for the health of molasses. Traditional foods from grapes must contribute to healthy nutrition, strengthen the immune system, reduce cardiovascular disease, treat anemia and protect against cancer. For this reason, increasing the share of production by defining the products obtained from grapes and taking place among export products is important in terms of the country's economy.

**Keywords :** Grape, Traditional food, Molasses, Healthy life.

***Other Traditional Foods***

***Abstract Reference : 249***

**TRADITIONAL KASTAMONU DESSERT `ÇEKME HELVA` : Touristic Delight**

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Turistic activities have become important subject of the milenium in terms of economical effects and settled in the top of the World agenda. This makes the natural competition in between countries, then the metropolitan areas and now the small settlements. In order to deal with this kind of competition not only countries but also small settlements have a strategy called as “*product diversification*” and priorty on Gastronomical Tourism. There is as strong belief that make the Gastromical Tourism one of the competition force is taste of the traditional quisine. Kastamonu is one of the small scale settlements that is working to hard to overcome economical underdevelopment as well as social, culturel, enviromental and political one in general tourism, especially Gastronomy Tourism. Because It is known that there are 812 different regional flavors belongs to Kastamonu that each has a potency to make strong attaction force. “*Çekme Helva*” is one of them. In this survey the Kastamonu Çekme Helva was used as a case study to find out the history behind the original source of production and consumption of this popular dessert becoming one of the most purchased item by tourist in the new millenium. The findings from this survey show that the Kastamonu Çekme Helva has been produced in the traditional way for centuries and the most purchased gift by tourists in the region.

**Keywords :** Traditional Food, Gastronomy Tourism, Çekme Helva, Kastamonu

***Other Traditional Foods***

***Abstract Reference : 472***

**Evolution of Some Traditional Foods From History to Present**

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Generally, culture can be defined as something that comes from thought or intellectuality of humans which is developed and passed from generation to generation. Traditional food products represent an important element of culture, identity, and heritage and are characterized by both historical and geographical dimensions. Furthermore, traditional foods are usually more nutritious and sustainable than foods that selling in commercial markets. People have been consuming traditional foods for many centuries and it is an indicator of the characteristics of society such as diet, health and so on. The materials, which have been used in production of traditional foods, production, storage and preservation methods were transferred to next generation throughout history. Several factors such as location, climate etc. can influence quality and properties of traditional foods. Cheeses are traditional foods for all over the world with having different properties. It is stated that cheeses make the milk carry to the infinity. Also, Tarhana, one of the most important traditional fermented products of Turkey, has a high nutritional quality and it was produced for preserve foods. The aim of this study provide information about history and evolution of some traditional foods of our country and also reveal the food culture of different regions.

**Keywords :**Traditional, Food, History, Evolution

***Other Traditional Foods***

***Abstract Reference : 504***

**Sensorial and Physicochemical Properties of Spirulina Enriched Icing-cream for Pastry**

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Microalgae have some nutritional and health-promoting beneficial effects because of their high amount bioactive contents such as proteins, essential oils, vitamins and pigments. Besides their nutritional and health-promoting effects microalgae are used in many field such as therapeutic nutrition, pharmaceuticals, aquaculture, cosmetics, biodiesel and animal feed. In this research, effect of Spirulina (*Spirulina platensis*) enriched icing cream for sponge cake on sensorial and some physicochemical properties of pastry. Icing creams enriched by pure spirulina powder with 0.5, 1.0 and 1.5 % of milk content were applied to sponge cake for pastry production. Sensorial evaluation was conducted by appearance, color, flavor and general acceptability of control and spirulina enriched pastry. General composition (humidity, protein, fat, carbohydrate and ash content), Hunter L, a, b color values were measured. The highest sensorial score was obtained by 0.5 % Spirulina enriched icing cream applied pastry. Protein content of enriched icing cream was increased proportionally with added spirulina powder and measured as 5.35%. Humidity contents were about 41% with no difference between icing cream samples. Increased Spirulina content caused decrease in L, a, and b values and measured 61.15, 10.04 and 5.5 respectively for 0.5% enriched icing cream. Microalgeas can be used as bioactive additives or bioactive supplements, coloring agent for functional food production.

**Keywords :** Spirulina, Spirulina platensis, Icing cream, Pastry

***Other Traditional Foods***

***Abstract Reference : 506***

**İncirlioiva Milk-Jam Production and its Modernization**

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Jam is a product produced by adding white sugar (saccharose), glucose syrup and other additives into the fruit and boiling of it. The jam can be preserved longer by heat treatment and the effect of sugar on the certain dry matter ratio. Besides the wide variety of traditionally produced jams in Turkey, there are also a large number of commercially produced jams in modern factories. In jam production, not only fruit but also vegetable and vegetable tissues such as flowers are also used. Milk-jam is also one of these type of jams.

Milk-jam is a kind of jam produced by traditional methods in Incirlioiva district of Aydın. After sugar and vanilla are added into the milk, it is boiled for 8 hours. At the end of 8 hours the milk becomes thicker and the sugar is caramelized and the process is terminated. As is known, the formation of hydroxy methyl furfural (HMF) is inevitable in such products. HMF is a compound that is formed by the reaction between heat-treating reducing sugars and amino acids and whose amount is limited to prevent excessive heat application in many products. For this reason, in this study, it is aimed to make modern production of consumed milk-jam in Incirlioiva. For this purpose, milk was evaporated to 25% dry matter ratio and then 20% sugar was added to it and boiled for 15 minutes. Analyzes of pH, dry matter, ash, hydroxy methyl furfural, invert sugar and saccharose were made in the obtained milk jams and milk jams produced by traditional methods. When the analysis results are compared, it is determined that the difference in the composition of the milk-jam samples produced by traditional and modern methods is statistically significant ( $p < 0.05$ ).

**Keywords :** Milk-jam, traditional food, physicochemical properties

***Acknowledgments :*** *We would like to thank the Municipality of İncirlioiva for their support in making this work.*

***Other Traditional Foods***

***Abstract Reference : 597***

**Some Medicinal and Aromatic Plant Volatile Oils' Effect on Chemical Composition and Antimicrobial Properties of Virgin Olive Oil**

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In this study, thyme, lavender, rose plants which are widely used in traditional medicine and various industries (food, cosmetics etc.), these plant volatile oils' were determined effects on some quality parameters (free fatty acid, peroxides number, oxidative stability, fatty acids composition, vitamin E) and antimicrobial properties of extra virgin olive oil.

Firstly, mixed extra virgin olive oil and plants volatile oil were determined as the free fatty acid values of the% 1.25-1,82 %, peroxide number values 11.0-12.6 meq / kg, color values 1.6-1.7 red, 70 yellow, 0-0.7 blue, 0-0.9 dark , E vitamine values 6.36-9.71 mg / 100 gr.

Secondly, in antimicrobial tests, volatile oils resulting from the distillation addition in virgin olive oil on the microorganisms *Escherichia coli* ATCC 25922, *Escherichia coli* O157: H7, *Listeria monocytogenes* ATCC 7644, *Salmonella enteritis* ATCC 13076, *Staphylococcus aureus* ATCC 2592 and these plant essential oils, extra virgin olive oil mixtures (2: 8) were found to be effective at different rates on these microorganisms.

**Keywords :** Medical and aromatic plants, volatile oil , fatty acid composition, antimicrobial, physico-chemical, virgin olive oil

***Other Traditional Foods***

***Abstract Reference : 60***

**Determination of the bacterial diversity of Thracian tarhana by both culture dependent and independent techniques**

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Tarhana is a valuable traditional fermented food with high nutritional value and long shelf life and its main ingredients are wheat flour, yoghurt and baker's yeast or sourdough, with overall composition and other ingredients varying from region to region. In the Western Thracian region of Turkey, sourdough obtained from koruk (unripe green grape) is used in tarhana production and fermentation is continued for 21 days. In this study, it was aimed to determine the bacterial diversity during the fermentation period by both culture-dependent and culture-independent techniques involving high-throughput sequencing (HTS) of 16S amplicons. To do this, tarhana dough was prepared and samples were taken from the 9<sup>th</sup>, 12<sup>th</sup>, 16<sup>th</sup>, 19<sup>th</sup> and 21<sup>st</sup> fermentation day from tarhana and also from sourdough to determine the bacterial diversity. For 16S HTS, DNA was extracted directly from tarhana and sourdough samples and 16S PCR was conducted using universal bacterial primers. Sequencing of the amplicons and subsequent bioinformatic analysis showed that the main bacterial species present in the sourdough are *Lactobacillus brevis* and another *Lactobacillus* sp. with relative abundances (RA) of 99% and 1%, respectively. Analysis of the fermentation period indicated that *L. brevis* from sourdough is the most predominant bacterial species in the tarhana fermentation period with RA increasing from 48% at the 9<sup>th</sup> day to 86% at the 21<sup>st</sup> day. *Lactobacillus* sp., which has a RA of about 1% in sourdough increased its presence to 31% on the 9<sup>th</sup> day, but then gradually decreased to 3%. The RA of *Streptococcus thermophilus* from yoghurt peaked on day 16 at 30%, but then decreased to 11% at the end of fermentation. The RA of the other yoghurt bacterium, *Lactobacillus bulgaricus*, remained limited during the fermentation days analyzed. Culture-based methods were used to recover the bacteria on culture and for molecular identification. As a result of this study, the microbiology of Thracian tarhana was analyzed by both culture-dependent and culture-independent methods. 16S HTS analysis, which was used for the first time in Tarhana, allowed in-depth examination of the fermentation process in terms of bacterial abundances and subsequently the bacteria were recovered using culture-based methods.

**Keywords :** Thracian tarhana, sourdough, bacterial diversity, 16S amplicons, high-throughput sequencing (HTS).

***Safety of Traditional Foods***

***Abstract Reference : 92***

**Influence of various packaging systems and microwave heating on quality characteristics of frozen döner**

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In this study, the effect of different packaging systems on lipolytic, microbiological and sensory quality of frozen döner were evaluated. Döner meat was prepared based on the guideline of Turkish standards, cooked in front of a gas oven, cut in 3 mm thickness and packaged with following systems:

- 1) Aerobic packaging (AP): A 400 g of cooked döner was placed into polyethylene+polyamide trays and sealed with atmospheric air inside by using OPET12/OPA15/CPP60 lidding films.
- 2) Vacuum packaging (VP): The same amount of döner was put into PET/OPA/CPP polypropylene pouches and sealed by applying 99% vacuum.
- 3) Sous vide (SV) packaging (SP): The döner meat was pasteurized at 70°C for 2 min after it was vacuum packaged under the same conditions.

All packages were stored at -18°C during 8 months until TBARS value reaches unconsumable limit and analyzed bimonthly. As a side purpose of this study, microwave heating (MH), which is used in homes to prepare these type of products for consumption, was applied at 360 W for 1.5 min to determine its effect on physicochemical, lipolytic and microbiological quality of döner.

Lower total mesophilic aerobic bacteria (TMAB), Micrococcaceae, yeast and mold counts were calculated in SP (P<0.05). During frozen storage, TMAB numbers gradually decreased after the 3rd month in SP and 4th month in VP due to the possible detrimental effect of frozen temperature (P<0.05). Additionally, MH decreased TMAB, yeast and mold counts in all packages. Considering TBARS, it is crucial to note that SP (1.73 mg MA/kg at 8th month) and VP (1.76 mg MA/kg at 8th month) extended the shelf life of döner by 4 times compared to AP (2.50 mg MA/kg at 2nd month) in which off-odor and off-flavor was reported by panelists at the 2nd month in sensory evaluation (P<0.05). Although SP was similar to VP in terms of oxidative quality, döner packaged with SV was noted light colored, juicy, tender and tasty. No significant effect of MH was determined on lipolytic changes during storage, but darker color, higher b\* values and lower moisture content were observed in döner treated with MH regardless packaging systems (P<0.05).

**Keywords :** Doner kebab, vacuum packaging, sous vide packaging, shelf life, lipid oxidation

***Acknowledgments :*** *This work was supported by Scientific Research Project Coordination Unit, Ankara University [grant number 15B0443004]*



***Safety of Traditional Foods***

***Abstract Reference : 209***

**DETERMINATION OF THE AMOUNTS OF HMF AND PATULIN IN APPLE SOUR THAT ONE OF THE DOMESTIC TRADITIONAL PRODUCTS OF KASTAMONU**

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Patulin is a toxic secondary metabolite produced by fungal species like *Aspergillus*. Exposure of humans to Patulin via consumption of infected products may result in severe toxicosis, including mutagenic, teratogenic, hepatotoxic, nephrotoxic, neurotoxic, and genotoxic effects. 5-(hidroksimetil)-2-furfural (HMF), a common major product of the Maillard reaction, is formed in many foods from reactions of reducing sugars and amino acids. HMF has been found to be carcinogenic, mutagenic and genotoxic. The thermal processing can promote the formation of undesirable compounds such as HMF.

Apple sour that called "elma eşisi" in Kastamonu region, is a local product consumed that spreading on bread and drinking with meals by dilution with water. The sour apple, basically, is produced by boiling and evaporating for tichkening of juice produced after removing the water from the apples. The HMF formation possibility is very high in these products, because of severe heat treatment such as prolonged boiling. At the same time, if the rotten apples that not separated from sound apples, used in the production, it is quite probable that these products contain patulin because of patulin is resistant to degradation by heat treatment. Therefore, the HMF and patulin levels of Apple sour samples were determined in this study.

The lowest value for HMF in this study was 132, the highest value was 52418 and the mean value was  $16215 \pm 13317$  mg / kg. All results were above the legal limit value (100 mg / kg). The minimum value for patulin was 20, the maximum value was 1416 and the mean value was  $284 \pm 307$  µg / kg, and 37 of the 39 samples were found to have equal or greater legal limit value (50 µg / kg) determined for the juice concentrates. These results indicate that consumption of apple sour produced by the traditional method is a great risk for HMF and Patulin toxicity.

**Keywords :** Apple sour, patulin, HMF, HPLC, toxicity, food safety

***Acknowledgments : This research has been supported by Kastamonu University Scientific Research Projects Coordination Department. Project Number: KÜ-BAP01/2016-17***

***Safety of Traditional Foods***

***Abstract Reference : 66***

**Ethical principles in agriculture and food safety**

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The word ethical is now in frequent use and appears in a wide range contexts. Most people probably believe they have some understanding of what behaving ethical implies – that is something to do with doing good. Economists have suggested that, by delineating three kinds of food product attributes, it is possible to identify circumstances in which ethical standards in agricultural production may not always bring their own reward. Consumer attributes have been labeled; search, experience and credence. The issue of health claims and food labeling highlights the fact that society may sometimes need to take steps to protect the interest of the food producer who behaves ethically, and regulate to provide for uniformity in their attempts to do so. The first of the ethical matrix is wellbeing and, crucially, this of course includes the wellbeing of those who consume the food product, as well as those who produce it. Food production processes that induce health hazards in food consumption have the potential to reduce the wellbeing of consumers – and the extreme version of this is death from food poisoning. Here, the important contribution is to understand, what went wrong. Everyone accepts that ethical behavior in the food industry implies supplying safe food.

**Keywords :** food safety, ethical principles, agricultural marketing

***Acknowledgments : Food safety, is defined as obeying the rules and taking precautions during the production, processing, storage and distribution of foods, in order to provide healthy and perfect food production.***

***Safety of Traditional Foods***

***Abstract Reference : 423***

**A novel bacteriocin, isolated from karın butter with a specifically antimicrobial activity against *Listeria monocytogenes***

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Bacteriocins are the ribosomal synthesized antimicrobial peptides used as natural preservatives against pathogens during food production process. The main problem of using bacteriocin and their producers is that these antimicrobials also inhibit the existing flora including non-starter lactic acid bacteria. The question is whether bacteriocins with narrow antimicrobial activity could be a solution? In this study, bacteriocins produced from lactic acid bacteria (LAB) having antimicrobial activity specifically on *Listeria monocytogenes* (LM) was isolated and characterized. To select the anti-LM bacteriocin LAB producer, a cocktail including of diverse *L. monocytogenes* strains was used as indicators. The isolate KtLm1 obtained from traditional karın butter showed antimicrobial activity against LM at both spot and well diffusion assays. This isolate and its bacteriocin-like metabolite did not inhibit any LAB tested, although it had antimicrobial activity against all LM strains (n=10) isolated from food samples. 16S rDNA sequence of KtLm1 indicated that it was 99,99% homolog with the *Enterococcus faecalis*. The partial purified KtLm1 was degraded with proteolytic enzymes including trypsin,  $\alpha$ -chymotrypsin, pepsin and proteinase K. MALDI-TOF analysis indicated that bacteriocin KtLm1 has a small molecular size. As a conclusion, *Enterococcus faecalis* isolated from traditional karın butter produced a novel narrow spectrum bacteriocin, which has specifically antimicrobial activity against LM. This study also demonstrated that pathogen-specific bacteriocins could be used to eliminate pathogens in foods with no antibacterial effects against LAB microflora.

**Keywords :** Bacteriocins, *Listeria monocytogenes*, *Enterococcus faecalis*

***Safety of Traditional Foods***

***Abstract Reference : 463***

**Determination of Enterotoxigenic Structures of *Bacillus cereus* Strains Isolated from Ice Creams**

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This study was conducted to investigate the presence of *Bacillus cereus* in ice cream samples and to identify associated toxin genes by mPCR. 125 ice cream samples including 75 fruit, 25 vanilla and 25 chocolate, collected from local pastry shops were used as material. A total of 38 (30.4%) ice cream samples (20 fruit, 14 vanilla and 4 chocolate) were found to be positive for *B. cereus*. The mean number of *B. cereus* was determined as  $2.0 \times 10^1$  -  $4.0 \times 10^2$  cfu/g. A total of 94 isolates were obtained from 38 positive samples. It was found that 31.9% (30/94) of the isolates had three enterotoxigenic HBL complex encoding genes (*hblA*, *hblC*, *hblD*), 10.6% (10/94) had two hbl genes and 6.3% (6/94) contained one hbl gene. On the other hand, 15.9% (15/94) of the isolates contained three NHE complex-encoding genes (*nheA*, *nheB*, *nheC*), 31.9% (30/94) had two nhe genes and 20.2% (19/94) contained one nhe gene. Also 7.4% (7/94) of isolates were found to contain both NHE (*nheA*, *nheB*, *nheC*) and HBL gene complex (*hblA*, *hblD*, *hblC*) together while *ctxA* gene was not detected in any sample. As a result, despite the low number of *B. cereus* in ice creams, it is considered that the agent can produce at low temperatures and it may create a potential risk for the consumer due to its ability to generate toxins.

**Keywords :** *B. cereus*, dairy, ice cream, mPCR

***Safety of Traditional Foods***

***Abstract Reference : 467***

**Impact of red beet peel extract on biogenic amine produced by food-borne pathogens**

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Biogenic amines produced by bacteria can be toxic to humans and animals and cause a variety of illnesses. When seafood are improperly stored and handled, bacteria can rapidly grow and they decarboxylated free amino acids to produce biogenic amines. The growth of the bacterial cells in foods as well as the prevention of toxin production is of great importance for food processing technology. It has been reported that red beet peel extracts have antibacterial properties on food spoilage bacteria and pathogens. However, there are not sufficient research regarding to the effect of red beet peel extracts on biogenic amines production. Therefore, in this study, the impact of red beet peel extracts used at different doses (0.5 and 1 mL/100 mL) on biogenic amine (BAs) and ammonia (AMN) production by *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, *Aeromonas hydrophila* and *Salmonella enterica* serovar Paratyphi A) was investigated in both histidine decarboxylase broth (HDB) and tyrosine decarboxylase broth (TDB) separately. The results obtained from the current study showed that all pathogens have ability to decarboxylase amino acid (histidine or tyrosine) to produce biogenic amines. Significant differences ( $P < 0.05$ ) were found in the production of AMN and BAs between members of the gram negative and gram positive pathogens in both amino acid decarboxylase broths. These differences were observed depending on the concentration of extracts and the pathogens studied. Red beet peel extracts used at different doses in TDB showed significant increase compare to HDB under the same conditions. This results also showed that extract has higher inhibitory effect on AMN and BAs formation by food-borne pathogens in HDB than TDB.

**Keywords :**Red beet peel extracts, biogenic amines, bacterial growth, amino acid decarboxylase broth, foodborne pathogens

***Safety of Traditional Foods***

***Abstract Reference : 171***

**Food safety challenges associated with traditional foods of Turkey**

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Consumer food safety concerns are continually increasing in Turkey, with consumer demand for safer foods becoming an important challenge for the industry. Most traditional foods in Turkey are produced under different requirements, and food safety risk management and risk assessment are conducted primarily by the government. Based on risk assessment, safety regulations and standards for traditional foods (e.g. Turkish white cheese, doner, helva) have been established. In this study, safety concerns surrounding the commercialization of traditional Turkish foods and related studies to identify and minimize potential hazards are discussed along with pathogen contamination in raw meat balls and aflatoxin in helva and white cheese. Based on risk analysis, in Western Turkey, regardless of income, poultry and meat doner, kokorec and midye dolma are foods with main risk for foodborne disease, where in Eastern Turkey, in specific raw meat ball and kokorec, are most related. Additionally, according to the assessment, fresh white cheese was considered as a safe food due to low frequency. of consumption. Helva also carry lower risk comparing to other traditional foods for people in Eastern Turkey due to higher consumption. Therefore, additional national risk analysis experts and related databases are urgently needed in Turkey.

**Keywords :** Traditional foods, safety, risk assessment, Turkey

***Safety of Traditional Foods***

***Abstract Reference : 609***

**Physical, Chemical and Biological Risks in Terms of Food Safety in Traditional Foods**

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The purpose of food safety is protection of human health, to make evaluation of risk assessment in the food chain. Food security begins on the field and last at the consumer. Therefore, food safety covers, providing quality raw materials, production, processing, storing, transportation, distribution and submission of the foods offered to the consumption "from field to table". There are several precautions taken within the scope of food safety of the food offered for consumption stages can be exposed to physical, chemical, biological dangerous risks. Traditional foods contribution to the country's economy and development would be very high if they are protected, extend the production, used rationally. On the other hand, traditional foods based on local raw materials, production techniques and protection method. Moreover, who does the production of traditional food in the world and our country, are small companies or family businesses. When producing traditional products, the main goal is to obtain the standardized products, ensure standard production, produce safe food on microbial aspects, free from physical, chemical, biological pollution and the most important quality products expectation from traditional foods is to obtain healthy, hygienic, clean product to ensure customer satisfaction and providing the perception of traditional foods not only can find the place in national market also in the international market.

**Keywords :** Traditional foods, food safety, risk

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 42***

**Protecting Ashura to Protect Culture**

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The concept of culture can be thought of as the basic material of social sciences. Culture is an important element that enables people to socialize and gain identity in society. In history, many scientists think about culture and produce a wide variety of theories. Some say that the culture determines the way people live, while others say that the needs of the people create culture. The most important issue that has been spoken these days is that the culture is dynamic, and has a very fast diffusion under the influence of globalization, it is changing and differentiating. What is important is to preserve the precious values of culture.

Rituals are valuable elements in cultures. Ashura is considered one of the important rituals of Anatolia and is a sweet made between tenth and twenty days in the first month of the hijri calendar.

The sanctity of Ashura's day went as far back as before Islam, and there are many different stories in the history. According to the most widely accepted rumor, at the end of Noah's flood, all the passengers on the ship are provided with a food prepared by bringing together the last foods left in the cellar and they celebrated salvation. This food, which contains forty kinds of material, was Ashura

Ashura is one of the important traditional foods that symbolize multiculturalism with different food groups coming together. It progress communication with its distribution and sharing ritual and includes geographical indications and identity information depending on the ingredients, cooking technique. To protect and sustain this ritual that has unchanged for centuries will be important for the preservation of the culture.

**Keywords :** Ashura, Culture, Ritual, Tradition, Sweet



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***Abstract Reference : 132***

**Comparison of the quality and nutritional parameters of food in organic and conventional production systems**

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Organic agriculture differs from conventional agriculture in that it refrains from using synthetic agricultural inputs such as synthetic chemical agents for plant protection and growth regulators, highly soluble mineral fertilizers, nanomaterials, synthetic supplements and preservatives, synthetic fortifying, flavouring and aromatic substances, genetically modified organisms and products thereof, and irradiation. Food quality is determined by its nutritional quality, which describes the inherent biological or health value of a product including the ratio of beneficial to harmful substances, benefits, nutritive value, and taste, fragrance, freshness and shelf-life as important quality characteristics leading consumer preferences. The majority studies of organic plant raw materials and their products from organic production indicate that they contain less nitrates, nitrites and pesticide residues and heavy metals, but more secondary substances, aromatic and phenolic compounds, anthocyanins, total sugars, organic and amino acids, certain antioxidants (vitamin C, polyphenols, flavonoids and carotenoids), essential amino acids and protein quality, but less total proteins. Except for free amino acids, fertilization increases the concentration of nitrogen compounds and protein-carbohydrate ratio, and decreases firmness and content of glucose in leafy green, root, tuber and nitrophilic vegetables. Analyses of food production systems have actually shown that reveal a trend towards a slightly higher dry matter and vitamins A, C, E,  $\beta$ -carotene, lutein, thiamine and riboflavin content, some minerals (Fe, Zn, Ca, Mg and P), salicylic acid, titratable acidity, secondary metabolites and sensory properties in organically cultivated vegetables especially berries and fruit. Also, there are differences between organic and conventional foods for packaging, preservation, preparation, processing, degradation, testing, contamination, addition to food. However, nutrients and other nutritionally relevant substances and sensory characteristics and/or quality were influenced by factors other than organic regulations such as cultivar, seed input, geographic locations, climate and soil characteristics, soil history, controllable and uncontrollable crop inputs, crop handling and testing of crop. On the other hand, the sensory characteristics and quality of authentic traditional foods are largely based on organic produce. Without any doubt, the manufacture of healthier and tastier organic and traditional products helps with the development of the diversification of agricultural activities and with the promotion of the regions, while on the other, it affects each other and organic food trends.

**Keywords :** Organic and traditional foods, nutritional value, food quality, production systems

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 299***

**From Past to Present Day Traditional Kitchen Wares of Şanlıurfa**

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The materials or tools necessary in order to cook or serve any food are called as kitchen wares. Although the utilities of Kitchen wares are similar, their characteristics can vary depending on the local specialties, cooking techniques and food presentation. In this study, traditional kitchen wares used in Şanlıurfa kitchen from past to present day were examined. Often there is an oven and tandır (a kind of barbecue) beside one side of the kitchen, and the other side a kiler, where the winter food is placed. Cereals and legumes like flour, pasta, bulgur, tarhana, keşkek or beans are filled in the bags, small potteries or jars and placed near the oven to facilitate use. Shelves are placed on the other side of the kitchen. At the top of the shelf has large pots, soup bowls and trays. At the middle of the shelf has saucepans, the bottom of the shelf has pitcher, small potteries, bowls etc.. In the spoon tray, there are wooden and iron spoons, knives, colander, scoops and rolling pin. Among the kitchen wares are Kuşhanas (a kind of big pot), dishes, saucepans, oil pans, two handled pie pans, soup bowls, pastry board, slotted spoon, sieve, stone for meat, stone mills and churn in the traditional kitchen of Şanlıurfa. At the top of the tools used in kitchens are copper cups. Tools made of copper material include: Sini, Lenger, Sahan, Üsküre, pan, pitcher, boiler, Sefer taşı, Maşrapa, strainer, funnel, Sitil, Gungum, Samovar and Teapot. In addition, many tools made from wooden, stone, glass and the other materials such as Grain warehouse, wooden cupboard, hand churn, halbur, Bazı of Külünçe (a kind of dough shaper), meat stone, stone mills, curun of Şıra (a kind of stone basin) have been used in traditional Şanlıurfa kitchen.

**Keywords :** Şanlıurfa, Traditional kitchen wares, copper, wooden, stone

***Acknowledgments :*** Authors thank to personels of Kitchen Museum of Şanlıurfa

***Social Aspects of Traditional Food and Nourishment***

***Abstract Referance : 618***

**The Importance of Lifelong Learning of Traditional Foods and Nutrition and the Role of Real and Virtual Information Organizations**

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The key purpose of this study is to emphasize the importance of lifelong learning of traditional foods and nutrition, and to guide information management and real and virtual information organizations for these topics. In addition, the objective of the study is to contribute to the lifelong learning of traditional foods and nutrition as well as improvement of nutritional status of all people among society with the aid of nutrition and dietetic professionals. In the study, it has been aimed to draw attention to the importance of advancing real and virtual information services to the highest quality by leading and developing support for vocational education of nutrition and dietetic professionals as well as lifelong learning programs and services that support all people within different age groups and socioeconomic status in the society. Documentary source analysis, descriptive research methods and data collection from scientific literature and documents techniques were used in the study. Topics of this study are subjected to review under the headings of “Lifelong learning concept”, “Priorities for action in lifelong learning”, “lifelong learning for traditional foods and nutrition”, “the role and importance of real and virtual information organizations as centres of lifelong learning for traditional foods and nutrition”.

**Keywords :** Lifelong learning, information organizations, traditional foods

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***Abstract Reference : 455***

**The Choice for Brand by Cheese Consumers using Multinomial Logit Model**

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Researches show that the consumption of cheese is increasing every year, thus, production of cheese has been increased and diversified in cheese varieties in order to meet this demand. This article presents the factors influencing brand preferences of consumers in cheese purchasing in Bursa, where cheese production is a technologically advanced, well-managed and economically important agricultural industry. Initially the consumers' preferences survey has been applied to 302 consumers which were randomly selected and evaluated. Then, the informative factors influencing brand preferences collected in these surveys have been determined by the multinomial logit model. Many independent variables have been used in this model. Independent variables that were not found as significant have not been included in the analysis. The major factors influencing cheese brand preferences were some socio-demographic attributes of consumers (such as occupation, marital status, income, gender), purchasing type and place, packaging, and brand tendency/dependency. It was observed that the cheese brand preferences were independent.

**Keywords :** Cheese, brand choice, consumers, logit model

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***Abstract Reference : 476***

**Glycemic Index Determination of Different Turkish Traditional Foods**

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The GI value is determined by comparing the increment area of blood glucose within 2 hours following ingestion of the test food containing 50 g digestible carbohydrate to the increment area of blood glucose of reference food containing same amount carbohydrate with test food. Glycemic Index(GI) reference intervals of foods are accepted as  $\leq 55$  low, 56-69 medium and  $70 \leq$  high GI. In our country, the glycemic index value of very little traditional food is known with clinical studies done. When we look at the National Food Composition Database established by TUBITAK, it appears that many of our traditional foods contain high amounts of carbohydrates. On the one hand, one of the most important factors affecting the glycemic index of foods is the amount of dietary fiber of food. Looking at this database again, it is seen that the amount of dietary fiber in many traditional foods is very low. Glycemic index of food is determined as in vivo and in vitro. Since the in vivo method is both disadvantages in terms of time and cost, in vitro methods is generally preferred. Glycemic index of foods can be determined as in vitro by forming the oral, gastric and small intestinal environment. In this study, the glycemic index of 10 traditional foods was determined as in vitro. These foods are baklava, sütlaç, aşure, leblebi, güllaç, kazandibi, tarhana, muhallebi, simit ve kadayıf, respectively. As a result, it was seen that some of our traditional foods had very high glycemic index value and others were low and medium. For example, results showed that the glycemic index of baklava was over 70 and that of desserts made from milk such as sütlaç had lower GI value. The number of studies concerning this issue must be increased

**Keywords :** Turkish Food, glycemic index, national food

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 483***

**Socio-Economic Analysis of Local Food Producer Women in Kahramanmaras Province of Turkey**

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Traditional food production is one of the most efficient ways in respect of increasing and developing of women employment in rural and less developed urban areas. Also local food production rated among economic facilities which produced public interest. In Turkey, Kahramanmaras is one of the richest provinces in terms of traditional foods. In the city, traditional foods mostly produced by women at homes. At the same time local people consume traditional foods regularly.

In this research, firstly socio-economic characteristics of women which produced traditional foods like red pepper, salca, bastik, pestil, tarhana, corek, sumac extract and locally dried vegetables such as eggplant, pepper and pumpkin was analyzed. Then contribution of traditional food to family budget and regional economy was investigated. In this context, a face to face survey was conducted with 100 women randomly selected in districts of Kahramanmaras province that produced traditional foods intensively. As a result, marketing of local products make an increase in budgets of households in the province and contributed significantly to the development of the local economy.

**Keywords :** Traditional food production, Women, Urban, Kahramanmaras

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 98***

**The Evaluation of Intake Level of Omega-3 with Analysis of 3-day Food Consumption in Students.**

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The Omega-3 lipid acids which constitute of important function in human nutrition, are composed from alfa-linolenik acid (18:3, ALA), eikosapentaenoik acid (20:5, EPA) and dokosaheksaenoik acid (22:6, DHA). EPA and DHA are essential lipid acids. The study was carried out with 50 students who was studying in health campus in Afyon Kocatepe University. Study was approved by ethic committee. Age, height and weight information and location of living area were questioned to students with getting information of 3 –day food consumption with one of them consisting of 1 weekend days. That data were evaluated with Food Registration of Nutrition Knowledge System (FRNKS) Data was inputted in SPSS 21 program and statistical mean standart deviation calculated. The study was composed of 50 students which of them 41 (82%) girls and 9 ( 18%) boys. 36 (72%) of them were living in dormitory , 11( 22%) of them in private home and 3 (6%) of them with their families.Body Mass Index was  $22,438 \pm 3,150$  and mean age was  $21,72 \pm 2,051$ . The dairy mean energy consumption was found  $1838,766 \pm 445,400$  calorie whose percent of protein was  $15,30 \pm 3,012$  % and percent of lipid was  $34,22 \pm 3,705$  % and percent of carbonhydrate was  $50,38 \pm 4,810$ %. The consumed Omega -3 lipit acids were comprised of  $0,968 \pm 0,575$  per gram ALA,  $0,236 \pm 0,319$  per gram EPA,  $0,332 \pm 0,239$  per gram DHA. It was found that students which were participated in study weren't consuming enough energy and lipid rate in dairy energy consumptions was high. Intake rate of lipid was higher than recommended level but wasn't enough for Omega-3 inclusion. It was found that the study need repeating in more crowded population.

**Keywords :** Omega-3, Nutrition, University student.

***Acknowledgments : Best Regard***

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 335***

**Some Analytical Properties of Turkish Virgin Olive Oils Produced by the Traditional and Modern  
(Continue) Oil Extraction Systems**

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The Mediterranean diet, including virgin olive oil as the main and traditional vegetable oil source since ancient period, is declared as the one of cultural heritage of the world by UNESCO. Virgin olive oil, accepted as a functional food by medical authorities and FDA-US due to its high nutritional properties, is produced by only physical methods (pressing [Hydraulic (wet) pres HP and Super [dry] pres SP], centrifugation [three phase extraction CP] and percolation [sinolea]) is a natural fruit oil or oily fruit juice. In this study, virgin olive oil samples produced by traditional oil production systems (HP n= 12 and SP n= 6), and modern oil production method (CP n= 21) were analysed in terms of chosen quality indices included free fatty acid content (FFA), peroxide value (PV) and spectrophotometric characteristics in the ultraviolet (UV, at K<sub>232</sub> and K<sub>270</sub>) region. Other measured parameters included oil stability (oxidative stability [Schall oven method at 75°C (±2°C) for 7 days based on the changing peroxide value %], chlorophyll pigment [spectrophotometrically 630, 670, and 710 nm]), cis–trans fatty acid profiles and color index based on Bromothymol Blue [BTB]. There was a wide distribution in FFA, PV and UV absorption, K<sub>232</sub> and K<sub>270</sub> values for all samples and extraction system groups. According to the distribution of FFA values, is of a basic commercial criterion for grading olive oil, oil samples based on traditional [totally HP&SP] and continue extraction [CP] systems respectively were classified as extra virgin (4 /18 or 22 % and 8/21 or 38.1%), virgin (6/18 or 33 % and 13/21 or 61.90%), and lampante (or inedible) (8 /18 or 44 % and 0/21 or 0.00 %) using the official FFA maximum values of 0.8, 2, and less than 3.3%, respectively, as guidelines. The peroxide values (PV) ranged from 3.63 to 27.38 mequiv O<sub>2</sub>/kg oil where 97.44 % (38/39) of the total samples (n=39) had values below 20 mequiv O<sub>2</sub>/kg oil the acceptable limit of the official norms. The ultra violet (UV) absorption values at K<sub>232</sub> and K<sub>270</sub>, for all samples (n=39) ranged from 1.46 to 4.16 and 0.01 to 0.38, respectively and all oil samples were classified as extra virgin (34/39 or 84.62% with K<sub>270</sub> ≤ 0.22), virgin (2/39 or 5.13 % with K<sub>270</sub> ≤ 0.25), and lampant (2/39 or 5.13 %) olive oils. The total chlorophyll contents in all samples were between 0.26 and 10.92 mg/kg whereas the color scale changes based on BTB indices of oil samples were between 2–1 and 2–3. Oxidative stability among oils differed whereas all the values of cis FAs (oleic, palmitic, linoleic, and stearic acids major FAs and palmitoleic, linolenic [below max 1%], and arachidic minor FAs) and total trans FA isomers (below max 0.1 %) conformed to those of the international and national regulations.

**Keywords :** Hydraulic Press, Super Press, Continue System, Virgin olive oil, Quality indices, Fatty Acids

**Acknowledgments :** *This project is supported as Project no: BAP 17 KARİYER.236 by Scientific Research Commission of Afyon Kocatepe University-Turkey.*



***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 477***

**Ancient History of Olive Production**

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The true origin of the olive is not known but is speculated to be Syria or possibly sub-Saharan Africa. For more than 6000 years, the cultivated olive has developed alongside Mediterranean civilizations. However, the production of olive oil, that is to say, the deliberate pressing of oil out of olives is currently documented no earlier than ~2500 BC. Several olive press machines were devised by the Mediterranean Romans and Greeks to mechanize the pressing process. The Romans are responsible for bringing about a significant increase in olive oil production beginning between 200 BC and AD 200. Olive oil production became semi-industrialized at sites such as Hendek Kale in Turkey, Byzacena in Tunisia and Tripolitania, in Libya, where 750 separate olive oil production sites have been identified. Estimates of oil production during the Roman era are that up to 30 million liters (8 million gallons) per year was produced in Tripolitania and up to 40 million li (10.5 million gals) in Byzacena. Plutarch reports that Caesar forced Tripolitania's inhabitants to pay a tribute of 1 million li (250,000 gals) in 46 BC. Olives were crushed either underfoot (the crusher wearing wooden sandals), with pestle and mortar, using a stone roller, or in presses, the first mechanical ones coming from Klazomenai (Urla, İzmir) in Turkey. Dating to the 6th century BCE, these used a beam anchored to a wall and a stone weight to increase the pressure and efficiency of the press. One of the best-preserved olive presses comes from Hellenistic Argilos in northern Greece. As the machine evolved, a winch was added to bring down the beam with greater force.

**Keywords :** Olive, olive oil

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 489***

**BIOACTIVITY AND CHEMICAL PROPERTIES OF OLIVE MILK BY-PRODUCT OF OLIVE OIL**

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Olive milk is the oil obtained from the olive water which is spontaneously leaked without crushing the olive by the stone mill. It is traditionally named among the people as nasal oil or first oil. The olive milk a mystical by-product of olive oil has high in nutritional value and rich in vitamin E. The aim of the present study was to determine bioactivity and chemical properties of olive milk. Total amount of sterols in olive milk were determined as 2715,63 mg/kg. The sterols consist of campesterol (1.65%),  $\beta$ -sitosterol (69.915%),  $\Delta$ - 5-avenasterol (8.23%), 5,24-stigmastadienone (20.225%). Additionally, the highest antiradical and antioxidant activity levels of the olive oil sample were 2910,52  $\mu$ g /g sample (IC50) and 127.379  $\mu$ g trolox /g sample, respectively. The olive milk was evaluated for total soluble solids (71.76°Brix), viscosity (65.24) and CIE  $L^*$ ,  $a^*$ ,  $b^*$  colour values ( $L^*$ : 91.06;  $a^*$ : -4.96;  $b^*$ : 50.91). Identification and quantification of aroma compounds of the olive milk was also carried out by GC-MS analysis. Consequently olive milk traditionally using as folk medicine is bioactive food.

**Keywords :** Bioactivity, Olive milk, Olive oil

***Traditional Cereal Foods***

***Abstract Reference : 348***

**Understanding the Tarhana Fermentation**

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Tarhana is a traditional fermented food that Anatolian people consumed by preparing it from summer to winter. It is produced by mixing wheat flour, yoghurt, sourdough and various vegetables and spices then drying and grinding after the fermentation. The main step at tarhana production which satisfy the consumers is fermentation. Because the desired aromatic property, the high nutrition value and the health-promoting characteristics are all gained within fermentation. The recent studies have shown that tarhana is fermented with diverse lactic acid bacteria (LAB) and yeast microflora. In this flora, the *Lactobacillus alimentarius* and *Pichia kudriavzevii* have shown related on the aromatic development of tarhana. The exopolysaccharides, which have been known enhancing impact on rheology of foods and health of consumers, was determined being produced by the skillful *Lactobacillus plantarum* strains existed in the microflora of the tarhana fermentation. Additionally, some LAB isolates were capable of synthesizing antimicrobial peptides inhibiting the growth of pathogenic *Listeria monocytogenes* and *Bacillus cereus*. On the other hand, to reach desirable aromatic tarhana, it should be fermented at least 5 days. In fact, extending the fermentation enables accumulation of esters in fermentation. The lactic, succinic and acetic acids were the organic acids produced at the fermentation of tarhana where the succinic acid was produced as the same level of lactic acid. As a conclusion tarhana has unique fermentation properties regarding the diverse microflora and chemically. Understanding the fermentation of tarhana will contribute to the development and promote of its industrial production.

**Keywords :** Tarhana, Fermentation, Lactic Acid Bacteria, Aroma

***Acknowledgments :*** The Scientific and Technological Research Council of Turkey (TÜBİTAK) is acknowledged for supporting the projects 113O400 and 116O525.

***Traditional Cereal Foods***

***Abstract Reference : 265***

**Rediscovering Siyez Wheat in Turkey, from nutritional perspective to the gastronomic demand.**

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With its unique taste and history dating back to the Hittites, Siyez wheat is one of the most exceptional nutrients in the world. Turkey is lucky to have this crop, harvest in Kastamonu region. Besides its high nutritional values and functionality, Siyez wheat has a low glycemic index. It has low in gluten and gliadin. Siyez wheat, which has a history of ten thousand years, is one of the most important local wheat varieties and it is rich in antioxidants such as lutein. Because of its unique properties Slow Food Foundation marked this crop as slow food presidia from Turkey in 2012. Moreover, The Siyez Bulgur Commission, under the patronage of the Kastamonu Directorate of Food, Agriculture and Livestock, initiated a project for the geographical recognition of Siyez bulgur, which is made from Siyez wheat from Turkish Patent and Trademark Office (TPE). There are some studies based on the production and harvesting process of this most invaluable grain; however, the number of studies about consumption and consumer pattern is limited. In particular, considering its nutritional aspects besides being an ancient and traditional grain, Siyez wheat finds a place in the food industry (restaurants & bakeries). Being popular also brings some misinformation or miscommunication about the product such as being a gluten free wheat alternative. This approach also directs people to the wrong dietary consumption, especially baby food for allergic kids. All these aspects need to be underlined and communicated well with the consumer. From this perspective, the aim of this study is (1) to increase the awareness of the product; (2) to contribute to nutritional perspective (allergen and Glycemic index), and (3) to analyze the consumer demands of the product. This study will be based on an in-depth desk research on Siyez product and qualitative research methods including comprehensive interviews with restaurants and bakery shops, which use Siyez wheat as an ingredient in their menus / product range) in Istanbul.

**Keywords :** Siyez Wheat, Geographical Recognition, Consumer Behavior, Nutritional Perspective

***Traditional Cereal Foods***

***Abstract Reference : 369***

**Phytic Acid Degrading Lactic Acid Bacteria Isolated From Boza-Fermented Sourdough**

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Boza is a fermented cereal based traditional beverage produced by cooking milled grains and subjected to lactic acid fermentation with addition some sugar. Whole grain products are rich in phytic acid and consumption of phytic acid causes decreasing the bioavailability of mineral and proteins. Sourdough fermentation provides phytic acid degradation owing to phytase activity of microorganism used as starter but it changes depending on the species and strain of bacteria. In this study, it was aimed to measure phytase degradation ability of bacteria isolated from boza-fermented sourdough. Boza, wheat flour, table salt and potable water were kneaded in the mixer and fermented at 27 ° C for 24 hours. At the 24<sup>th</sup> hour of fermentation, extra wheat flour and potable water were added, refreshed by kneading then fermented at 27 ° C. During the fermentation period of 10 days, this step was repeated. MRS agar, MRS broth, M17 agar and M17 broth media were used for the isolation, identification and characterization of pure cultures from lactic acid bacteria isolated from sourdough. The identification of isolates has also done with the MALDI-TOF MS (VITEK® MS) method, which is based on the principle that the protein profile of cell organelles of microorganisms is removed and compared to a reference spectrum. *Lactobacillus pentosus*, *Lactobacillus fermentum*, *Lactobacillus casei* and *Leuconostoc lactis* species were identified in nine different isolates. To determine the phytase degradation abilities of these bacteria, the isolates were incubated in 24h, 48h and 96h at a temperature of 34 ° C in the media supplemented with MRS Broth (52.2 g / L), 0.1% Na-phytate and 0.2% glucose. To determine the phytic acid degradation, the diameters of the transparent zones formed after incubation in the petri dishes were measured. The largest measured zone diameter was 8 mm; after incubation for 96 hours, it belongs to the B32 isolate-encoded *Leuconostoc lactis*. After 96 hours of incubation, the zone of *Lactobacillus pentosus* encoded by B34 isolate and *Lactobacillus casei* encoded by B21 were determined as the smallest zone forming lactic acid bacteria, 4 mm in diameter.

**Keywords :** Boza, sourdough, phytic acid, fermentation

***Traditional Cereal Foods***

***Abstract Reference : 222***

**UTILISATION OF PATATO FLOUR FOR TARHANA CHIPS PRODUCTION**

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Chips made from tarhana -traditional fermented food- are widely consumed in Kahramanmaraş region of Turkey as snack food. But generally tarhana chips are not preferred by other consumers, especially from young people and children because of its unfamiliar taste. In order to increase the perception of this functional chips it was aimed to produce tarhana chips by adding different amounts (0, 15, 30, 45 %) of potato flour and powders of aroma supplements (thyme, cumin, mint, garlic and onion) to be closer to the taste of popular snack foods. Prepared mixture was sheeted and dried with microwave drier. Results indicated that water activity and moisture of potato flour chips (PFC) were not shown significant difference while titratable acidity, salt, total lipid, protein and ash values were increased after addition of potato flour and spices. The addition of potato flour over 15% was lowered the hardness. The hardness were decreased from 748.51 to 609.55 kg for control and 45 % PFC respectively. Aroma, taste, overall acceptability and purchasing intent of PFC were rated more than control after sensorial tests. Especially 45% potato flour added tarhana chips were preferred most. As a result it can recommended that more highly palatable tarhana chips can be produced by adding potato flour and the mixture of thyme, cumin, mint, garlic and onion powders. Thence their consumption by children and young's can be increased.

**Keywords :** Tarhana, Chips, Snack Foods, Patato Flour, Chidren

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***Abstract Reference : 289***

**An Alternative Traditional Food for Celiac Patients: Rice Couscous**

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In this research, it is aimed to improve not only the production of couscous for the consumption of celiac patients but also developed an alternative product for those who prefer to consume gluten-free products nowadays with the product in question. Most of the gluten-free couscous sold in the market is generally produced with the corn flour. The corn flour may rarely cause allergic reactions. However, rice is a hypoallergenic grain product. For this reason, it can safely consume by allergic children and individuals.

When the content of gluten-free couscous sold in the markets examined, it was seen that various additives (acid regulator, stabilizer, and coloring agent) were added in order to create the desired structure. The developed product entirely made from rice and rice flour. No additives were added. Instead of additives such as gums and enzymes, gelatinized rice flour was used for the production of couscous.

In this study technological (cooking properties) properties of rice couscous samples determined. For evaluation of cooking properties; cooking time, weight increase, volume increase, total organic matter in water and cooking loss analysis was measured. It was also determined the chemical properties of rice couscous such as crude protein, total ash, fat, carbohydrate and energy values.

**Keywords :** couscous, rice, celiac disease, chemical composition, cooking properties

***Acknowledgments : This project is supported by Düzce University Research Fund Project Number: 2016.11.05.418***

*Traditional Cereal Foods*

*Abstract Reference : 290*

**QUALITY EVALUATION OF WHOLE WHEAT FLOUR PHYLLIO (YUFKA) FLAKES WITH  
POPPY, CHIA, QUINOA AND FLAX SEEDS**

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There is a positive correlation between the use of whole grains and seeds to improve human nutritional status and to reduce risk of developing metabolic diseases, like high cholesterol, diabetes, cardiovascular disease, certain cancers and weight control. In this study it was aimed to produce functional phyllo (yufka) flakes (PF) with improved nutritional properties by adding poppy seeds, chia seeds, quinoa seeds and flax seeds in the whole wheat flour. Whole wheat flour PF without seeds were taken as control flakes (CF). The main quality parameters such as moisture and ash content, total dietary fiber, total lipid, protein, water activity, pH, thickness, textural parameters, surface color (brightness, redness and yellowness) and sensory properties—taste, aroma, appearance, brittleness, hardness, general acceptability and purchasing intent were analyzed using the standard methods. Moisture and ash content of PF were found in the range of 2.9-9.3 % and 2.14-2.86% respectively. Total dietary fiber and total lipid content of seed containing flakes were measured higher than CF. PF produced with poppy seeds were showed highest hardness while PF with flaxseed was shown the lowest hardness. Sensory data was observed higher for seed containing samples than CF. Within samples poppy seed flakes were also taken highest scores from panelist in terms of taste, aroma and odor. However highest brittleness, hardness and mouth feel scores were cause chia seeds flakes most acceptable and purchasable. In contrast overall acceptability and purchasing intent of quinoa seed containing flakes were observed lower than others. As a result; it is possible to produce more functional phyllo flakes with poppy, chia and flax seeds. These flakes may be consumed as snack food as an alternative to other popular flakes.

**Keywords :** functional food, phyllo, poppy, quinoa, chia, flaxseed, flakes,



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***Abstract Reference : 312***

**Kavurga**

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It is very important that traditional foods, one of the important cultural heritages from the past, continue to exist today. In terms of nutrition and health, the importance of traditional food production and consumption is understood better within each day. Parallel to the developments in science and technology, the production of industrial foods is becoming easier and this provides advantages in economic terms. However, this situation has also some negative effects directly affect human health. For this reason, people are often questioning the food they consume and are more likely to shift to traditional foods. Turkey is a very lucky country in terms of food production. In almost every region, a wide range of traditional foods are produced and consumed.

Kavurga; it is a type of traditional and regional nuts made of cereals, specific to the Turks. It is obtained by mixing various seeds and cores with wheat grains and washing them, then roasting on the sheet. Especially in Anatolia, where winter is long and hard, it is mostly made in those regions. It is important in terms of giving satiety for a long time and providing more resistance to cold in winter. Kavurga is rich in minerals, vitamins and dietary fiber because of made its grain ingredients, which contains unseparated shell and core part. Kavurga; prepared with wheat, menengic seeds, flax seeds, zucchini and watermelon seeds and corn roasted, and optionally with carob, almond and walnut added, it is also a rich source of energy. It gives off specific odour while roasted and for this reason is the indispensable part of the winter evenings. This flavor, which is known in many regions of Anatolia, is offered to the guests and thereby continuing our cultural heritage.

**Keywords :** Grain seeds, nuts, traditional food.

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***Abstract Reference : 319***

**Some Properties of Tarhana Produced by Adding *Saccharomyces cerevisiae* and Sourdough as Starter Culture After Different Fermentation Periods**

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As a traditional fermented product tarhana is the dry form of yoghurt-cereal mixture and form an important part of diets of many people in Turkey. There are differences among tarhana depending on the presentation and changes in the materials used in various regions in Turkey. Generally, lactic acid bacteria are responsible for the formation of acidic structure during fermentation. Yoghurt or sour milk is used as a starter for lactic acid fermentation. In addition to this classical application, sourdough or baker's yeast (*Saccharomyces cerevisiae*) can also be added to tarhana as a starter culture in some regions. In this research, wheat flour, salt, water, dry baker's yeast (*Saccharomyces cerevisiae*), sour dough, peppermint, parsley, dill, black pepper, yoghurt, fresh red pepper, tomato and onion were used as materials in the production of tarhana samples. Tarhana samples were left for fermentation for 7, 14 and 21 days. pH, acidity(%), dry matter, total mesophilic aerobic bacteria, lactic acid bacteria, coliform, yeast and mould counts of samples were determined. pH values of baker's yeast added samples had lower than pH values of sourdough added samples at 7, 14 and 21 days of fermentation. Dry matter of samples was increased with extension of fermentation time. In both samples, the number of microorganisms increased with extension of fermentation time. Although the coliforms were initially detected, were not detected on days 7, 14 and 21 of fermentation. Tarhana samples were evaluated in terms of color, odor, consistency, taste and overall acceptability. As a result of sensory evaluation, the favorite sample was dry baker's yeast added sample left to fermentation for 21 days. In commercially produced tarhana, the fermentation period is generally 5-7 days. Application of different fermentation times may increase consumer liking.

**Keywords :** Tarhana, baker's yeast, traditional fermented product, sourdough

***Traditional Cereal Foods***

***Abstract Reference : 495***

**COMPARATIVE ANALYSIS OF ANATOLIAN FERMENTED FOOD: TARHANA**

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Tarhana is a traditional fermented cereal food from Anatolia and its production varies by regions, cities and also villages. It is mostly prepared by mixing wheat flour, yogurt, yeast and a variety of cooked vegetables (tomatoes, onions, green pepper etc., salt, and spices (mint, paprika)) followed by fermentation for one to seven days. This study aimed to determine and to compare some chemical properties, total phenolic content and antioxidant activity of Tarhana samples.

In this study, samples were collected from Malatya, Sivas, Tokat provinces in Turkey. Although these cities are neighbours, the collected samples are quite different from each other. The sample obtained from Malatya is prepared by boiling wheat and adding yeast, while sample of Tokat is produced by adding yogurt into the boiled wheat and followed by fermentation without adding yeast. Sample of Sivas is prepared with wheat flour, yoghurt and tomato. These samples were analysed chemically. Titration acidity, pH, dry matter, total phenolic content and antioxidant activity were investigated.

Dry matter of samples was found covering the range of %92-95. pH and titration acidity values of samples ranged 3.46-4.16 and 1.20-3.42 g/100g, respectively. Among the samples, sample of Malatya had the lowest pH (pH 3.46) values, while sample of Sivas had the highest titration acidity (3.42 g/100g). Total phenolic content for Sivas, Tokat and Malatya were found as 193.25, 12.37 and 8.52 mg/kg, respectively. When compared to other samples, Sivas sample had the highest total phenolic content as the sample tomato includes. Antioxidant activity of Sivas, Tokat and Malatya were determined as 0.77, 0.57 and 0.46 (µmol trolox (TEAC)/g), respectively. This study showed that the ingredients used in the formulation influences chemical and bioactive properties of tarhana.

**Keywords :** Tarhana, antioxidant activity, total phenolic content, pH

***Traditional Cereal Foods***

***Abstract Reference : 181***

**SOME CHEMICAL PROPERTIES OF COOKIES SUPPLEMENTED WITH OLEASTER FLOUR**

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Oleaster (*Elaeagnus angustifolia*) belongs to *Elaeagnus* L. genus and *Elaeagnaceae* family. Although oleaster grows naturally in most parts of Turkey, its fruits are of limited use in agricultural and food industry. It is consumed as fresh fruit but may also be dried and is used as a functional ingredient in the production of bakery products, yoghurt, ice cream, infant food, chocolate, confectionery etc. due to its floury structure, specific taste and functional properties. In addition, this fruit is used in alternative medicine. The aim of this research was to improve cookie which is enhanced functional properties with oleaster flour which has higher nutritional and functional properties and was to determine the effects of oleaster flour on some chemical properties of cookies. These chemical properties are micro minerals, fatty acid composition and organic acids. Oleaster flours (OFs) were produced from two different genotypes (G1 and G2) by two different methods (oleaster mesocarp flour: OMF and oleaster mesocarp flour with pericarp: OMFP). In this study, OFs were used to replace wheat flour in the cookie formulation (control) at the levels of 5,10,15,20 and 25% (w/w). OFs supplementation increased Fe, Cu, Mn contents of cookies compared to the control significantly. Palmitic acid and oleic acid were the major fatty acids which was followed by linoleic acid of cookies. Among seven different organic acids detected, the level of tartaric acid was the highest and it was followed by malic, and citric acids. These results from the study show that oleaster flour(OF) is a good additive for the production of cookies because of high nutritional value, OF can provide a nutritionally qualified and valuable product, product diversity and increased consumer choice.

**Keywords :** oleaster flour, cookie, fatty acid, micro minerals, organic acids

***Acknowledgments :*** *This project was supported by The Scientific and Technological Research Council of Turkey (TUBITAK) TOVAG (Project Number 110 o 060)*

***Traditional Dairy Products***

***Abstract Reference : 351***

**Determination of fatty acid profile of Anatolian Water Buffalo milk fats with special emphasis on conjugated linoleic (CLA) and trans fatty (TFA) acids**

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Buffalo milk is used to make a wide variety traditional product. Buffalo milk production is increasing recently because of its high energetic and nutritive value. Fat constitutes are the main fraction of buffalo milk. The objective of the present study was to investigate the variation the fatty acid composition of milk fat from 30 Anatolian Water Buffaloes. Buffalo's milks were collected from individual farms situated buffalo herds in Istanbul province (Catalca and Silivri district), Turkey. Detection of the fatty acid compositions was carried out by gas chromatography with flame ionization detector (GC-FID). Also, this study was performed to evaluate some physicochemical properties buffalo milk fat. The results revealed that contained 17.08 % total solids, 5.46 % protein, 6.16 % fat, 4.36 % lactose on average in the buffalo raw milk. Saturated fatty acids (68.48%) predominated in buffalo milk fat, monounsaturated and polyunsaturated fatty acids were 25.38 % and 3.25%, respectively. The palmitic acid (C16:0), myristic acid (C14:0) and stearic acid (C18:0) contents were 34.24 %, 11.92 % and 11.78 % of total fatty acid, respectively. The oleic acid (C18:1 cis-9) was the major unsaturated fatty acid in all the analyzed samples, representing 22.21 % of total fatty acid. The C18:1 trans-9 and the C18:2 trans-6 were 0.62 % and 0.56 % on average in the samples of buffalo milk fat. The linoleic acid (C18:2) varied from 0.37 to 2.64 % of total fatty acid, while the linolenic acid (C18:3 cis-6 and C18:3 cis-3) content was 0.47 % and 0.42 % of total fatty acid. The total conjugated linoleic acid (CLA) isomers in the buffalo milk fats ranged from 3.85 to 7.33 mg/g fat (average 6.06 mg/g fat). The predominant CLA isomers were identified as cis-9, trans-11-18:2 (86.13 %). The rest of the CLA isomers were followed by trans-9, trans-11-18:2 (6.76 %), trans-10, cis-12-18:2 (3.96 %) and cis-10, cis-12-18:2 (3.13 %).

**Keywords :** Anatolian water buffalo, milk fat, fatty acid profile, conjugated linoleic acid, trans fatty acid

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***Abstract Reference : 43***

**Determination of Proteolytic Activity of Yeast and Lactic Acid Bacteria Isolated from Kefir**

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<sup>1</sup>Institute Of Science And Technology

This study, was carried out to determine proteolytic activity (PA) of strains isolated from different kefir samples and develop potable kefir with new combinations of the isolated strains. A total of 82 strains were isolated from 10 commercial kefir samples, in which 8 samples were purchased from supermarkets and 2 samples were homemade (one from lyophilised kefir starter culture, another from fresh kefir grains). Proteolytic activity (PA) values of the each isolates were determined. Strains with maximum and minimum PA values, designated as M16, M21, P29, P20, Y22 and Y1, from different samples were selected and six types of kefir were produced by the combinations of the strains as the starter culture. The PA values of the combination 1 (M21 + P20 + Y1), 2 (M16 + P20 + Y1), 3 (M16 + P20 + Y22), 4 (M21 + P29 + Y1), 5 (M16 + P29 + Y1) and 6 (M21 + P20 + Y22) were found as 67.4; 65.6; 84.3; 56.1; 81.7; and 62.2 µg tyrosine/mL, respectively (P<0.05). Afterwards, six kefir types were produced using the each combination.

In all kefir samples, pH and °SH (*Soxhlet-Henke*) values were determined (P<0.05) and sensory analysis was carried out. Selected bacterial isolates were identified as *Streptococcus thermophilus*, *Lactococcus* subsp. *Lactis* and *Leuconostoc* sp. As a result, all produced kefir types were found acceptable. Our findings indicated that selected strains and their combination could be used as the starter cultures in kefir production.

**Keywords :** Kefir, proteolytic activity, lactic acid bacteria, yeast

***Acknowledgments :*** The authors are grateful for the financial support of University of Ankara Scientific Research Projects Fund (09-2013-13H4343004).

***Traditional Dairy Products***

***Abstract Reference : 115***

**IDENTIFICATION OF VOLATILE COMPOUNDS IN VAN HERBY CHEESE VARIETIES (BRINE, ÇOLIK AND LORIK)**

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<sup>1</sup>Mustafa Kemal University, Faculty Of Agriculture, Department Of Food Engineering, Hatay-turkiye

It is well known that Van Herby cheese is produced using wild herbs growing in Van province. According to the manufacturing procedures, Van Herby Cheeses are classified as Sulu (Brine), Çolik and Lorik. These cheeses are made from raw sheep milk without starter culture. In ‘Brine’ (Sulu) cheese, one layer 20d-old cheese blocks (7x7x7cm<sup>3</sup>) and one layer ‘pancar’, a mix of Sirik, Siyabo and Kereng herbs, are placed into plastic barrels and then it is filled by whey obtained from draining teleme and tightly closed. In ‘Lorik’ cheese, whey obtained during drainage of rennet-type curd is boiled and the lor is made. After straining, lor is salted and kept for 2 days. Hereafter, one layer block cheese with Kereng and one layer lor are filled tightly into plastic barrels. After closing top of barrel, it is placed underground as inverted and ripened at a cool environment/cave for at least 3 months. In ‘Çolik’ cheese, 2d-old block cheese is crumbled and mixed by sirik (sirimo) herb. Hereafter, one layer 20d-old block cheese and one layer crumbled cheese with Sirik are filled firmly into plastic barrels. The other manufacturing stages are similar to ‘Lorik’ cheese. In this study, the volatile compounds (VCs) in the headspace of 9 months-old herby cheese varieties were extracted with a Solid-Phase-Micro-Extraction technique and were identified using gas chromatography-mass spectrometry (GC-MS). A total of 99 VCs including 15 alcohol, 25 esters, 14 acids, 13 terpenes, 13 phenyl and phenol, 7 compounds with sulfide, 5 ketones, 2 lactones, 2 aldehydes and 3 alkenes were identified in the herby cheeses. ‘Çolik’ cheese had the greater number of VCs (75) than ‘Brine’ (64) and ‘Lorik’ (58) herby cheeses. Acid with the majority of hexanoic acid and ester chemical groups were the most abundant VCs identified in all the cheeses in terms of their percentage proportions (68%) and numbers (25), respectively. While 2-heptanol (1.8%) and benzeneethanol (2.5%) were found in ‘Brine’ cheese only, allyl propyl disulfide (1.0%) and diallyl disulfide (2.0%) were in ‘Çolik’ cheese. In conclusion, the proportions and profiles of VCs varied according to cheese-making procedure and herbs varieties used.

**Keywords :** Van herby cheeses, volatile compounds, SPME

***Acknowledgments :*** The authors wish to thank Ebru GÜL for her assistance in conducting the experiments and Medya Karakaya for providing Herby cheeses.

***Traditional Dairy Products***

***Abstract Reference : 122***

**Production of spicy (hot) Ayran and assessment of some properties**

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<sup>2</sup>Duycan Food

In order to increase the consumer acceptability and diversity of dairy products in overseas, different aroma, sweeteners, colouring materials or fruits and fruit syrups/extract are used to manufacture fruit and vegetable added yoghurts, drinkable yoghurts, buttermilk yoghurts and milk. There is no commercial fruit and vegetable added Ayran in Turkey, but in some regions, different traditional spicy dairy products are consumed in home scale level. The aim of this study is both to produce an alternative beverage using Cayenne pepper to incorporate health promoting factors into Ayran and to investigate its microbiological, physicochemical, sensory and functional properties during the storage time.

Cayenne pepper was used in two different forms and concentrations, namely pulverized form (0.5%, 1%, 2.5%; w/v) and sliced form (5%, 10%, 15%; w/v). Ayrans with 2.5% pulverized pepper had the highest amount of total phenolic content and antioxidant capacity. Total phenolic contents and antioxidant activity was  $245.99 \pm 0.46$  µg gallic acid/mL and  $311.88 \pm 0.17$  µg Trolox/mL, respectively. The addition of pepper increased the counts of *Lactobacillus* and *Streptococcus* compared to control Ayran samples at the end of storage ( $p < 0.05$ ). *Streptococcus* was the dominant bacteria during the storage period (7.61-8.88 log CFU/mL). Although the antimicrobial activity of cayenne pepper is known, there was no significant suppressive effect on the *Lactobacillus* and *Streptococcus* counts. On the contrary, the usage of pepper significantly reduced counts of yeast and moulds throughout the storage period. Although 2.5% pulverized pepper added Ayran samples revealed the highest functional properties, sensory panelists rated them inferior and gave the maximum liking scores to the Ayrans with 15% sliced pepper added.

To diversify dairy products such as Ayran by adding different fruits and vegetables may have a significant contribution to the dairy sector development in Turkey.

**Keywords :** Ayran; functionality; Cayenne peppers (*Capsicum annum* L.); traditional beverage



***Traditional Dairy Products***

***Abstract Reference : 301***

**The Effects of Microencapsulated Protease and Lipase into Sodium Alginate on the Textural Properties of Kashar Cheese**

Mutlu Buket AKIN<sup>1</sup>, Büşra GÖNCÜ<sup>1</sup>, Leyla EREN-KARAHAN<sup>2</sup>, Musa Serdar AKIN<sup>1</sup>

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Kashar cheese is the most commonly produced and consumed cheese in Turkey, the Balkan Peninsula and the Mediterranean region after white cheese. The main problem in manufacturing Kashar cheese is the long maturation period, which increases the cost of handling significantly. Several attempts have been made to reduce the ripening period by the addition of individual and mixed lipase, protease and  $\beta$ -galactosidase enzymes, some of which have been reported to halve the normal maturation period of cheese. The addition of free lipase or protease has resulted in premature attack leading to excessive lipolysis, proteolysis and texture and flavour defects. The use of microencapsulated enzymes has been proposed to improve these drawbacks.

In tis study, lipase, protease and the mixture of them were encapsulated by using emulsion and extrusion techniques in sodium alginate and added to Kashar cheese milk to accelerate cheese ripening. The effect of encapsulated enzymes on the textural properties of the cheese was investigated during 180 days storage.

According to the result, the best cheeses were obtained with encapsulated protease and the mixture of protease and lipase by using emulsion techniques. So usage of encapsulated protease and the mixture of protease and lipase by using emulsion techniques for Kashar cheese production could be recommend.

**Keywords :** Kashar cheese, microencapsulation, lipase, protease, texture

***Traditional Dairy Products***

***Abstract Reference : 305***

**The Effects of Microencapsulated Protease and Lipase into Sodium Alginate on the Physicochemical and the Organoleptical Properties of Kashar Cheese**

Musa Serdar AKIN<sup>1</sup>, Leyla EREN KARAHAN<sup>2</sup>, Büşra GÖNCÜ<sup>1</sup>, Mutlu Buket AKIN<sup>1</sup>

<sup>1</sup>Harran University, Engineering Faculty, Department Of Food Engineering, Sanliurfa, Turkey

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According to the result, the best cheeses were obtained with encapsulated protease and the mixture of protease and lipase by using emulsion techniques. So usage of encapsulated protease and the mixture of protease and lipase by using emulsion techniques for Kashar cheese production could be recommended.

**Keywords :** Kashar cheese, microencapsulation, lipase, protease, proteolysis and lipolysis

***Acknowledgments :*** This study was supported financially by the TUBITAK (Project No: 106O409). Authors thank Prof. Dr. Ahmet KAYA for laboratory supplies. Authors also thank Novozymes for enzyme supplies.

***Traditional Dairy Products***

***Abstract Reference : 306***

**The Effects of Microencapsulated Protease and Lipase into Sodium Alginate on the Physicochemical Properties of Kashar Cheese**

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**Keywords :** Kashar cheese, microencapsulation, lipase, protease, ripening

### ***Traditional Dairy Products***

#### ***Abstract Referance : 581***

### **History of Ice Cream**

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As a very popular food in the world, ice cream represents all the various frozen desserts that might come to mind. The ice cream we know today as it has a history of about 300 years. When, where, and how it was made for the first time is unknown. There are some myths that describe this topic. Most known of these, that the Roman Emperor Nero, who ruled in the 1st century C.E., ate fruits, chilled in the snow brought from mountains by slaves. Together with this, it is said that the ice cream was found by the Mongol horsemen. In winter during the long trips in the Gobi Desert, they had crema as their provisions, by the shaking rapidly while traveling on horseback and the freezing temperature, the ice cream was formed. With the expansion of the Mongol borders, ice cream moved to China, from where it goes Italy with the return of Marco Polo in 1295 and Europe taste this pleasure.

Historically very faint traces have been found for these stories. For this reason, it's not scientifically supported. We can't say who invented it first, but we can say that the development of ice cream depends directly on the development of cooling techniques. During these technological developments, many recipes experimented, on this occasion, we achieved from the chilled fruits to what we know as ice cream today.

In Anatolia, consumption of sherbet mixed with snow can be seen as an origin to ice cream during Ottomans. Although snow dessert with pekmez is very popular, modern ice-cream production is based on the 17th century. But then, Maraş Ice Cream, which is one of the geographically labeled flavors of Anatolia, differs from the examples in the world. It's prepared with goat's milk, sugar and salep. Maraş Ice Cream, which is one of the hardest ice creams known yet, is very famous for can be eaten only with help of a knife.

This study will tell the adventure of ice cream, from Adriatic to the Anatolia and the Caucasus even to the Far East.

**Keywords :** Ice cream, Maraş, History, Dairy, Traditional

***Traditional Dairy Products***

***Abstract Reference : 169***

**Effect of Synbiotic Usage of Prebiotic and Probiotics on Some Product Characteristics of Kefir  
Produced from Cow Milk**

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Probiotic commercial culture (Direct Vat Set-DVS) kefir culture, *Lactobacillus acidophilus* and *Bifidobacterium bifidum* and prebiotic fructooligosaccharide (FOS) were added to cow milk and compound properties and the viability of probiotic bacteria were investigated on 1<sup>st</sup>, 7<sup>th</sup>, 14<sup>th</sup>, 21<sup>st</sup> and 28<sup>th</sup> days of storage, in order to see their effect on some quality characteristics of synbiotic kefir.

The cow milk was separated into 3 parts and two parts were processed in to kefir with synbiotic additive (FOS+DVS kefir culture+*L. acidophilus* and FOS+DVS kefir culture+*B. bifidum*) except for the control part (only with DVS kefir culture). Raw milk was preheated at 65°C for 15 minutes, 2% FOS was dissolved in a way to be a homogenous mixture and transferred into preheated raw milk. All samples were rapidly cooled to 22-24°C following pasteurization at 90°C for 10 minutes. All sample were added first with 0,0032% DVS kefir culture and then with *L. acidophilus* and *B. bifidum* (Chr-Hansen) were added in a ratio of 0,01% in conformity with company lable information and mixed homogeneously. The samples were left in incubation at 22°C. Kefir samples reached pH 4.5-4.6 about 14.5 hours later and then removed from the oven and taken to the refrigerator and allowed to cool.

The chemical composition (total dry matter, fat, protein, total nitrogen, titratable acidity, pH value, amount of tyrosine, amount of alcohol and water retention capacity) and microbiological characteristics (*Lactococcus* spp., *L. acidophilus*, *B. bifidum* and total yeast and mold number) were determined throughout the storage. It was observed that the total dry matter, fat, protein, total nitrogen, titratable acidity, pH value and alcohol content in kefir samples did not change significantly at the end of storage. It was determined that the water retention capacity was higher in the control sample than in the samples containing prebiotic. When the amount of tyrosine tended to increase all kefir samples until the 21<sup>st</sup> day, it showed a tendency to decrease at 28<sup>th</sup> day. Also it was determined that probiotic viability was higher in synbiotic kefir. All kefir samples were found to contain probiotic microorganisms at least 10<sup>6</sup>-10<sup>7</sup> cfu/mL level during storage.

**Keywords :** Kefir, Prebiotic, Probiotic, Synbiotic

***Acknowledgments :*** This project was financially supported by the Scientific Research Projects Coordination Unit of Ankara University (Project No: 16B0447003).

***Traditional Dairy Products***

***Abstract Reference : 646***

**A comparative study on proteolysis and sensory properties of traditional Erzincan Tulum cheese produced with commercial and homemade rennets**

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Erzincan Tulum cheese is produced in the mountains and plateaus of Erzincan, Erzurum, Tunceli, Bingöl, and Elazığ and in the East Anatolian regions (in Turkey) by the Şavak tribe using Akkaraman sheep milk between May and September. The cheese was originally ripened in tulum in caves for at least 3 mo. Goat's skin bags are stronger than sheep's skin bags and tulum are permeable to water and air because of their porous structure. Nowadays, almost all, hardened plastic barrels have been used for ripening the Tulum cheese. The cheese has a white or cream colour, a high fat content, a crumbly-semi-hard texture, a buttery and pungent flavour. It was the first cheese to receive a geographical designation by the Turkish Patent and Trademark Office in 2000.

In this research, Erzincan Tulum cheeses were made from raw Akkaraman ewe's milk in Dumlu plateau (Erzurum, Turkey). The homemade calf rennet (A cheese) and commercial rennet (B cheese) were added for coagulation, separately. The cheeses were ripened in a refrigerator at 4±1°C for 90 days pressed in the plastic barrels (2 kg). Cheeses making were performed in duplicate, and the cheese samples were analysed every 30 d. Tulum cheese samples were tested for proteolysis (1<sup>st</sup> 30<sup>th</sup>, 60<sup>th</sup> and 90<sup>th</sup> days) and sensory properties (90 d). Cheeses were analysed for total nitrogen (TN), water-soluble nitrogen (WSN), 12% TCA-soluble nitrogen (TCA-SN), and 5% phosphotungstic acid-soluble (PTA-SN) fractions, as the percentage of TN of the cheese.

The cheese variety has an important effect on proteolysis properties ( $P < 0.05$ ). Proteolysis was found to be higher in cheese produced from commercial rennet coagulated milk. The proteolysis of all the cheeses showed continuously an increase during ripening. The ripening period had a significant effect on the proteolysis properties of cheese samples ( $P < 0.01$ ). The cheese variety has not an important effect (for 90 d) on the sensory properties. Also, Tulum cheeses produced with homemade rennet are more liked by the panelists, on the 90th day of ripening. The results obtained showed that the ripening of Tulum cheese with traditional homemade rennet and commercial rennet influenced the proteolysis of the cheeses during ripening.

**Keywords :** Cheeses of Turkey, Erzincan Tulum cheese, ripening, rennet, proteolysis

**Acknowledgments :** *The authors would like to thank the Atatürk University Research Fund for supporting this research (BAP-Project Number 2014/115). The authors would also like to thank Celoglu Dairy Products (Elazığ, Turkey) and Şavak tribe.*

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 518***

**RHEOLOGICAL PROPERTIES OF POPPY SEED PASTE**

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In this work, determination of the rheological properties of poppy seed paste was aimed and time independent rheological properties of poppy seed paste samples having different solid content were determined at different temperatures. Measurements were done with rotational viscometer (Brookfield RVDV-II model viscometer). Measurements were done by using SC4-28 spindle, SC4-13R sample holder, SC4-64Y small sample adapter and SC4-45Y heat jacket. Sample temperature was attained by using circulated water bath (Polyscience). Shear stress-shear rate relations of the samples were determined at 5, 15, 25, 35 and 45°C. Measurements were done at 0.03-100 rpm rpm rotational speeds determined according to the maximum and minimum ranges of the instrument and the properties of the sample used. Samples were sheared with increasing and decreasing order at different shear rates. Samples having 46, 48, 50 and 52 % solid contents behaved as a pseudoplastic power law fluid at 5, 15, 25, 35 and 45°C. Effect of temperature on consistency coefficient (K) was explained by Arrhenius type equation. Consistency coefficient was increased gradually with increase in solid content and decrease in temperature. Activation energies were showed an increasing trend with an increase in solid content and it was changed between 20789.18 and 35728.38 kJ/kmol. Effect of solid content on consistency coefficient was represented by power-law model.

**Keywords :** Poppy seed paste, rheological properties, consistency coefficient

***Acknowledgments :*** The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support of Project No: 2011FBE015

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 134***

**ULTRASOUND ASSISTED EXTRACTION OF PHENOLIC COMPOUNDS OF GILABURU  
(*Viburnum opulus* L.)**

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European Cranberrybush (*Viburnum opulus* L.) or Guelder rose which is widely known as “Gilaburu” is mostly grown in Kayseri in Turkey. It has a preventive effect on kidney disease as well as menstrual and stomach cramps. Gilaburu fruit which has a high phenolic content is traditionally used in treatment of hypertension, asthma, digestion problems, tuberculosis and common cold. The anticarcinogenic and antioxidant properties of phenolic compounds found in Gilaburu make their mild extraction an important topic to be investigated. In this study, extraction of phenolic compounds from gilaburu fruit using ultrasonic bath at 50 °C is performed. Water was the solvent used during the ultrasound assisted extraction. The independent variables of the research were solid:solvent ratio (5:100, 10:100, 15:100) and process time (1 min; 10 min; 20 min, 30 min, 60 min, 120 min). Total phenolic content, antioxidant capacity and color values of extracts were determined. The optimum solid solvent ratio and optimum extraction time with respect to the total phenolic content were found as 5:100 and 60 minute, respectively. Moreover, L\*, a\*, b\* and total color change values were found to be positively correlated with total phenolic content.

**Keywords :** Ultrasound assisted extraction, phenolic compounds, cranberrybush, gilaburu

***Acknowledgments :*** *This research was supported by BAP 16L0443009 (Ankara University, Ankara, Turkey).*



***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 298***

**Antioxidant Capacity of Traditional Rhubarb (*Rheum ribes*) Tea**

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Rhubarb (*Rheum ribes*) is a perennial, herbaceous that grows at a height of 1000 - 4000 m from the family of the Polygonaceae, 40-150 cm in height, with yellowish white blooms in May-June. In Mesopotamia, the plant has been known and used since ancient times as a medicinal herb. Rhubarb is grown mainly in eastern and southeastern Anatolia region of Turkey. The stalk of the plant is freshly consumed. Traditional rhubarb tea is made from the root. We aimed to determine the antioxidant capacity of teas made from the root. For this purpose, we performed color, DPPH, FRAP, total phenolic, and flavonoid analyzes in rhubarb roots and in 5,10,15 minutes brewed tea (Rhubarb roots were kept in boiling water like a cinnamon stick). Rhubarb root was found total phenolic content 4863.89 mg catechin / 100 g, flavonoid 1285.31 mg catechin / 100 g, FRAP 1869.14 mg Fe<sup>2+</sup> / 100 g and 769.90 mg trolox / 100 g, ABTS 2615.81 mg trolox / 100 g and DPPH 34.34 mg trolox / 100 g. The highest phenolic content in tea was found 24,48 mg catechin / 100 g in tea brewed 15 minutes; the highest flavonoid was found 150.94 mg catechin / 100 g in tea brewed 10 minutes; highest DPPH was found 9,11 mg trolox / 100 g in tea brewed 15 minutes; the highest FRAP was found 215.92 mg Fe<sup>2+</sup> / 100 g and 107.62 mg trolox / 100 g in tea brewed 5 minutes.

**Keywords :** Rheum ribes Tea, Phenolic, Flavonoids, DPPH, FRAP, Antioxidant capacity

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 232***

**Aromatic profile of *Malvasia odorosissima* and *Malvasia di Candia aromatica* grapevines used for white sparkling wines**

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Aromatic and anthocyanin characterisation of local grape cultivars was carried out under a project funded by AGER (2010-2104), called “An Italian Vitis database with multidisciplinary approach for exploitation and valorisation of the regional genotypes”, as implementation of the Italian Vitis Database platform ([www.vitisdb.it](http://www.vitisdb.it)). *Malvasia odorosissima* (MO) and *Malvasia di Candia aromatica* (MC) are both aromatic white grapes [ *Vitis vinifera* L., 1753]. Genetic information is now available on the pedigree and genetic relationships linking the two varieties. MC is widely cultivated in the provinces of Piacenza, Parma and Reggio Emilia, as well as in Oltrepò Pavese (Northern Italy) and broadly used for manufacturing sweet and dry, sparkling, semi-sparkling, and still white wines. Conversely, MO is almost unknown, even though historical records and local tradition attest its oenological potential. Known at least since the XIX century in Emilia Romagna, MO is currently on the brink of extinction and it has often been replaced in the vineyards by the higher yielding MC. The increasing interest in Malvasia wines on the international market opens good perspective for the re-proposal of underexploited Malvasia cultivars for the oenological products diversification. The supposed richness of the aromatic profile of MO is an important feature for its oenological exploitation. The aim of this study is to define the peculiarities of the aromatic profile of MO in comparison with MC. Results provided the aromatic characterization of MO for the first time. Free and glycosylated aroma compounds of samples of the two varieties harvested during two consecutive vintages were determined by solid phase extraction (SPE) followed by GC-MS analysis. Geraniol and its derivatives were the most abundant set of volatiles. Conversely to MC and other aromatic varieties, MO showed a small amount of glycosylated volatiles, thus almost completely expressing its aromatic potential. The abundance of free terpenoids in the aromatic profile of MO, in even higher levels than in MC, is a major feature for the oenological exploitation of its grapes. Moreover, MO solely presented some peculiar volatiles, the rose oxides. These compounds bring the MO near to the *White Muscat*, consistently with the parent-offspring relationship recently ascertained between these two varieties.

**Keywords :** *Malvasia di Candia aromatica*, *Malvasia odorosissima*, aromatic wine grapes, SPE-GC-MS approach, rose oxide isomers

**Acknowledgments :** *Authors are grateful to Prof. Tagliavini (I.T.A., A. Zanelli, Reggio Emilia, Italy) for supplying the grape samples. This study was funded by the AGER project n. 2010-2014: An Italian Vitis database with multidisciplinary approach, for exploitation and valorization of the regional genotypes.*

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 619***

**ANTI-CANCER EFFECT OF CORCHORUS OLITORIUS DICHLOROMETHANE EXTRACT IN COLON ADENOCARCINOMA CELL LINES**

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**Aim:** The aim of the study was determine anti-cancer activities of *Corchorus olitorius* L. (*Co*) leaf dichloromethane (DCM) extract in Colo-320 primer and Colo-741 metastatic colon adenocarcinoma cell lines.

**Material and Methods:** Dry, powdered *Co* leaves (100 g) that were collected in Kyrenia, Cyprus were extracted with ethanol then filtered and concentrated. Concentrated ethanolic extract was then extracted with DCM to remove lipophilic compounds by using separation funnel. Different concentrations of *Co* extract were incubated for 24 and 48 h with Colo-320 and Colo-741 cells. Cell growth and cytotoxicity were measured with MTT assays. Apoptotic activities of *Co* were investigated by immunocytochemistry using antibodies directed against to caspase-3, cytochrome-c and Fas ligand (FasL). TUNEL assay was used to detect DNA fragmentation in both cell lines.

**Results:** Caspase-3 expression was significantly higher in both Colo-320 cells and Colo-741 cells after 24 h incubation. On the other hand, immunoreactivity of cytochrome-c and FasL were not significant when compared with control group in Colo-320 cells. However, both cytochrome-c and FasL immunoreactivities were significantly higher in Colo-741 cells than control group. TUNEL results stated that DCM extract of *Co* was significantly more effective in Colo-741 cells than Colo-320 cells.

**Discussion/Conclusion:** DCM extract of *Co* leaf had shown more anti-cancer effect in Colo-741 cells. Increased caspase-3 immunoreactivity was observed in both cell lines whereas cytochrome-c and FasL was activated in only Colo-741 cells. This result suggested that *Co* leaf extract has shown anti-cancer effects in colon adenocarcinoma cell lines while being more effective in metastatic cells.

**Keywords :**Corchorus olitorius, Apoptosis, Colon cancer, Plant Extract

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 479***

**Some Physicochemical Properties of White Myrtle Fruit Jam**

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Fruits and vegetables are important sources of bioactive components, including polyphenols and these components have some physiological benefit beyond their basic nutrition. Myrtle (*Myrtus communis* L.) is an aromatic medicinal and evergreen shrub belonging to the family of Myrtaceae and is distributed in Mediterranean basin, Asia and America. There are two types of Myrtle fruits which are called “black and white Myrtle”. Although literature focuses on the myrtles with their leaves, berries or liqueur, regarding in potentials of myrtle products such as jam has been already limited. Consumption of fresh myrtle berries is seasonal and has limited shelf life. This research was conducted for the evaluation of white myrtle berries for jam production. Jam production was made by the traditional technique of cooking under the atmosphere pressure until water soluble solid content reached to 70% with the main ingredients used fruit, sugar, pectin and citric acid. Both fresh fruits and jam were analyzed to determine total solid content, titratable acidity (TA), total ash, total phenolic compounds (TP), antioxidant activities (FRAP method). It was demonstrated that total solid content (%), titratable acidity (TA) as citric acid and total ash (%) of fresh fruit are average 34.56 %, 0.4 % and 1.24 %, respectively and for Myrtle jam samples, the results are 72.13 %, 0.5 % and 0.65 %, respectively. Total phenolic content and antioxidant activity were determined using spectrophotometric methods. Whereas total phenolic content of fruit was observed 6998 µg gallic acid equivalent/g dw, (TP) content of Myrtle jam was observed 3433 µg gallic acid equivalent/g dw. Regarding the antioxidant activity, the results of fruit and jam are 13598 µg FeSO<sub>4</sub>/g dw and 5713 µg FeSO<sub>4</sub>/g dw respectively. In conclusion, Myrtle fruit jam can take place as a new traditional product and contribute to not just economical but also nutritional benefits for the consumers.

**Keywords :** Myrtle, *Myrtus communis*, Jam, Antioxidant activity, Total phenolic content

***Traditional Fruit and Vegetable Foods***

***Abstract Referance : 611***

**TRADITIONAL FOOD STORAGE METHODS in FRUIT and VEGETABLE PRODUCTS**

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Peoples try to maintain their cullinary with traditional food preserving methods applications on several fruits and vegetables in accordance with geographical conditions where they live and grow products. Especially traditional storage methods for ancestral vegetable and fruit productss are vital here. Because of urbanization and participation of the women in the business world, preparation of the products for winter in many house, is not common as it is used to be. So, superior quality products have been made at the production industry by using different new production methods, for making the life easier. Firms, made products in healthy conditions and update technology they use, supply ready-made and quality products to the people who are short of time. Although, the products prepared with these new methods increase rapidly, producing foods with traditional methods are decreasing in every houses in many regions of our country. In this study, required issues for tradional food storage methods applications to fruits and vegetable products have been explained scientifically.

**Keywords :** Traditional foods, food storage methods, fruits, vegetables

***Traditional Functional Foods***

***Abstract Reference : 584***

**Determination of the anti-carcinogenic characteristics of cherry laurel extracts and their functional lyophilizates**

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Cherry laurel is an underexploited agricultural resource that has been widely utilized in Turkish folk medicine. A variety of bioactive characteristics of cherry laurel is well-characterized including antioxidative activity. Here, an effort was made to investigate anti-carcinogenic and apoptotic characteristics of methanolic extracts from 3 different cherry laurel varieties (55K06, 61K04 and 61K05). Firstly, anti-proliferative activity of the extracts was studied against HCT 116 human colon carcinoma cells. Although the extent of cellular viability was variety-dependent, in all cases, the viability of cancer cells was significantly reduced. Using flow cytometry, apoptotic characteristics of the extracts were analyzed. Apoptosis of HCT 116 cells was induced by the addition of extracts to varying extents. In all cases, the extent of early or late stage apoptosis was a function of extract concentration. Chlorogenic acid was the most abundant phenolic compound along with a number of phenolic acids, anthocyanins and other phenolics. The results were interpreted in regards to the phenolic profiles of the extracts. To enhance the gastrointestinal stability, the manufacture of calcium pectate gels bearing extracts was carried out and their lyophilized fractions were investigated for anti-carcinogenic characteristics. The dissolution characteristics of the functional lyophilizates were assayed in simulated gastric and intestinal media. The released fractions were withdrawn and studied in HCT 116 cell culture for their anti-proliferative activities. The gastric release was rapid and substantial in all cases ( $\geq 94.9\%$ ). The collected fractions have demonstrated significant anti-proliferative activity (approx. 85% inhibition for 55K06 and 61K04 extracts) against HCT 116 cells even after 20 $\times$  dilution. The intestinal release of extracts was significantly slower. Based on these findings, via the utilization of appropriate gastric coatings, the functional lyophilizates could be rendered suitable for colonic delivery, especially since the lyophilizates demonstrated both anti-proliferative and apoptotic activity. The findings are being discussed with emphasis on the relevance of pectin-polyphenol interactions during digestion, interaction with cancer cells and dissolution behavior in simulated media as well as the influence of phenolic profiles on these processes and the manufacture of value-added products from agricultural waste or low-value byproducts that can be utilized in functional foods and pharmaceuticals.

**Keywords :** Cherry laurel, LMP, phenolic compounds, anti-proliferative activity, apoptotic activity, HCT 116 cells, encapsulation, functional lyophilizates, MTT assay, flow cytometry.

**Acknowledgments :** *This study was funded by a grant from TAGEM R&D Support Programme (TAGEM-14/AR-GE/27; General Directorate of Agricultural Research and Policies). The authors would like to thank the Black Sea Agricultural Research Institute; Dr. Kadir Bayrambaş and GEMHAM for their assistance.*

***Traditional Functional Foods***

***Abstract Reference : 563***

**FUNCTIONAL PROPERTIES OF FERMENTED TURKISH TRADITIONAL FOODS AND BEVERAGES**

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Turkey has various types of fermented traditional foods that contains functional bioactive food compounds including phenolic compounds, vitamins, minerals, essential oils, probiotic bacteria. Dairy-based traditional Turkish beverages including ayran and kefir are fermented dairy products enriched with probiotic lactic acid bacteria. Likely, sucuk is a meat-based Turkish traditional food that is fermented using probiotic lactic acid bacteria. Moreover, tarhana is a fermented legume-based product which is produced as a mixture with dry yoghurt and represents an important part of Turkish diet. Additionally, boza is a cereal-based fermented Turkish traditional beverage which is produced by yeast and lactic acid bacteria fermentation of millet, cooked maize, wheat, or rice semolina/flour. Probiotic bacteria have some potential health benefits including improving immune system and modulating gut microbiota by increasing the amount of beneficial bacteria and decreasing pathogenic bacteria. Besides, various Turkish traditional fermented beverages have high content of phenolic compounds like hardaliye and shalgam. These products have become an intense focus of research interest due to their health-beneficial effects especially in the treatment and prevention of cancer and cardiovascular diseases. The suggested beneficial effects include anticarcinogenic, antiatherogenic, antiulcer, antithrombotic, anti-inflammatory, antiallergenic, anticoagulant, immune modulating, antimicrobial, vasodilatory, and analgesic activities, among others. Furthermore, the reciprocal relationship between polyphenols and gut microbiota may contribute to host health benefits. In this review, dairy-based, meat-based, legume-based, cereal-based, vegetable- and fruit-based products in terms of their product characteristics, nutritive value, production method, consumption style, functional properties, and beneficial health effects are explained in detail.

**Keywords** : fermented Turkish traditional foods, functional properties, phenolic compounds, probiotic bacteria, beneficial health effects

***Traditional Functional Foods***

***Abstract Reference : 382***

**Production and Quality (glycemic index, protein and starch digestibility) of Baby Biscuits made from Natural, Additive-free Einkorn Wheat and Wheat Flour**

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Wheat species are divided into three groups according to their ploidy level: diploids (2n=14-AA genome), tetraploids (2n=28, AABB genome) and hexaploids (2n=42, AABBDD genome). Einkorn (*Triticum monococcum* L.) is one of the most rare agricultural heritages that it has been surviving until today by preserving its ancient form. Einkorn means “single corn” in German, a name derived from the presence of a single grain on each spikelet. Einkorn wheat (*Triticum monococcum* L.) is a diploid species, already known as an agricultural crop since twelve thousand years ago, and still surviving on some marginal mountain areas, especially in Turkey and the Caucasian region.

One set of chromosomes is taken from the male and the other is taken from the female ancestor. Studies carried out (Bálint et al., 2001; Abdel et al., 2002; Hidalgo et al., 2006; Emeksizoglu, 2016) on einkorn wheat report that it has higher protein, lysine, glutamic acid, ash, phenolic compound, tocopherol, carotenoid, fat and polyunsaturated fatty acid content than other wheat species, and a lower gliadin and gluten ratio.

This study was aimed at investigating the production of natural, additive-free baby biscuits from einkorn wheat and some of their nutritional traits: glycemic index, protein and starch digestion. We are also planning to examine 30 biscuit samples made from the combination of five different einkorn wheat flours and five different formulas. In preliminary experiments, two types of baby biscuits, made of 100% einkorn wheat flour or 100% wheat flour were compared. According to results, starch digestibility (%48±0.05, %58±0.05) and glycemic index (%58.7±0.01, %65±0.01) were lower in einkorn flour than in conventional wheat flour baby biscuits, whereas protein digestibility (%94.1±0.1 and % 87.36±1.45) was higher. With the use of Einkorn flour in baby biscuits, it has provided a positive contribution to the product by decreasing the current glycemic index and increasing protein digestion. Our studies concerning using of Einkorn wheat flour in baby biscuits still continue. Further research is planned on this subject.

**Keywords :** Baby biscuit, glycemic index, protein digestion, starch digestibility, Einkorn



***Traditional Functional Foods***

***Abstract Reference : 25***

**Changes in amount of phenolic, flavonoid and antioxidant in ripening period of Gemlik type olive**

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Phenolic compounds in the olive are very important because they affect the oxidative stability and sensory properties of the table olive. In this study, phenolic component and antioxidant capacities of Gemlik type olives collected from Fethiye district of Muğla in different ripening periods were investigated. Olive was collected during 4 times in 15-day periods. DPPH, ABTS, phenolic compound and flavonoid content changes were detected in the collected olives. The highest phenolic compound, flavonoid and ABTS amount were detected in olives collected during the 3rd period. (Respectively: 657.02 mg / 100 g catechin equivalent, 397.03 mg / 100 g catechin equivalent, 527.44 mg / 100 g Trolox equivalent). The highest amount of DPPH was found as 20,41 mg / 100 g Trolox equivalent in olives collected in the 1st period. Considering the ripening period, correlation were found between phenolic compounds and DPPH, Flavonoid ( $R^2 = 0.927$  -  $R^2 = 0.980$ ); flavonoid and DPPH ( $R^2 = 0.971$ ).

**Keywords :** Antioxidant, Phenolic compound, Flavonoid, Olea europaea, Olive, ABTS, DPPH

***Traditional Functional Foods***

***Abstract Reference : 446***

**THE STINGING NETTLE: USAGE AREAS AND HEALTH EFFECTS**

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The stinging nettle plant is regarded as one of the basic plants by medicinal herb practitioners in the West. The needle effect is widely known by many people. The name of the genus *Urtica* comes from the Latin "uro" root and means "to burn". It is a common species adapting to various climatic conditions in the temperate and tropical regions of Europe, Asia and America. It has found a wide variety of usage areas from ancient times. Basically, it is possible to distinguish these areas as medicine, cosmetics, dye, fiber production, food and fertilizer. Nettle leaves and seeds are known to be used alone or in combination with other herbs in the treatment of diseases such as diabetes, eczema, hemorrhoids, liver inflammation, anemia, rheumatism and prostate cancer. It is known that analgesics and painkillers, antimicrobials, antibacterials, hypotensive and antidiabetic, diuretic, antiinflammatory, and antirheumatic effects have been reported. Leaves are very rich in mineral substances, mainly iron, vitamin C and A, essential amino acids, ascorbic acid and various mineral elements and essential fatty acids. The use of plant as tea is quite common. Both in Turkey and other countries it is known that the stinging nettle used as food. The leaves are also dried and utilized in the winter months. Depending on the cultures, there are lots of many usage as food such as nettle omelet, nettle soup, nettle chicken soup, nettle mashed, nettle lahmacun, nettle salad and nettle borek.

**Keywords :** stinging nettle, health effects, food

***Acknowledgments : Thank you for this educational congress***

***Traditional Functional Foods***

***Abstract Reference : 337***

**BIOAVAILABILITY OF MINERALS IN TARHANA**

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Traditional Usak Tarhana is lovely consumed in the form of thick soup all over the Anatolian. It is produced by mixing flour, yoghurt, onion, green and red pepper, fresh mint, salt and yeast obtained from local markets. Tarhana dough is leaved to fermentation along 21 days. It is dried along 2-3 days on flat layers by dividing into small pieces and than grinded.

Tarhana is a good source of vitamins and minerals, especially vitamins B, which are important in terms of thiamine and pyridoxine. It is also an important food for calcium, magnesium, iron, zinc, copper, manganese, sodium and potassium minerals. However, it is known that phytic acid in cereal and cereal products has an antinutritional effect and reduces the bioavailability of minerals. In various studies it has been reported that phytic acid is broken down during fermentation process.

In recent years *in vitro* gastrointestinal methods have been extensively used to investigate the bioavailability and bioaccessibility of nutrients. For this purpose, a simulated stomach and intestinal system (body temperature, stomach and intestinal pH, enzymes) inform us about the degree of absorption of a chemical or a substance in the human body. Bioavailability refers to the degree of chemical or food substance absorption in a human or animal body. Simulated gastrointestinal digestion aims to determine how much of the nutrients from the sample matrix, such as vegetables, fruits, meat, dry legumes in the daily diet, are taken into the body.

In our study, we have investigated the bioavailability of Ca, Mg, K, Fe and Zn minerals of traditional Usak tarhana in the form of soup using *in vitro* digestion methods. It is observed that bioaccessibility of minerals in tarhana were increased while the phytic acid content was decreased about 91% after tarhana fermentation.

**Keywords :** Tarhana, Bioavailability, Minerals

***Acknowledgments : Manisa Celal Bayar University, Scientific Research Projects Commission (BAP)  
Project number: 2016/34***

***Traditional Functional Foods***

***Abstract Reference : 497***

**THE COMPARISON OF ANTIOXIDANT CHARACTERISTICS OF TRADITIONAL DOUGH  
TARHANA OF KASTAMONU AND TARHANA'S FROM OTHER REGIONS**

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The tarhana soup of Kastamonu is a local food which is stored in the form of dough without drying. Another difference of this tarhana from other regional tarhanas is that darak dalı (dried dill stalks with seeds) is always put into the tarhana dough. This dough is often mixed with dried basil stalks and its seeds. The tarhana dough is fermented by occasionally mixing with these plant stalks for a few weeks. Then the dough is taken into storage containers and stored in the refrigerator without removing these seeded stalks. These stalks are separated from the cooking soup by using a strainer. Meanwhile, the seeds remain in the soup. These seedy plant stalks give flavor, different taste and healing effect to the tarhana soup of Kastamonu.

In this study, total phenolic compounds, total flavonoid substances and total antioxidant capacities, ABTS, DPPH, and FRAP assays were used for determining for antioxidant activity. The results of antioxidant characteristics of traditional dough tarhana of Kastamonu and tarhana's from other regions were compared.

The highest total phenolic compound, total flavonoid substance and total antioxidant capacities, ABTS radical scavenging activity, DPPH radical scavenging activity, and FRAP (ferric reducing antioxidant power as mM FeSO<sub>4</sub>·7H<sub>2</sub>O) for dough tarhana of Kastamonu and other regions dry powder tarhana's were founded as 0.58 mg GAE (gallic acid equivalent)/g and 0.78 mg GAE/g; 0.30 mg QE (quercetin equivalent)/g and 0.39 mg QE/g; 0.62 mg AE (ascorbic acid equivalent)/g and 0.94 mg AE/g; 36.3 % and 29.07 %; 49.62% and 55.3 %, and 1.07 mM and 1.72 mM, respectively. But, if the results of dough tarhana of Kastamonu are expressed on dry matter basis, it was seen that the results (the total phenolic compound, total flavonoid substance and total antioxidant capacities, ABTS radical scavenging activity, DPPH radical scavenging activity, and FRAP were 0.78 mg GAE/g; 0.39 mg QE/g; 0.94 mg AE/g; 29.07 %; 55.3 %, and 1.07 mM FeSO<sub>4</sub>·7H<sub>2</sub>O, respectively) were higher than those of dry powder tarhana's.

**Keywords :** Antioxidant, Fenolic, Flavanoid, ABTS, DPPH, FRAP, Tarhana

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 183***

**VOLATILE COMPOUNDS (VCs) IN SUCUKS RIPENED IN NATURAL AND ARTIFICIAL CASINGS**

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Sucuk is the most popular traditional dry-fermented sausage in Turkey. For traditional sucuk production, the beef meat/fat, salt and spices (garlic, pimento, red and black peppers) is mixed and stuffed into natural casing (bovine small intestines) and then is ripened under the environmental conditions. The type of casing used plays an important role for sucuk quality characteristics. The volatile compounds (VCs) formed by mostly biochemical pathways or derived directly from spices are essential for sucuk quality. However it is not known that whether traditional sucuk ripened in natural casing (S-NC) can differ from that ripened in artificial casing (S-AC), in terms of VCs. Therefore, we objected to determine the VCs in S-NC and S-AC at 0., 3., 7. and 11. days of ripening. The VCs were analyzed using solid-phase-micro-extraction (SPME) technique with gas chromatography-mass spectrometry (GC-MS). A total of 66 VCs including 25 terpenes (35-48%), 10 alcohols (2-18%), 9 phenyls-phenols (17-21%), 6 aldehydes (4-39%), 6 esters (0-2%), 4 sulfur compounds (6-9%), 3 ketones (0-11%), 2 acids (0-2%) and 1 alkene (0-2%) were identified in the sucuks. The number of VCs ranged from 32 to 61 for the S-AC and from 32 to 66 for S-NC. Two-methyl-3-phenyl-propanal known as the major constituent of curcumin significantly decreased in the sucuks from day 0 to days 11. Methyleugenol and diallyl disulphide, are the major VCs for pimento and garlic, were not influenced by the both ripening period and the casing types. The principal VCs identified in sucuks were methyleugenol (14%), 4-(1-methylethyl)-benzenmethanol (11%),  $\gamma$ -terpinene (11%), trans-caryophyllene (10%), 2-methyl-3-phenyl-propanal (9%), p-cymene (7%), diallyl-disulphide (7%), 3-hydroxy-2-butanone (4%), methyl eugenol (3%),  $\alpha$ -thujenal (2%) and  $\beta$ -pinene (2%), accounted for approximately 78% of total VCs. Of these VCs, 4-(1-methylethyl)-benzenmethanol, 2-methyl-3-phenyl-propanal,  $\gamma$ -terpinene, p-cymene,  $\alpha$ -thujenal,  $\beta$ -pinene and 3-hydroxy-2-butanone were significantly influenced by the ripening period. S-NC had the higher percentages of 2-methyl-3-phenyl-propanal, 4-(1-methylethyl)-benzenmethanol and  $\alpha$ -thujenal than those in S-AN. In conclusion, use of artificial casing for sucuk production resulted in the higher percentages of alcohols, esters, sesquiterpenes and phenyls-phenols, compared with natural casing. Furthermore, a long-term goal of this research is to determine the detailed biochemical changes and also sensory attributes.

**Keywords :** Sucuk, volatile compound, artificial and natural casing, ripening period

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 628***

**MONITORING THE CHANGES OF PHYSICOCHEMICAL PROPERTIES OF TRADITIONAL  
FERMENTED TURKISH SAUSAGE INOCULATED WITH PROBIOTIC ENTEROCOCCUS  
FAECIUM BY THE ADDITION OF OAT BRAN AS A PREBIOTIC SOURCE**

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In this study, the effect of oat bran concentrations (1 %, 2.5 %, 5 %) as a prebiotic source in fermented sausage inoculated with probiotic *Enterococcus faecium* bacterium were determined by analyzing some physicochemical properties of the product. Sausages were fermented in a humidity (95% - 63%), temperature (24 °C – 18 °C) and air flow (0,5 m/s – 0,2 m/s) controlled cabinet. The tested physicochemical properties included pH, moisture content, water activity ( $a_w$ ), color values ( $L^*$ ,  $a^*$  and  $b^*$ ) of the surface and cross section, TBA, and % lactic acid value. Results showed that the increase in concentration of oat bran in sausage inoculated with probiotic *Enterococcus faecium* bacterium decreased the pH, moisture content,  $L^*$  value of surface and  $a_w$  values while, % lactic acid,  $L^*$  and  $a^*$  values of the cross section and  $b^*$  value of the surface were increased. All physicochemical property results were considered to be within an acceptable range. The addition of oat bran in sausage formulation, together with probiotic *Enterococcus faecium* inoculation, could be a beneficial application for decreasing the duration of fermentation as a result of, the low pH and moisture content data observed. At the industrial scale, a short fermentation duration is very important for higher plant output as well as lower microbial contamination.

**Keywords** : sausage, oat bran, probiotic, prebiotic, *Enterococcus faecium*, physicochemical properties

***Acknowledgments*** : This study is part of the first author's PhD dissertation.

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 574***

**Factors Affecting Consumer Preferences on Seafood Consumption: The Case of Mersin**

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Seafood are an extremely valuable food type in terms of protein, vitamin, mineral and omega 3 fatty acids. It is consumed in the world as a quality substitute product for healthy and balanced nutrition with all its characteristics, especially protein, which is included in many developed countries, especially the European Union region. It is also a fact that in the developing countries like our country, when the healthy and balanced nutrition problem of the quality of the food consumption of the individuals is taken into consideration, the seafood are not consumed enough. It is necessary to determine the factors affecting the consumption and to find a solution to these problems, especially the factors that negatively affect the consumption of seafood. This study was conducted to determine the relationship between the demographic characteristics of the individuals, such as gender, age, occupation and education, and consumption of seafood in Mersin province, the eastern of the Mediterranean, which is not foreign to sea cultures and seafood. In April-May 2016 period, 1214 people were interviewed by face-to-face interview method in different districts of Mersin city center. According to the results, preferences of the individuals living in Mersin on meat consumption are; 47.0% red meat, 37.9% poultry meat, 13.7% fish consumed. The most consumed fish species of the respondents were anchovy (24.7%), sea bream (23.3%), sea bass (20.4%), gold band goatfish (11.2%), sardine (7.4%), rainbow trout (4.9%), lizardfish (1.9%), mullet (1.7%) and the others (4.4%). According to preference of consumption of participants, 94.3% of fish is consumed freshly. According to the results of the study, seasonal preference of the most consumed seafood; 44.3% in winter, 5.1% in summer, 3.7% in autumn, 1.4% in spring. The participant's cooking method is as follows; frying (49.7%), grilling (29.3%), oven (15.3%) and steaming (4.9%). In Mersin province, the fish consumption frequency of the individuals is the highest, respectively; 33.2% once a month, 24.2% once every fifteen days, 22.3% once a week, 8.3% once or twice a year, 7% a week or more, 4.9% as never consuming fish It has been identified.

**Keywords :** Seafood, Consumer preferences, Mersin, Fish, Consumer, Chi Squared Test

***Acknowledgments : This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-2-TP2-2557***

***Traditional Meat, Poultry and Fishery Products***

***Status : Accepted - Poster Presentation***

***Abstract Referance : 27***

**A FERMENTED FISH PRODUCT: FISH SAUCE**

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Fermentation has been used since centuries. It is one of the oldest and most economical methods of food production and preservation. Fermentation plays an important role in many parts of the world for the production of traditional fish products. The advantages of traditional fermented fish products to the people in developing countries are high acceptability, low cost, ease of preparation, safety, digestability and absorbability. Fish sauces are a fermented fish products and they have different names according to the countries (*Shottsuru* in Japan, *Budu* in Malaysia, *Patis* in Philippine, *Nam-pla* in Thailand, *Nuoc-mam* in Vietnamese). Fish sauce is usually used as a condiment for cooking due to its characteristic odor and taste. Fish sauce is a clear brown liquid hydrolysis of salted fish. Fish sauce contains all essential amino acids. Fish sauce may be considered among the important sources of animal proteins. It is a very good source of vitamin B12 and minerals such as sodium (Na), calcium (Ca), magnesium (Mg), iron (Fe), manganese (Mn) and phosphorus (P). Generally, mixing fish and salt is the first step in making fish sauce. Traditional ways of producing fish sauce is by mixing fish and salt at the ratio of 2:1 or 3:1. The ratio of fish and salt varies from 2:1 to 6:1 depending on the country. After mixing fish and salt, the fish is ferment for 6-12 month at 30-35°C.

**Keywords :** Fermentation, traditional fish products, fish sauce



***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 433***

**Traditional Turkish Fermented Sucuk: Learning From the Tradition to Inform the Future**

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<sup>1</sup>Istanbul Sabahattin Zaim University

Traditional Turkish fermented sucuk, which has been known since ancient times is consumed with appreciation by the people of our country. Sucuk is an important food product for nutrition and health due to its valuable nutrients and probiotic microorganisms. Traditional Turkish fermented sucuk is a fermented meat product that is traditionally produced without heat treatment or starter cultures. Fermented sucuks are dried and ripened under completely natural conditions. In Turkey, despite the production of natural sucuk is wide spread, the production is usually carried out in small-scale manufacturers. On the other hand, medium and large-scale manufacturers prefer to produce semi-fermented sucuks or the heat-processed sucuk-like products because of high production cost and longer production time. Some companies are selling heat-processed sucuk-like products to the market with a natural fermented sucuk label, which causes consumer deception due to product imitation and adulteration. This review study was carried out with the aim of revealing the characteristic of the traditional Turkish fermented sucuk consumed in Turkey and its current situation.

**Keywords :** Soudjouk, Traditional, Probiotics

***Traditional Meat, Poultry and Fishery Products***

***Status : Accepted - Poster Presentation***

***Abstract Reference : 445***

**TRADITIONAL FOOD OF MARDİN: DRIED GOAT MEAT**

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Goat meat is a preferred meat type because of its low fat content and nutritive properties. It has a species specific flavor and aroma, which is different from lamb meat, and is the main component of some of the meals in the traditional cuisine of a significant part of the Mediterranean basin countries. In the Southeastern Anatolia region, the goat meat is widely consumed for centuries in Mardin province either directly or as a component of the meals. Dried goat meat is prepared from the rib cage of the animals between January and February when the air temperature and humidity are very low. After slaughtering, the chest of the goat is divided into 2-3 pieces and the meat on the ribs is incised and salted and kept overnight in a basin. Then the salted meat pieces are hanged to the hooks with ropes in an empty room or in open air by avoiding from sun light for drying. Drying process is completed within 5-10 days depending on the weather conditions and meat thickness. Drying process is continued until the meat becomes hard like wood. Dried meat is traditionally stored in the bulgur. Nowadays, storage in deep freezer has become more prevalent due to the widespread use of freezers. Another way of preserving the dried goat meat is to store in brine. The dried meat product, which is kept as dry or in brine, is left in the water overnight to remove excess salt as well as to soften it before consumption. Although dried goat meat was widely consumed until last 15-20 years, today demand for this meat is gradually falling. Determination of the effect of drying process on the microbiological, chemical and sensory properties of dried goat meat will contribute to the protection, publicity and sustainable production of this traditional meat product.

**Keywords :** Goat meat, Dried Meat, Mardin, Traditional Food

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 482***

**Kastamonu’s Pastırma**

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‘Pastırma’ is a traditional dried and cured meat product. The aim of this study is to introduce the pastırma produced in Kastamonu province. Pastırma production is carried out in September and April. To prepare Kastamonu’s pastırma, the whole muscle from certain parts (like loin, kuşgözü or rib eye steak) of high quality beef carcass is utilized. Curing, drying, pressing and covering with çemen steps are applied respectively to obtain pastırma. Firstly meat is covered with a rocksalt containing curing mixture. Before this step several incisions are made on the meat surface to provide better penetration of curing mixture. After that, cured meat is piled together and set aside around 3 days. Then cured meat is washed and dried at the special places called ‘Sayvan’. The convectional and radiational forces of sun are used in drying step. Drying process takes place around 30 days. After salting and drying process, the surface of meat is covered with çemen at amount of 10 % of its own weight. To obtain characteristic flavour of pastırma, ‘çemen’ is essential ingredient. Çemen consists of mashed garlic, ground fenugreek (*Trigonella foenum graecum*) seeds, water, cumin, red pepper and salt. The garlic used in this mixture is grown in Taşköprü district of Kastamonu. These garlics give the unique flavour and taste of Kastamonu’s pastırma. The meat covered with çemen dried again. Finally, obtained pastırma is sliced with a steel knife manually. Thinly sliced pastırma is usually consumed raw.

**Keywords :** Pastırma, Kastamonu, Geographical Indication, dry meat

### ***Traditional Sweet Products***

#### ***Abstract Reference : 23***

#### **Physicochemical Characterization of Milk Jam (Dulce de Leche – DL) Produced in Turkey**

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Milk jam (Dulce de Leche – DL) is a type of sweetened milk which is very popular in South American countries, especially Argentina and Brazil. It's prepared by milk evaporation to about 70 % total solids by heating at atmospheric pressure with addition sucrose and/or glucose, NaHCO<sub>3</sub> and/or vanilla. DL is consumed as a spread, as a dessert and at breakfast. It's widely used in bakery and confectionery. Recently, DL has been marketed in Europe. Although the industry produces several types of DL, typical composition of traditional DL is moisture (30%, max), milk solids non fat (24%, min), milk fat (6-9%), protein (5%, min) and ash (2%, max).

In my study, sheep milk DL was produced from sheep milk (18% total solid content, 7.4% fat, 5.4% protein, 0.165% lactic acid on average) in local dairy plant Güntepe. Other five DL samples were purchased in commercial establishments located in Çanakkale, Turkey. Totally six Turkish commercial brands were characterized for total solid content, carbohydrates content, protein, ash, pH and titratable acidity and color parameters. The four of the DL samples were produced from cow milk while the two of them were produced individually from sheep milk and goat milk.

Total solid content, lactic acid content (%) and pH ranged respectively from 68,91 to 74,76; 0,226 to 0,386 and 6,07 to 6,31 for five brands of DL. With respect to the sugars, sucrose proved to be the most predominant in DL matrix as compared to lactose, glucose and fructose. Protein, ash and sucrose content (%) ranged respectively from 1,76 to 9,00; 1,55 to 2,56 and 33,18 to 42,49 for five brands of DL. One of them has different composition from the other samples with 0,098 lactic acid (%), 62,42 total solid content (%), 1,38 ash (%) and 6,75 pH. It was also determined the values of color parameters for lightness (L\*), redness (a\*) and yellowness (b\*). It was found that the average values of L\* were in the range of 43,48 – 48,68; a\* values were in the range of 6,49 – 8,36 and b\* values were in the range of 13,82 – 17,63 for four brands of DL. Two brands of DL have different color parameters from the other four DL samples. It was determined that their average values of L\*, a\* and b\* are 30,66 and 57,36; 3,55 and 1,73; 3,3 and 11,58, respectively.

**Keywords :** Milk jam, Dulce de Leche, physicochemical properties, color parameters.

***Acknowledgments :*** The author expresses her gratitude to Miss. Yelda Zencir for color measurements and to Miss. Gamze Baş, Miss. Busenur Özgül, Miss. Hatice Karataş and Miss. Gül Karaduman for their help in the laboratory.

***Traditional Sweet Products***

***Abstract Reference : 555***

**THE FUNCTIONAL AND SENSORIAL PROPERTIES OF ANGELICA JAM FROM BURSA**

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Traditional food, defined as a food having specific property, which differentiate it evidently from other similar foods in the way of the utilization of conventional ingredients or traditional composition or traditional type of manufacturing and/or processing method. In recent years, consumer behavior towards buying and consuming traditional, natural and functional foods, which are believed to be an alternative medicine as well. *Angelica sylvestris*, is member of *Apiaceae*. In Turkey, it has been frequently harvested in Bursa from the skirts of Mount Uludag. The plant has a special flavor and taste with odoriferous feature. It has been reported that it strengthens the nervous system, decreases the side effects of asthma and improves digestion system. There have been few experimental studies reported in literature on the functional properties of *Angelica sylvestris*. It contains phenolic components including caffeic, p-hydroxybenzoic, p-coumaric, vanillic and ferulic acids predominated in drugs. Angelica jam, a traditional Bursa cuisine is produced by cutting its stem in a ring shape. Even though the jam has a pleasant taste and functional properties, it has not been well known, and sunk into oblivion. In that presentation, the functional and sensorial properties of Angelica jam will be explained in detail based on the experimental studies.

**Keywords :**Angelica, *Angelica sylvestris*, jam, traditional foods

***Traditional Sweet Products***

***Abstract Reference : 120***

**A Tradational Sweet: Küncülü Halvah**

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Hatay, which is a world gastronomy city with its rich cuisine and delicious meals, has a dessert, called "küncülü halvah" which is specially produced in Ramadan as well as künefe's. Küncülü halvah is produced and consumed in the Hatay region, and is a unknown product on the world market due to local production and consumption. More than 200 years in Hatay, a few family establishments producing küncülü halvah in the historic Antakya Uzun bazaar, as they learned from their grandfather in are draw attention as the last representatives of this tradition.

This delicacy that is consumed next to tea or coffee as a snack, usually after iftar (after fast); It starts with a mixture of tahini (paste made from ground sesame seeds in Turkish and Middle Eastern culture), sugar and water. After the sugar is dissolved in water, the mixture is added to the *Saponaria officinalis*(çöven juice for food structure and crystalization). The mixture is boil for about 3 hours and a certain consistency is obtained. The consistent mixture is poured onto the white sesame with the help of a shovel and is kneaded again. Halvah cut in strips at certain intervals is finally pressed in a special pressing machine. As a result of the process, the long-thinned halva is packed and ready to be consumed. It is known that Küncülü halvah, which is produced between 150-200 kilograms per day in the month of Ramadan, keeps its feature year-round, if it is stored in closed places in cool places

**Keywords :** Küncülü, Halvah, sweet, traditional taste

***Traditional Sweet Products***

***Abstract Reference : 415***

**Preservation of flavor of Pistachio nut kernels used for Antep Baklava by Pistacia vera resin based edible coating**

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Antep Baklava is a very popular dessert and had been geographically signed and approved by TPE and EC in 2013. According to definition, it should be made from Antep Pistachio nut kernels which has dense aroma and flavor. During storage of kernels which had been harvested in a limited time (usually August) loss of flavor and odor is an important problem of quality of kernels and directly the quality of Baklava. In this study, Pistacia vera resin (PVR) based edible coatings were applied to kernels to preserve quality parameters such as moisture content (MC), free fatty acid (FFA) content, and peroxide value (PV) during storage at 20°C (30% RH) for 20 days. Sun-dried kernels were collected from post-harvesting of pistachio nut during late August 2017 and stored at proper conditions. For FFA and PV analysis pistachio nut oil was extracted by using hexane. Both MC of uncoated and coated kernels decreased without any significant change ( $P>0.05$ ) during storage. The decrease in the coated kernels was smaller. FFA and PV of control groups increased during storage while decreasing in coated kernels (5.5 % decrease). Presence of FFA and PV higher than permitted levels in Turkish Food Codex has a high impact on flavor and odor of kernels. As a result, edible coating with PVR may be suggested for preserving quality parameters of pistachio nut kernels which affects the quality of popular dessert Baklava.

**Keywords :** Antep Baklava, Edible coating, Pistachio nut, Pistacia vera resin

***Traditional Sweet Products***

***Abstract Reference : 435***

**DIFFERENT AND SATISFYING DESSERT WITH UNIQUE CREAM FOAM: KEREBIC**

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Kerebic is a traditional dessert that is consumed in Eastern Mediterranean port city Mersin, especially in the Ramadan. Kerebic cookies are made from butter, oil, semolina, egg, flour, powdered sugar, baking soda, pistachios, sugar, cinnamon. The cream foam is made from powdered sugar and soaproot plant (gypsophila). Kerebic is nutritious dessert in comparison with other dessert with sherbet. Butter, oil, semolina, flour, egg are mixed for the dough. And small pieces of dough are filled with pistachios, sugar and cinnamon mixture. And cookies are baked in the oven. In recent years kerebic has begun to be consumed in Adana, Hatay, Antep. Kerebic cookies are usually served with white foam which is made from soaproot plant (gypsophila) and powdered sugar. The gypsophila has saponin glycoside which is naturally found in some sea creatures, plants, and legumes. Saponin known to be toxic effect of high doses. But the recent studies are shown that it has hypocholesterolemic, anticarcinogenic, antioxidant, antiinflammatory, antimicrobial and immunocompromising effects. In Mersin, kerebic, which is consumed as dessert after iftar, especially during Ramadan months, is sold in the last years 12 months of the year. One portion (1 kerebic patty (about 60 grams) and 1 tablespoon of foam (about 15 grams) contains approximately 431 calories, 74 grams of carbohydrate, 5 grams of protein, 12.5 grams of fat. Kerebic patties are made from bulgur product, so that it also contains 0.1 mg B1 (Tiamin), 0.05 mg B2 (Riboflavin) and 1,3 mg B3 (Niacin) vitamins. When the calorie content is considered, it can be a tasty alternative for a dessert if the portion control could be managed.

**Keywords :**Gypsophilla, Soaproot, Saponin



***Traditional Sweet Products***

***Abstract Reference : 582***

**From Past to Present the Story of Pekmez**

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Pekmez (grape molasses) is a traditional product obtained by concentration of sugary fruits. Even there are different types of pekmez made of fruits such as fig, white mulberry, apricot and locust bean, the most favorite type of it made of grape. In respect of viniculture, Anatolia is one of the most fruitful lands around the World. History of viniculture here dates back to the B.C. 3500's.

Throughout the history, viniculture has always been important for Turkish people. While they were in Central Asia, viniculture was an important agricultural activity. Gokturks used to export grape to China. Turkish people who moved from Central Asia to Anatolia brought their viniculture and grape cultivation skills to these territories. Thanks to this culture, Anatolia, which is very suitable for grape cultivation, is still one of the top grape cultivators of the world.

Before table sugar was invented, pekmez was used as a sweetener on foods. Seljuks stated the significance of pekmez as an ingredient for halva by the expression of them “the one who has kavut (roasted and ground wheat) would add it to pekmez, the one who is rational would take the advice”. Kavut means “roasted wheat flour added to the butter or pekmez”. In the mulberry, kavut, millet, flour and farina halvass made in Fatih's Halvahouse pekmez was used as a sweetener.

We may also conclude the significance of viniculture, grape and pekmez for Turkish people from the proverbs.

Pekmez includes approximately 50% glucose, 50% fructose. Pekmez, which also comes into prominence with its content of iron, magnesium, phosphor, calcium and potassium, is a nutrition that can be preferred for the periods such as growing and breastfeeding periods in which energy need is increased. Also, it's a good choice for athletes and laborers that in which energy consumption is high.

However, consumption of it as sweetener decreased as a result of the invention of table sugar, it's possible to pick up the trail of pekmez in Turkish culture. In this study, the history, the combination, health-wise evaluation and its significance in Turkish cuisine will be presented.

**Keywords :** Grape molasses, Pekmez, Vine, Viniculture, Anatolia

# ***Poster***

# ***Presentations***

***Geographical Indications of Traditional Foods***

***Abstract Reference : 637***

**Turkey Geographical Indications (GIs) and Applications**

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Geographical indications (GIs) are legal signs which identify a good as originating in a specific country or region, where the reputation of the product is attributable to its geographical roots. The concept of Geographical Indication provides the protection of the rights of producers and consumers by obtaining all or certain characteristics of a product that it is originating from the region or sometimes country. Geographical indications are covered by the Industrial Property Rights and are protected by the Turkish Patent Institute. Geographical Indication Signal according to legislation in Turkey are divided into two as of Origin and Geographical Name. To qualify for registration, certain criteria must be met from the time of application. Turkey has important richness of geographical indications with its deep rooted history. Geographical indications include natural products, agriculture, mining, handicrafts and industrial products. Ezine Cheese, Oltu Stone, Aydın Fig, İzmir Boyoz can be given as an example of geographical signs. It will be useful creating awareness and agenda on geographical marking for the final position of Geographical marking and local products.

**Keywords :** geographical indications, legal signs, local products

***Geographical Indications of Traditional Foods***

***Abstract Reference : 652***

**Tekirdağ's first geographical sign was registered; Malkara Eski Kaşar**

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The geographical signs are divided into two parts: designation of origin (PDO) and geographical indication (PGI). The production of the product subject to geographical indication protection, processing and other processes must all take place within the bounded geographical area the geographical indications in this case are called the "menşe (PDO)". Malkara eski kaşar was registreted as a menşe (PDO). Geographical markings are signs indicating a distinctive quality, fame or other features and identified with a district, area, region or country of its origin. In other words, geographical indication shows goods' origin. Malkara Eski Kaşar is the first geographically marked food of Tekirdağ. Malkara Eski Kaşar, Evliya Çelebi's famous work has been the subject of Travel Names; it is stated that Malkara is a place famous for kashkaval (kashar cheese). The fact that Malkara is on the old road from Thessaloniki to Istanbul has made it an important center for accommodation. In a research conducted in 1937, dairy's who produce kashar cheese in Trakya Region have been identified. Malkara Eski Kaşar is made from the milk of sheep, goat and cows (30-35% goat milk, 20-35% sheep milk, 30-50% cow milk) which is fed which is localized and the other various herbs and especially myrmidum and thyme. The economic value of local values and, more importantly, the geographical indications that provide the transfer are an accurate industrial property right.

**Keywords :** Designation of origin, geographical indication, Malkara Eski Kaşar, economical value

***Geographical Indications of Traditional Foods***

***Abstract Reference : 362***

**ARABAŞI**

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Arabaşı is a traditional Turkish soup and it is consumed in Central Anatolia region especially the zones where Turkmens live. Actually, its real name is ara-aşı because of consumed as snack. In time, its name had turned into to Arabaşı. The feature of the soup is drinking it by swallowing small parts of dough instead of consuming with bread. So, the dough and Arabaşı soup should be thought together.

At first, the soup had been cooked with partridge meal in the extensive hunting times. Later, it was cooked with rooster meal. The soup is especially consumed in winter times with a lot of guests. It contains chicken, rooster, turkey or partridge meals, flour, paste, salt, so much chili pepper, lemon and black pepper and mentioned before eaten with dough containing flour, salt and water. The soup is a substantial meal due to dough and thanks to chili pepper and lemon in the soup it increases the body resistance. As well as old times, still the soup is consumed in countryside in winter times and it is considered as culture and a tool gathering people rather than just a food.

**Keywords :** Traditional food, Soup, Chicken

***Geographical Indications of Traditional Foods***

***Abstract Reference : 366***

**A Registered Geographical Landmark: The Uşak Tarhana**

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Uşak tarhana has already been registered by Turkish Patent and Trademark office at 21.03.2017 with registration number C2015/015. In this study, the properties of Uşak tarhana was introduced by emphasizing them while providing to be registered as Geographical Landmark.

Uşak tarhana is a flour type tarhana produced with mixing the wheat flour, yogurt, paprika, onion, tomatoes and mint which this prepared dough is fermented 21 days before drying under shadow with reducing the particle size periodically. Uşak tarhana could be preserved in dried powder form as well as frozen dough at refrigerated conditions.

Uşak Tarhana is mainly produced in Uşak and provenience which immediately attracted the consumer attention for its flavor. The distinctive features of Uşak tarhana are; the long fermentation carried out under natural climate conditions of Uşak and surroundings and the high vegetable (paprika, onion and tomatoes) ratio used without pre-cooking at its preparation.

There is a relation with fermentation time and climate conditions of Uşak tarhana. Because its mainly produced between at the end of August and September which the temperature is averagely 22-24°C. This difference probably enables production of desirable volatiles of the characteristic flavor of Uşak tarhana since the metabolic activities of responsible microflora including lactic acid bacteria and yeast are slow.

The usage of high amount of vegetable in the production without pre-cooking both contributed to the development of flavor characteristics and fermentation properties. For instances, the paprika that is supplied from the provenience of Uşak is given slightly hot desirable taste. Also without pre-cooking of vegetables increases the microbial diversity of fermentation which may related with the desirable flavor.

As a conclusion, Uşak tarhana has high consumer demand for its characteristic flavor which is related with the production region and time. Thereby, the industrial production of Uşak tarhana according to the traditional habits is increasing which could economically derive profits.

**Keywords :** Uşak Tarhana, Geographical Landmark, Flavor, Climate and Ingredients.

***Geographical Indications of Traditional Foods***

***Abstract Reference : 588***

**Salted Yoghurt: Potential PDO Product in Turkey**

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Salted yogurt is a traditional dairy product which produced and consumed especially in Hatay province in the Mediterranean part of Turkey, and is sent to different regions of Turkey as well. Due to its high dry matter content, long shelf life and production methods, salted yogurt is also known as "winter yoghurt", "yoghurt cheese" or "cooked yoghurt".

Salty yogurt can be obtained from both cow and goat milk or from mixtures of them. However, it is stated that the salted yoghurt produced from goat milk has a whiter colour and smoother structure.

In salted yoghurt production, classical yoghurt production is performed first. The yoghurt is strained from a cloth after it has been stored in the refrigerator overnight. The yoghurt, which is concentrated by straining of a portion of the serum, is taken to a pot and cooked until boiling. Then some salt is added and mixed again. After the cooking stage, yoghurt is transferred to another container for cooling. The product is then stored at the refrigerator temperature.

It is stated that the content of salted yogurt is about 3 times higher than that of classical yogurt due to straining and cooking processes. In addition, due to the addition of salt, the shelf life of the product is much longer (up to 1 year) than the classical yoghurt. Salted yoghurt can be consumed as it is, but it can also be consumed by adding ingredients such as red pepper and olive oil or by adding it in soup production.

Geographically indicated products (PDO/PGI) are known to be important in local development. The PDO system is also very important in terms of delivering the product's unique characteristics to the consumer without changing. Salted yoghurt is not produced industrially, it is traditionally produced only in the houses and small dairy plants. The exact specification of the product and its registration as a PDO will both increase the recognition of the salted yoghurt and ensure that the product comes to a more important point among the income sources of the region.

**Keywords :** Hatay, PDO, Salted yoghurt

***Geographical Indications of Traditional Foods***

***Abstract Reference : 287***

**Giresun's Centennial Delicacies That are on The Way of Geographical Indication**

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<sup>2</sup>Ondokuz Mayıs University

A Geographical Indication is a sign indicating a product identified with a locality, area, region or country in which it originated in terms of its distinctive character, reputation or other characteristics, and basically expresses a local product name. The main advantages of protecting local products with Geographical Indication are stated as preservation of traditional knowledge and production methods, protection of the producers, increment of marketing opportunities and supporting of rural development by providing economic return. In addition, Geographical Indication affects the demand for these products by directing the preferences of the consumers, gives the product an identity by providing the consumers to distinguish that product from the other products, and thus prevents the cheating of the consumers. When these factors are evaluated as a whole, to show the extent to which Giresun will be benefiting from the advantages of Geographical Indication and from the applications of local food products to Turkish Patent and Trademark Office (TURKPATENT: Türk Patent ve Marka Kurumu) seems to be of great importance. Within the scope of the Diversification Project of Giresun Provincial Rural Income Sources (GIRKAP: Giresun İli Kırsal Gelir Kaynaklarının Çeşitlendirilmesi Projesi), conducted by Giresun Provincial Directorate of Food, Agriculture and Animal Husbandry and financed by Eastern Black Sea Project Regional Development Administration (DOKAP: Doğu Karadeniz Projesi Bölge Kalkınma İdaresi Başkanlığı); research, file preparation and application works about the products that may be subject to Geographical Indication are carried out. In this review, information on Alucra Capricorn Kebab, Çamoluk Dry Bean, Çavuşlu Bread, Giresun Bagel, Giresun Cherry Laurel, Giresun Minced Meat Pita, Giresun Tel Kadayıf Dessert, Görele Ice Cream, Şebin Black Mulberry and Tirebolu Tea, which are the traditional foods of Giresun province studied in the Project, is given. Within these products, Geographical Indication application of Çamoluk Dry Bean is almost published in TURKPATENT Official Geographical Indication and Traditional Product Name Bulletin; the applications of other products are in the stage of preparation and research. The success of the project will create a great added value in Giresun and will greatly contribute to the rural and economic development of the province.

**Keywords :** Giresun, traditional food, Geographical Indication, GIRKAP, TURKPATENT



***Geographical Indications of Traditional Foods***

***Abstract Reference : 295***

**Traditional Samsun Culinary and Samsun's (Bafra) Covered Pita**

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<sup>2</sup>Ataturk University

Bafra, the county of Samsun in Turkey, is the third largest city in terms of population and its distance to Samsun is 51 kilometers and it is located to the West of Samsun province.

The Samsun culinary, with a special place in Turkish culinary, carries traces of the Black Sea, Anatolia, Balkan and Caucasus. Samsun culinary consists of mainly local foods such as corn, black cabbage, bean, meat, rice and pastry foods and also tirit, lepsi, herse and goose turn (kebab) which made from poultry such as goose, chicken, duck, which have an important place in tradition. In this region where many foods from wild plants are made, various soups and roasting are cooked from plants such as nettles, kırçın, and kaydırarak. In addition to these, Samsun's (Bafra) covered Pita, Samsun's (Terme) open Pita, keşkek which is cooked especially in wedding ceremonies, Samsun's (Çarşamba) kıvratma, a kind of dessert, Samsun bagel and corn soup are the most famous foods in the city.

Despite the fact that there are pita bakeries in almost every province and county centers throughout the country, Samsun's (Bafra) covered Pita have been registered as geographical signs due to differences in production and service stages. The dough consistency and shape, the materials used belong to Samsun (Bafra) and the differences in pre-service lubrication make Samsun's (Bafra) covered Pita a distinctive feature. Samsun's (Bafra) covered Pita is an important and interesting regional element in terms of Samsun's culinary culture and presentation of Samsun's (Bafra) covered Pita will contribute to the recognition of the natural and historical beauties that the region has.

**Keywords :** Culinary culture, Samsun culinary culture, Samsun's (Bafra) covered Pita.

***Geographical Indications of Traditional Foods***

***Abstract Reference : 296***

**Traditional Samsun (Çarşamba) Kivrıatma (A kind of Turkish dessert)**

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<sup>1</sup>Bingöl University

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Çarşamba is located to the east of Samsun province in Black Sea Region in Turkey. Çarşamba is builded on two banks of Yeşilırmak, near the area where Yeşilırmak River intersects with Çarşamba Plain.

One of the culinary wealth of Samsun (Çarşamba) province, Kivrıatma has preserved its originality and value from the 1930s to todays. The preparation and production stage of the traditional Samsun's (Çarşamba) Kivrıatma is quite simple. When the dough is prepared for Kivrıatma production, coming to a certain degree it is opened with the help of a rolling pin and a mixture of sugar, Hazelnut and walnut is sprinkled on a rolled dough and rolled with a rolling pin and it is put in a oiled tray. After the puting has been completed, Kivrıatmas are cut into squares and their surfaces are lubricated with the butter with the aid of a brush, Kivrıatma is baked until they blush and served.

The culinary culture that the Çarşamba region has brought to the market by using local resources will be acted and contribute to the existing natural and cultural values of Çarşamba. From this perspective, traditionally Samsun's (Çarşamba) Kivrıatma, which received the trademark registration certificate in 2006, constitutes an important example.

**Keywords :** Culinary culture, Samsun culinary culture, Samsun's (Çarşamba) Kivrıatma (A kind of dessert), Turkish dessert

***Geographical Indications of Traditional Foods***

***Abstract Reference : 428***

**Turkish PDO Dairy Products**

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Due to the development of dairy technology and the awareness of the consumers, the increase in demand for quality products is causing the increase in the search for new products as well as the interest in traditional products. Traditional products are regarded as natural and reliable products in society. For this reason, the need to protect traditional products with legal regulations has emerged. Because some traditional products are produced only in certain regions, this is protected by legislation.

The European Union has created a " Protected Designation of Origin/Geographical Indication (PDO/PGI)" system to help inform consumers about the incentives of different types of agricultural production, the prevention of wrong and unjust use of product names, and product characteristics. PDO's are signs indicating a product identified with a locality, area, region or country where it has a distinctive character, reputation or other characteristics.

The number of PDO products is increasing as the importance of geographical indications in the world and Turkey begin to understand better. In 2013, the total number of PDO products in Turkey was 167, and only 9 of them were dairy products. It emphasizes the importance of the PDO that the PDO products number has doubled in 5 years.

Turkey has 306 PDO products as of now. The vast majority of them are food products, as they are all over the world. The number of PDO dairy products is 13. These are Afyon Kaymağı, Diyarbakır Örgü Peyniri, Edirne Beyaz Peyniri, Erzincan Tulum Peyniri, Erzurum Civil Peyniri, Erzurum Küflü Civil Peyniri (Göğermiş Peynir), Ezine Peyniri, Hellim (Halloumi), Karaman Divle Obruğu Tulum Peyniri, Kars Kaşarı, Malkara Eski Kaşar Peyniri, Susurluk Ayrarı ve Yozgat Çanak Peyniri. Today, there are a total of 385 PDO products in the application phase, of which 22 are dairy products. However, there is much more potential for PDO products in Turkey. The activities highlighted the importance of PDO products, such as seminars and training activities will provide an increase in the number of PDO products in Turkey.

**Keywords :** Dairy product, PDO, Turkey

***Geographical Indications of Traditional Foods***

***Abstract Reference : 461***

**Characteristics of Arapgir Purple Basil (*Ocimum basilicum* L.): A geographical indicated product**

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Arapgir Purple Basil (*Ocimum basilicum* L.) belonging to the *Lamiaceae* and is geographically indicated (with the number of 266) in 2017 by Turkish Patent and Trademark Office (Ankara, Turkey). The leaf structure of it is soft which 5-10 cm in length and 3-6 cm in width, dark purple color as the dominant color. The length of the Arapgir purple basil is 8-15 cm and the diameter of the plant stem is around 1-1,5 cm. Arapgir purple basil is an endemic plant that all of it is purple. Arapgir purple basil (*Ocimum basilicum* L) is grown in Arapgir county of Malatya and its production amount increased sharply. The basil can be used as a spice in fresh or dried form. In this study, it was reported that the production/grown methodology, product characteristics and volatiles and essential oil compounds of Arapgir purple basil. The fresh purple basil samples harvest dates are during May to the end of October and the basil was marketed in Arapgir town of Malatya in Turkey. It has a linalool type basil and about more than 25% (v/v) of volatiles or essential oils are composed of linalool. However, other types of basil in Turkey contain estragol, which is a carcinogenic effects for human. For drying Arapgir purple basil, semi-shade drying were performed and is essential to protect its volatiles. Volatile compounds and essential oils constituents of semi-shade dried purple basil were identified by gas chromatography/mass spectrometry (GC/MS). A total of 130 volatile components and 170 essential oils were identified during the three seasons, including monoterpenoids, sesquiterpenoids, alcohols, aldehydes, ketones and acids. The major volatile components of dried purple basil were linalool, 1,8-cineole, 2-Propenoic acid, methyl cinnamate,  $\alpha$ -trans-Bergamotene, 2- $\beta$ -pinene, and  $\alpha$ -humulene.

**Keywords :** Arapgir Purple Basil, volatile compounds, essential oils, semi-shade drying, geographical indication

***Acknowledgments : MINISTRY OF FOOD, AGRICULTURE AND LIVESTOCK, GENERAL DIRECTORATE OF AGRICULTURAL RESEARCH AND POLICIES (TAGEM, Ankara, Turkey)***

***Imitation and Adulteration of Traditional Foods***

***Abstract Reference : 459***

**Analytical Methods for Halal Food Authentication: Principles, Comparisons and Food Applications**

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Food choice has normally been reflected individual expectations such as lifestyles, culture, religion and health concerns. From the Muslim societies' point of view, this expectation is usually related to halal situation of the food. A considerable number of methods have been developed to evaluate the authenticity and traceability of foods. The analytical methods used for halal food authentication might put in order as polymerase chain reaction, enzyme linked immunosorbent assays, mass spectrometry, chromatography, electronic nose and spectroscopy. These techniques offer a unique possibility for the rapid and reliable separation and quantitative determination of macro- and micro components of highly similar chemical structures in complicated matrices of foods and food products.

Chromatographic methods (HPLC, GC etc.) are used to determinate the pork, lard and pig gelatin in food matrix due to fatty acid, triglyceride and aminoacid composition of food and this method presents a high separation performance. Enzyme-Linked Immuno Sorbent Assay (ELISA) is a method used to define the species of meat products. ELISA provides the opportunity to analyze a great number of samples in a short time. Electronic nose method is used for determination and separation of lards from the other fats.

Spectroscopic techniques, another validation technique, operates in a different and limited frequency range depending on the size of the processes and energy exchange. These techniques are acceptable in agriculture and food products for both qualitative and quantitative analysis, and provides an alternative to time-consuming wet chemical techniques. Among DNA-based methods, polymerase chain reaction (PCR) is the most well developed molecular technique up to now and provides a simple, rapid, highly sensitive and specific detection for constituents of animal origin in foods.

This study will focus on the review and discussion with selected examples of commonly used analytical methods for food authentication in halal food industry.

**Keywords :** Halal, Authentication, Analytical method, Muslim.

***Innovation in Traditional Foods***

***Abstract Reference : 204***

**A NOVEL APPROACH TO INCREASE SENSORY QUALITY OF MANTI (STUFFED PASTA):  
DRYING WITH HUMIDIFICATION**

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Stuffed pasta (manti) is one of the famous and nutritious traditional foods produced in Turkey. Sensory quality of manti varies due to differences in production processes. Therefore, the purpose of this study was to increase sensory quality of the dried manti. With this aim, manti samples were held on a water bath (at 80° C, for 5 minutes) contacting with water vapor. Then they were dried until 12% moisture contents using a 500 W bar type Infrared lamp and traditional method (250 ° C, 30 minutes) as a control group. As control groups, the manti samples were not treated with water vapor dried with traditional method together with 500 W bar type infrared lamp. After drying, sensory analyses of dried manti samples were performed. Based on the obtained data, sensory qualities (taste, aroma, mouth feel, appearance and overall preference parameters) of the manti samples that were tempered by water bath at 80 °C for 5 minutes and then dried with a 500 W bar type infrared lamp were statistically higher ( $p < 0.05$ ) than those of the conventional method and control groups without humidification. It was thus concluded that the sensory features of the manti might be increased by drying with humidification immediately after the production.

**Keywords :** Keywords: Manti, sensory quality, infrared lamp, traditional drying method, humidification

***Innovation in Traditional Foods***

***Abstract Reference : 356***

**NOVEL METHODS FOR SEAFOOD PROCESSING**

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Seafood consumption is associated with health benefits since they are not only rich in proteins with high biological value but also unsaturated essential fatty acids, minerals and vitamins. However, seafood is a very delicate product and deteriorates very quickly. Therefore, processing is necessary to assure the prolonged shelf life and safety of seafood. Novel technologies for preserving seafood have attracted the attention of many food manufacturers and scientists. This work updates knowledge of novel process technologies (High-Pressure Processing, Irradiation, Ultrasound, Pulsed Electric Field, Radio-Frequency Processing, Ohmic heating, Ultraviolet light) for seafood industry and highlights the quality of seafood treated with these novel technologies.

**Keywords :** seafood, novel technology, preservation, quality

***Innovation in Traditional Foods***

***Abstract Reference : 63***

**Usage of Chickpea Flour for the Production of Frozen Sourdough Bread**

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In this study, usage possibilities of chickpea flour due to its high nutritive properties were investigated in frozen sourdough bread making. Wheat flour was blended with chickpea flour at the level of 0%, 25% and 50% in the production of Type I sourdough. This sourdough was added in bread dough (30%) and determined the rheological properties, freezable water content (%) and bread making performance before and after frozen storage (-35°C, 28 days). According to dynamic rheological measurements, storage modulus (G') was not affected significantly by frozen storage in the samples with chickpea flour ( $p>0.05$ ). The freezable water content (%) was determined as 33% in bread prepared with wheat flour sourdough and as 25% in bread prepared with chickpea flour (25%) sourdough. Frozen storage decreased significantly the specific volume (mL/g) of the breads prepared with wheat flour sourdough ( $p<0.05$ ) while no significant effect was observed in the breads with wheat flour sourdough ( $p>0.05$ ). No significant effect of frozen storage was observed on the colour characteristic of breads. This study showed that addition of chickpea flour (25%) to sourdough should improve the rheological quality, the content of freezable water and texture properties of frozen sourdough bread.

**Keywords :** Frozen dough, sourdough, chickpea flour, bread quality



***Innovation in Traditional Foods***

***Abstract Reference : 359***

**Effect of Different Flour Mixtures and Protein Sources on Gluten Free Formulation of the Turkish Dessert Revani**

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Revani is a traditional dessert made from semolina and syrup, which is mostly consumed in Middle Eastern countries and in Turkey. However celiac patients cannot consume revani because semolina contains gluten. The purpose of this study was to optimize a gluten-free revani formulation using corn flour, rice flour, potato flour, corn starch and tapioca starch and the recipes were further developed with the supplementation of soy protein, pea protein and transglutaminase enzyme.

Twenty flour combinations were prepared and evaluated the hardness values using TA.XT2 Plus Texture Analyzer (SMS, UK). The flour type influenced hardness of gluten-free revani. Use of soy protein, pea protein and TG in a blend of corn flour and rice flour or in a blend of corn flour, potato flour and tapioca starch resulted in an increase in hardness. The combination of TG and soy protein was found more effective in enhancing the hardness of revani compared to soy protein alone. The results showed that the combined effect of TG and soy protein resulted in revani with ideal hardness properties.

**Keywords :** Gluten-free revani dessert, celiac disease, soy protein, pea protein, transglutaminase

***Innovation in Traditional Foods***

***Abstract Reference : 267***

**Determination of some properties of propolis extracts by FT-Raman Spectroscopy**

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Propolis is a product of honeybees collected from buds, leaves, bark, and exudates of several trees and plants. Propolis has been used in traditional medicine since ancient time at least 300 BC. It continues to be used worldwide as a folk medicine and functional food. A broad spectrum of biological activities for propolis have been discovered and investigated, such as anticancer, antioxidant, anti-inflammatory, antibiotic, antimicrobial, immunomodulatory, hepatoprotective properties and so on. Studies shows that the chemical components of propolis depend on various factors, like geographical origins, botanical species, harvest seasons and races of honeybees. It is very difficult to differentiate them by using the chromatographic methods such as high performance liquid chromatography (HPLC) and gas chromatography (GC) to determine the chemical components of propolis. Therefore, how to effectively discriminate these two mixtures is a problem to be solved urgently. In our research, raw propolis samples were collected from Kırklareli in Turkey and finely powdered using a blender. The powder was subjected to two different extraction process that using cold water ( +4°C) or heat treatment ( 70 °C). A rapid method for discriminating some chemical components was established by the Fourier transform – Raman spectroscopy (FT-IR) combined with GC analysis. Also we determined that difference of raw propolis and extracted propolis'. There was some differences from two of them that, raw propolis is a more complex substance than extracted propolis, so the absorbance-wavenumber figure of propolis has become more obscure. Moreover, when searching from library of the FT-Raman database at the extracted propolis' figure, we determined that almost same component with determined with GC.

**Keywords :** Propolis, Raman, Spectroscopy

***Innovation in Traditional Foods***

***Abstract Reference : 641***

**Different Sized Wheat Bran Fibers as Fat Mimetic in Biscuits: Its Effects on Dough Rheology and Biscuit Quality**

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The aim of this study is to investigate the effects of various particle sized and different amount of plant fibers as fat mimetic for biscuit formulations instead of biscuit fat. For this aim, fibers with different particle sizes were obtained from wheat bran and used instead of fat in biscuit formulations. The texture, rheology and quality analyses of low-fat biscuit (30%, 20% and 10% fat) were performed and compared with those of the full-fat control sample (40% fat).

Results showed that wheat bran fibers with bigger particle size (Long Fiber, LF) were more favorable in terms of textural properties of the dough and the quality parameters of biscuits while the fibers with lower particle size (Medium Fiber, MF and Small Fiber, SF) improved viscoelastic properties of dough similar to the control. Although the use of these fibers in the production of low-fat biscuits were suitable in terms of workability of dough samples, increasing fiber content and/or reducing fiber size resulted in having harder biscuit samples with lower spread ratio. This study showed that the texture of biscuit was greatly dependent on the texture of the biscuit dough.

**Keywords :** Fiber, Fat mimetic, Dough, Biscuit, Rheology

***Innovation in Traditional Foods***

***Abstract Reference : 645***

**Characteristics properties of oak propolis**

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Propolis is a resinous mixture that honey bees produce from resin of boughs, leafs and crusts of trees. It is used by honey bees for protect to their hives against to various hazards. Also propolis have several properties such as antioxidant, antiviral, antiinflammatory, antitumor activity. In this present study 4 different propolis samples that is collected from Kırklareli were examined to determine moisture, wax, balsam, total polyphenolic material and total flavanoid content. The moisture content of oak propolis is % 4.56 as same as other findings. Furthermore, propolis wax that is include various compounds like fatty acids, bee enzymes, found % 4.66 in our samples. Oak propolis samples which was obtained from oak forest in Kırklareli had high content of phenolic compounds and it can be used in the production of various traditional foods. However, further studies are required to clarify the phenolic composition and to elucidate their biological values of propolis.

**Keywords :** Propolis, Oak, Flavanoid, Wax, Balsam

***Innovation in Traditional Foods***

***Abstract Reference : 224***

**Physicochemical and Sensory Properties of Vacuum Fried Eggplant**

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Eggplant is a largely consumed vegetable in our country. The variety of eggplant dishes is one of the most important features of the Ottoman cuisine and is one of the first of our traditional meals. Well-known eggplant dishes are karnıyarık, karnıyarık, patlıcan kebabı, patlıcan oturtma, patlıcan kızartma, hünkârbeğendi and imam bayıldı. Vacuum frying, alternative to traditional frying, is a novel technology, which is performed at low temperature and pressure to improve the quality characteristics of food products. It was aimed that serving healthier eggplant dishes, which is prepared fried eggplant, encouraging the usage of vacuum frying, which is novel alternative method and preparing preservative-free open-eat eggplant fries. In the study, eggplants that are supplied from Gönen, Balıkesir and sunflower oil, which is procured from local market, were used. For vacuum frying, a prototype device developed by Öztiryakiler Madeni Eşya San. ve Tic. A.Ş. was used. For traditional frying 200 g eggplant was fried at 180 °C for 15 minutes 5 times; for vacuum same amount of sample was fried at 100 ±10 °C and -500 mbar pressure for 2,4,6,8 and 10 minutes. After frying, moisture %, oil %, texture, acrylamide, sensorial analysis and free acid % in oil, peroxide and polar substance value were conducted in eggplant. As a result of the examinations made, the values of acidity, peroxide and polarity of oil used in vacuum frying technology were found to be lower. In addition, the fat content of the fried eggplant is about 50% lower than the conventional method, whereas the acrylamide was not detected. As a result; while both the product and the oil were found to be healthier than the fried with the vacuum technology, it was more appreciated from the sensory and textural point of view.

**Keywords :**vacuum frying, eggplant, acrylamide, traditional frying

***Innovation in Traditional Foods***

***Abstract Reference : 292***

**Determination of Some Properties of Ayran Containing of Cranberry and St. Johns Wort Extracts**

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Today, various antimicrobial and antioxidative substances used to protect the physical, chemical and microbial properties of food can be exposed to various deterioration during storage. In addition to this, restrictions are imposed on the addition of food after the detection of the use of synthetic preservatives causing some diseases. Natural resources have been started to be investigated in food industry in order to prevent oxidation and degradation caused by microorganisms. In studies conducted for this purpose, antimicrobial and antioxidant effects of a high proportion of medicinal and aromatic plants were determined.

In this study, cornucopia juice and St. Johns wort extract were added and some physicochemical, microbiological and sensory properties were determined and compared. As a preliminary experiment, 1%, 2%, 3%, St. Johns wort extract and 1%, 2% and 3% cranberry juice were added to ayran. According to the findings obtained, dry matter values of ayran were determined as K (Control group) A (ayran added with 1% cranberry juice), B (ayran added with 2% cranberry juice), C (ayran added with 3% cranberry juice), D (ayran added with 1% St.Johns wort extract), E (ayran added with 2% St.Johns wort extract), F (ayran added with 3% St.Johns wort extract) respectively 7.462, 7.243, 7.607, 7.606, 7.471, 7.715, 7.7 ; the ash values were 1.102, 1.114, 1.113, 1.120, 1.122, 1.106, 1.107 and the acid values 25.6, 26, 26.6, 27, 24.8, 27, 28.2 (in terms of SH) of the salt values 3.51, 5.55, 5.26, 5.55, 4.38, 3.8, 3.8 water activity values were found as 0.957, 0.956, 0.955, 0.956, 0.957, 0.966, 0.967.

From the microbiological analysis, the total mesophyll group did not show any statistically significant differences. No improvement was observed in bacteria of the yeast and coliform group. Given the taste-smell and general acclaim scores, the samples containing no more than 1% of the St. Johns wort extract were liked. Thus, plants with rich contents of bioactive compounds were added to the products consumed frequently by people, and consumer taste was tried to be determined.

In the food industry, it is necessary to encourage the use of synthetic antioxidants in order to contribute to human health, supported by various researches in recent years, in which the use of antimicrobial agents is replaced by natural products.

**Keywords :** Cranberry, St. Johns Wort, drinking milk.

***Innovation in Traditional Foods***

***Abstract Reference : 140***

**TOTAL PHENOLIC CONTENT AND COLOR VALUES OF DRIED BROCCOLI**

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Broccoli (*Brassica oleracea*) is a winter vegetable which has nutritive value and beneficial health effects. Since the metabolic reactions of fresh broccoli shortens its shelf-life, different preservation techniques have been applied to extend it. In this study broccoli samples with an initial moisture content of 82.87% (wb) were dried. Microwave (90 W, 180 W, 270 W) and convective drying methods were used to dry samples. The total phenolic content and color values were determined in the dried samples. The phenolic contents were found as 8.92, 7.41 and 7.60 mg gallic acid/ g dry matter for fresh, convective dried and MW dried at 270 W broccoli samples, respectively. The total phenolic content of samples dried at 270 W was closest to fresh samples compared to other MW powers and convective drying. A similar result was observed for color values, too. L\*, a\* and b\* of samples were measured before and after drying in different conditions and microwave dried samples at 270 W were closest to fresh broccoli. As a conclusion, it can be declared that microwave drying can be considered as a promising technique for dried broccoli production, if the process conditions are optimized.

**Keywords :** Total phenolic content, color, broccoli, microwave drying

***Innovation in Traditional Foods***

***Abstract Reference : 613***

**SITUATION ASSESSMENT OF THE ELDERLY IN CYPRUS, FAMAGUSTA IN TERMS OF KEFIR, AIRAN AND MILK CONSUMPTION, BMI AND QUALITY OF LIFE**

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This study has been carried out to determine the association of kefir, airan and milk consumption, BMI (Body Mass Index) and quality of life of the elderly people who are 65 years and over.

It has been conducted with total 210 elderly volunteers, registered in Famagusta Municipality and living in Famagusta, Cyprus. Participants' eating habits, anthropometric measurements, food consumption over the last 24 hours and quality of life have been evaluated. Quality of life for elderly people was evaluated with the WHO-8 EUROHIS Quality of Life Questionnaire. SPSS 21.0 Statistical Package Program was used for statistical evaluation of data.

Male participants' kefir, airan and milk consumption was 5.7%, 32.4% and 13.3%, respectively. Female participants' kefir, airan and milk consumption was 3.8%, 24.8% and 25.7%, respectively. In addition, daily calcium intake was 860.85±467.31 mg for males and 725.00±385.84 for females. When compared with the Dietary Guidelines for Turkey, participants' daily dietary intake of calcium level was less than the suggested amounts (1200 mg). Average BMI was 29.81±4.68 kg/m<sup>2</sup> for male participants and 32.39±5.85 kg/m<sup>2</sup> for female participants. Total score of quality of life was 31.35±2.9 for males and 29.67±2.72 for females (p<0.05). There was no statistically significant correlation between the kefir, airan and milk consumption and calcium intake with BMI and quality of life (p>0.05). In addition, a statistically significant negative correlation was found between the total score of quality of life and BMI (p<0.05).

It was found that there was no statistically significant correlation between the kefir, airan and milk consumption with BMI and quality of life. In contrast, a statistically significant correlation was found between the total score of quality of life and BMI. Elderly people should be provided with nutritional education to acquire healthy eating habits and make changes to their lifestyle. Elderly people's quality of life should be increased by improving their nutritional status. In addition, they should be monitored regularly.

**Keywords :** Elderly, nutrition, quality of life



***Innovation in Traditional Foods***

***Abstract Reference : 233***

**Reduction of Sodium Content in Turkish Traditional Foods: Ezogelin Soup As an Example (Case Study)**

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Soups have a crucial importance in Turkish cuisine. Especially, some traditional soups such as ezogelin, tarhana, mercimek soups are inevitable for Turkish daily menu. However, due to high salt intake of Turkish person (18 g/daily), new strategies have to be developed for preparing salt-reduced food. To be able to achieve more sodium reduction, the partial replacement of sodium chloride (NaCl) by other salts and amino acids can be used as a possible method. In open literature, there are very few studies on this method. In this study, five different ezogelin soup formulations were prepared. Potassium chloride (KCl) (25-35%) and L-glutamic acid (5-15%) were used as salt replacers with combination of NaCl (60-100%). Some sensorial characteristics (saltiness, bitterness, sourness, astringent, umami taste, sweetness and overall acceptability) of soups was examined by means of sensory analysis. It was seen that the soup formulation (60% NaCl, 30% KCl and 10% L-glutamic acid) can be used to attain 40% sodium reduction in ezogelin soup without negatively affecting its palatability. The results are expected to be beneficial for development of low sodium alternative product for other type of foods.

**Keywords :** Sodium reduction, L-glutamic acid, Umami, KCl, Ezogelin soup

***Acknowledgments: This study was supported by Yaşar University Scientific Research Grant Scheme with project number BAP 058.***

***Innovation in Traditional Foods***

***Abstract Reference : 617***

**NUTRITION AND DIETETICS GRADE 1 STUDENTS AND THEIR CORRELATION WITH  
HELLIM CONSUMPTION, CALCIUM INTAKE AND BMI'S**

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The aim of this study is to evaluate the relationship between hellim consumption, calcium intake and body mass index (BMI's) of the first year students of the Department of Nutrition and Dietetics, Faculty of Health Sciences, Near East University.

96 individuals from the first year students of the Department of Nutrition and Dietetics participated in the study. Individual questionnaires were used. The anthropometric measurements were measured using a rigid grapevine and a portable scale. Hellim consumption was determined by taking '3 days food intake report'. The BMI values were grouped according to WHO classification. Food consumption records were calculated using the students version of the Nutrition Information System 7.2. In the analysis of the obtained data, the SPSS 18.0 Statistical Package Program was used and the significance level was accepted as 0.05.

According to the BMI classification values, 14.6% of the students were found to be thin, 74.0% normal, 9.4% mildly obese and 2.1% obese. The difference in the BMI classification values between the sexes was statistically insignificant ( $p>0.05$ ). Average daily hellim consumption of students was  $13.8 \pm 8.4$  grams. 100 grams of hellim contains 594.3 mg of calcium. When evaluating the sufficiency level of calcium intake according to the DRI, it was accepted as <67% insufficient, 67-133% adequate, and >133% excessive intake. When the sufficiency levels of calcium intake by individuals were examined, it was determined that 79.2% of the students were inadequate, 19.8% had sufficient level and 1% had excessive amount of calcium. The differences between the calcium intake of students ( $r=0.304$ ,  $p=0.03$ ) and hellim consumption ( $r=0.214$ ,  $p=0.036$ ) and BMI were found significant.

As a result of this study, there was a significant correlation between hellim consumption, calcium intake and BMI ( $p<0.05$ ). Calcium can bind to free fatty acids to form insoluble calcium soaps and cause fecal fatty acid uptake. By reducing the amount of fat stored in the body, the body weight of a person can be protected.

**Keywords :** Nutrition, Hellim Consumption, Calcium intake, BMI

***Innovation in Traditional Foods***

***Abstract Reference : 656***

**The use of edible films for preservation of kumquat**

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Kumquat (*Citrus japonica*) is a native fruit in Central China and it has become popular in other countries in last decades. While the fruit is eaten whole with its peel, it belongs to the same family with orange, lemon etc. Kumquat is rich in vitamins, minerals and phenolic compounds. However, it is more sensitive to the environmental conditions than other citrus fruits. In this study, the effect of edible film application on the textural properties kumquat fruits was investigated. Three different edible films were prepared using pectin, zein and gelatin as the main ingredient and the results were compared with the control sample analyzed without film application. The parameters namely; hardness (N), springiness, gumminess, chewiness and resilience were determined for all 4 sample groups. There is no statistical difference between the groups ( $P < 0.05$ ) but the highest hardness score was found for zein film and the lowest one was for the control as 5.82 and 3.99 N, respectively. The control sample showed lowest chewiness, gumminess and springiness scores as 148.8, 237.0 and 0.6, respectively. While there is no significant difference between control and the other groups, the further studies should be conducted with degustation and chemical analysis in order to present the advantages of the use of edible films for kumquat preservation.

**Keywords :** Kumquat, edible film, preservation

***Innovation in Traditional Foods***

***Abstract Reference : 620***

**INVESTIGATING THE EFFECT OF FORTIFICATION HAZELNUT MILK ON THE  
PHYSICOCHEMICAL, MICROBIOLOGICAL AND SENSORY PROPERTIES OF YOGHURT-LIKE  
PRODUCT**

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In this study, chemical, microbiological and sensory properties of yoghurt-like products made from hazelnut milk and hazelnut milk: cow milk mixture at a ratio of 1:3, 1:2, 1:1 (v/v) were investigated using cows' milk yoghurt as a control. For yoghurt production, hazelnut milk (12.41% total solid) and cows' milk (12.36% total solid) were standardized to 14.5 g/ 100 g with skimmed milk powder. The pH declined faster in sample made from hazelnut milk than those made from cows' milk or mixture; however the pH of yoghurt made from hazelnut milk was found to be more stable during storage. Replacement of cows' milk with hazelnut milk increased the water holding capacity and viscosity of yoghurt samples due to high protein content of hazelnut milk. While *S. thermophilus* counts did not show any difference, use of hazelnut milk in yoghurt production led to a decrease in the number of *L. bulgaricus* compared to the control. Adding hazelnut milk caused to increase malic acid while decreasing lactic acid content of yoghurt samples. Hazelnut milk yoghurt also contained a higher proportion of unsaturated fatty acids than saturated fatty acids as compared to control sample. Sensory evaluation revealed that using 3:1 concentration ratio (v/v, cow milk: hazelnut milk) was found the best ratio in view of appearance, flavor and overall acceptability. Based on the chemical properties and acceptance in the sensory analysis, this study could guide the dairy industry to use hazelnut milk obtained from hazelnut cake as a waste of hazelnut oil industry.

**Keywords :**By-products; Hazelnut milk; Physicochemical properties; Yoghurt.

**Acknowledgments :** The authors acknowledge financial support provided by Turkish Scientific and Technical Research Council (TUBITAK) for the project (Project Number: TOVAG 110174).

***Innovation in Traditional Foods***

***Abstract Reference : 76***

**AN INNOVATIVE NEW PRODUCT: CHOCOLOVE (ÇİKOLAŞK)**

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Dietary habits of the society have transformed in the forthcoming years. The production of innovative products has gained great importance considering the troubles in nourishment that are resulted from rapid population growth. Chocolate is a type of food that is appealing since it has a good taste, smell and appearance. Its production as one of the most important types of sugary products has become widespread and has begun to create its market 100 years later than Europe. In this study, we have created Chocolove (Chocolate of Delight) to produce an edible product that has no additives and high nutritional values. This innovative product is made by blending the tastes of milk chocolate and hazelnut which are happily consumed by both adults and children. Chocolove is a product that can be used in various fields with its high nutritional values. It attracts the consumers' attention with its nutritional features that derive from vanilla and hazelnut. Chocolove's production has begun in 2014 in Osmanlı Kahvecisi production facility. It was presented to consumers' taste in Turkey and in Cyprus. Chocolove is aimed to be used in the production of ice creams, waffles, cakes, cold drinks and breakfast food. Also, it is open for experimentation with new methods that will be developed. The purpose of this study is to provide general information about chocolate production and to tell Chocolove's (which is a chocolate product with hazelnut paste and milk) production story and point out its nutritional features.

**Keywords :**innovative, chocolate, product, nutrition

***Innovation in Traditional Foods***

***Abstract Reference : 328***

**Exopolysaccharide Production of *Lactobacillus plantarum* Strains Isolated from Tarhana Under Different Growth Conditions**

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Exopolysaccharides (EPS) are long chain molecules composed of branched sugar repeat units produced by certain lactic acid bacteria. Some strains of *Lactobacillus plantarum*, which constitute the main microflora of many fermented foods, have the ability to produce EPS. In this study, the effects of incubation temperature, duration, carbon source and medium pH on the EPS production of 6 *L. plantarum* strains isolated from tarhana was investigated in order to characterize EPS metabolism, increase EPS production level and modify EPS structures. The highest EPS production at 20 °C was found in PFC 310 strain (545 mg L<sup>-1</sup>), while the EPS production in PFC 308 and PFC 313 strains was not observed in this temperature. When the incubation temperature was raised to 37°C, the PFC 310 produced 852 mg L<sup>-1</sup> EPS. At pH 5 and 6, EPS production was higher at all *L. plantarum* strains except for PFC 309 that produced almost the same amount of EPS at all pH values tested. The presence of maltose stimulated eps production for PFC 310 and PFC 311 strain, where the similar effect was observed for PFC 313 with fructose. 48 h is required to reach the highest eps production at PFC 310 and 311 however 36 h enabled the highest EPS production at PFC 308, 312 and 313. In conclusion, *L. plantarum* strains were capable of producing different amounts of EPS under varying conditions and PFC 310-311 strains were the highest EPS producers among *L. plantarum* isolated from tarhana.

**Keywords :**Exopolysaccharide, Tarhana, *Lactobacillus plantarum*, Growth conditions

***Innovation in Traditional Foods***

***Abstract Reference : 341***

**The effects of addition of fish protein isolate on the nutritive value of microencapsulated anchovy fish oil (*Engraulis encrasicolus*)**

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Fish oils are rich in long-chain  $\omega$ 3-series fatty acids that have proven health-worthy, but are highly sensitive to lipid oxidation. Traditionally, they are used for healthy diets, and thus there is a growing the interest of consumers for these oils in industrial foods. However, the smell and taste of these oils limit their usage in foods. Microencapsulation technology is the most effective method for the solution of these problems. While there are reports that food proteins such as soy proteins, milk proteins and egg proteins can be used as coating agents in microencapsulation technology, research on fish proteins is highly inadequate. In this study, fish protein isolate extracted from underutilised fish species were used for coating material of anchovy oils and its nutritive value was investigated. For this purpose, Klunzinger's ponyfish (*Equulites klunzingeri*) which is a discard fish was caught by the staff of Fisheries Faculty University of Çukurova in Northeast Mediterranean Sea, and its protein was extracted by using pH shifting process. Microparticles were prepared with anchovy oil (*Engraulis encrasicolus*) as core material (10%), and as wall materials a ratio of 5% and 10% fish protein isolate (FPI) was used. Maltodextrin (DE:18:20) was added to both groups in a ratio of 10%. The emulsions were fed immediately into a Buchi Mini Spray Dryer (B-290, Switzerland). The inlet temperatures, feed rate and aspiration rate were maintained at 160 °C, 15 mL/min and 35 m<sup>3</sup>/h, respectively. The lipid, protein and moisture contents of anchovy oil microcapsules containing 5% FPI and 10% FPI were found as 43.76-43.09%, 4.34- 9.82% and 3.95-3.92%, respectively. The main amino acids in microcapsule samples were aspartic acid, glutamic acid, leucine and lysine which constituted in the range of 278-575 mg/100 g sample for microcapsules containing 5% FPI, and 797-1547 mg/100 g sample for microcapsules containing 10% FPI. As a result of this study, it can be concluded that the addition of fish protein isolate enhanced the nutritive value of microencapsulated fish oil. (This study was supported by Cukurova University with the project number FBA-2018-9626).

**Keywords :** Fish protein isolate, microencapsulation, fish oil, amino acid

**Acknowledgments :** This study was supported by Cukurova University with the project number FBA-2018-9626

***Innovation in Traditional Foods***

***Abstract Reference : 175***

**DEVELOPING A VACUUM COOKING EQUIPMENT PROTOTYPE TO PRODUCE TOMATO PASTE AND ITS COMPARISON WITH ATMOSPHERIC COOKING**

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Tomato paste is generally produced with vacuum evaporation at low temperature at industrial scale, however, in domestic conditions, it is obtained at atmospheric pressure and its quality characteristics are different from the industrially processed tomato paste. Vacuum evaporation applied at low-temperature has advantageous about short processing time, the reduced cooking oxygen environment and so better protection of the physical and nutritional properties. Recent years, usability and suitability of vacuum evaporation method at home conditions are investigated.

In this study, a vacuum cooking equipment prototype was designed to work in a wide range pressure by a vacuum pump and equipped with a mixer works in range of 0 to 50 Hz. A PT100 thermocouple was adapted to the system to monitor the temperature of product. This study was undertaken to determine optimum conditions of vacuum evaporation and compare the effect of vacuum and atmospheric evaporation processes on tomato paste. Vacuum evaporation applications were carried out according to Central Composite Rotatable Design (CCRD). At the optimization stage of the study, evaporation temperature (60-90°C) and time (70-110 min) were selected as the independent factors and their effects were investigated by the means of soluble solids content, a\*/b\* color values, dark speck, lycopene content and overall preference which is one of sensory evaluation criteria of tomato paste. Tomato paste was also produced at 100°C for 70, 80, 90 and 100 min.

The optimum vacuum evaporation condition was determined by targeting minimum dark speck, maximum lycopene content, maximum a\*/b\* value, 28% soluble solids content and maximum overall sensorial preference as 80.5°C of evaporation temperature and 98.9 min of evaporation time. The soluble solids content of tomato paste increased with increasing time, whereas a\*/b\* value decreased with increasing time both for vacuum and atmospheric evaporation. In addition, the counts of dark specks of paste were increased with increasing time and temperature, as expected. However, the lycopene content of vacuum evaporated tomato paste was higher than atmospheric ones at the same soluble solid content.

**Keywords :** Vacuum evaporation, tomato paste, lycopene, optimization, atmospheric evaporation



***Mediterranean Diet***

***Abstract Reference : 600***

**EVALUATION OF BİRİKİM KINDERGARTEN STUDENTS’ ADHERENCE TO  
MEDITERRANEAN DIET**

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**Aim:** The aim of this study is to determine the adherence to Mediterranean diet in pre-school children.

**Methods:** This is a cross-section and descriptive study. The population of this study was 42 pre-school students at Birikim Kindergarten. Their ages are between 3 and 6. Researchers created a survey form which determine general information, anthropometric measurements and Mediterranean Diet Quality Index (KIDMED index). We obtained all informations from students’ parents in a face to face conversation. We used folding rule to measure students’ height and upper middle arm circumference. Participants’ weights measured by electronic weighing machine which has 0.1 kg sensivity. Researchers used World Health Organization (WHO) – anthro and SPSS-18 to evaluate datas.

**Results:** %52,4 of participants were male and %47,6 were female. The mean weight of students was  $16.30 \pm 2.70$  kg (min. 11.20 kg, max. 22.40 kg). mean height was  $102.19 \pm 8.00$  cm (min. 88.00 cm, max. 118.00 cm) and mean upper middle arm circumference was  $16.95 \pm 1.48$  cm (min. 14.00 cm, max. 21.00 cm). According to percentiles %31 had malnutrition and %33.3 was very short. The mean score of KIDMED index was  $7.80 \pm 1.85$  point (min. 4.00 point, max. 11.00 point).  $7.81 \pm 1.62$  point (min. 5.00 point, max. 11 point) in males and  $7.80 \pm 2.11$  point (min. 4.00 point, max. 11.00 point) in females. When the results were examined in terms of gender, there wasn’t significant difference in score of KIDMED index ( $p>0.05$ ). According to KIDMED index %54.8 of participants had high, %45.2 had medium adaptation to Mediterranean diet.

**Conclusion:** These results show all children adhence to Mediterranean diet. This may be effective in preventing many diseases in adulthood. According to percentiles some of them have malnutrition (%31). Malnourished children need to be evaluated and treated. So policy should be developed in this direction.

**Keywords :** Mediterranean diet, KIDMED index, pre-school children

**Acknowledgments :** *We would like to thanks to Özge HULUSİAĞA who is school manager at Birikim Kindergarten.*

***Mediterranean Diet***

***Abstract Reference : 604***

**Determination of Healthy Eating Index and Body Mass Index for Women Aged 19-65 Living in TRNC**

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**Subjects:**To determine dietary quality differs between body mass index in womens.**Methods:**Our study was conducted on randomly selected 400 female subject aged 19-65 years. Questionnaire form was applied using on interview technique. Healthy Eating Index (HEI-2010) scores from 24-hours food consumption records were calculated to determine participants dietary qualities.**Results:**The mean HEI scores of our participants were found to be 62.2 (moderate dietary quality). Of the 400 participants, 19% were found to have low (<50 points) dietary qualities, 74.3% of middle (51-80 points) dietary qualities and 6.7% of them had good (> 80 points) dietary qualities. It was found that 4% of participants were weak, 41.3% were normal, 40.3% were mildly obese and 17.4% were obese BMI classes. According to the classification of HEI scores, it was determined that the average BMI values of individuals have shown table 1.**Discussion and Conclusion:**Recent studies have shown that chronic diseases and eating habits are closely related. The identification of dietary qualities of individuals is important in terms of prevention and / or delay of chronic diseases. The Healthy Eating Index is designed on the basis of healthy eating patterns such as the Mediterranean Diet and the DASH diet in order to provide a measure of the overall quality of the diet in order to measure how well the US is adapting to the recommended dietary patterns.Obesity is closely related to chronic diseases. BIA (Bioelectrical Impedance Analysis) and anthropometric measurements (BMI, waist circumference, waist/hip, waist / length ratio, etc.) are widely used in the detection of obesity. Studies have shown that unhealthy eating habits are the most important changeable risk factor contributing to the development of obesity. It has been shown that individuals with healthy eating habits have lower BMI values than those with unhealthy eating habits In our study, 52% of individuals with low dietary qualities were found to have a weak and normal BMI classification, and 48% had a mildly obese and obese BMI classification. There is a need for similar work to be carried out with more participants in order to clearly demonstrate the relationship between healthy eating index and body mass index.

**Keywords :** healthy eating index,body mass index, eating pattern.

## ***Mediterranean Diet***

### ***Abstract Reference : 606***

#### **Adherence to Mediterranean Diet and International Physical Activity Questionnaire (IPAQ) Scores of Nutrition and Dietetic Students in Near East University**

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#### **Background and Objectives:**

Adherence to the Mediterranean diet is associated significant improvements in health status. Healthy eating index is a indicator of diet quality. This study aimed to determine the adherence to Mediterranean diet and diet quality of first and third in Nutrition and Dietetics students at Near East University in North Cyprus.

#### **Methods:**

The study was conducted on 177 Nutrition and Dietetics students, aged 18 to 31 years. The nutritional status and adherence of Mediterranean Diet of individuals were determined by PREDIMED. General characteristics, anthropometrical measurements and physical activity (PA) levels (International Physical Activity Questionnaire Short Form- (IPAQ) of participants were also determined. Statistical analysis was performed with SPSS 18.

#### **Results:**

80.2% of participants was female and 19.8% was male. Mean age of participants was 20.33±1.72. 14.3% of participants were underweight, 73.6% was normal, 9.3% overweight and 2.9% was obese. There was significant difference between BMI and gender ( $p<0.05$ ). Females mean PREDIMED score was 6.25±2.59 and males score was 5.43±2.93. There was no istatistical significant between males and females ( $p>0.05$ ). 5.1% of participants had low adherence to Mediterranean diet. However 32.8% had moderate adherence and 62.1% had high adherence to Mediterranean diet. There was no significant diffirence between groups ( $p>0.05$ ). 60.5% was inactive, 26.0% minimally active and 13.6% active. There was no significant diffirence between groups ( $p>0.05$ ). According to gender there is no correlation between PREDIMED and IPAQ scores ( $r=-0.078$ ,  $p=0.304$ ).

#### **Conclusions:**

Mediterranean diet is considered one of the most healthy diets. It effective to prevent chronic diseases.

The finding indicate that most of nutrition and dietetics students had high adherence to Mediterranean diet. Education in this department had let to improve students diet quality.

**Keywords :** Mediterranean diet, IPAQ, university students

***Mediterranean Diet***

***Abstract Reference : 158***

**Dried Fig Jam**

Murat Reis Akkaya<sup>1</sup>, Erva Parıldı<sup>1</sup>, Osman Kola<sup>1</sup>

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Fig, one of the subtropical fruits, generally grows in the mild temperate zones. It grows especially in the countries where the Mediterranean climate is dominant. It can grow in all the regions of Turkey except for Central and Eastern Anatolia Regions. Fig is a valuable nutritional source and rich in carbohydrate, protein, vitamin and various minerals. Although the fruit is consumed as fresh, dried fig has gained popularity after because of being a healing source. It is consumed as appetizer and used for jam making.

The fig fruit is dried in order to preserve the fruit without any spoilage for a long time. Water content of the fruit decreases from 90% to 15% by drying. This process limits the activity of water in foods that can support the growth of microorganisms. The fig, dried at high temperatures in summer, can be stored and consumed in four seasons.

Big and tasty fig fruits grown in Çukurova region are spread on a wood surface or a clean fabric to dry with the aim of making jam. The fruits are generally harvested in the early morning. Before the drying process, the fruits are cut in half in order to make drying faster. So the fruits become ready to be dried and easily stored within 7-10 days. Spreading on a metal surface should be avoided in order to prevent burning and mould growth.

The fig jam, indigenous to Çukurova region, is made by mixing 1 kg dried fig, 1 kg sugar, 1 L water and few drops of lemon juice. The dried figs are chopped into small pieces about 1.5-2 cm<sup>2</sup>. Burned and darkened figs must be removed. The figs suitable for jam making are washed with tap water. Water and sugar are combined in a saucepan and the solution is boiled for 25-30 minutes. The chopped figs are placed in this thickened solution and the mixture is boiled for 15-20 minutes by gentle stirring. Finally lemon juice is added and mixed by stirring. The jam is left to cool down to room temperature. The cooled jam is transferred into the clean jars. This product is generally consumed in the winters. Dried fig jam, which is suitable for all meals, can be consumed directly or with butter.

**Keywords :** Dried fig, Jam, Jam making, Çukurova

***Mediterranean Diet***

***Abstract Referance : 161***

**Colocassia Plant Consumed as Food**

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Colocassia plant is grown in the counties of Mersin (Anamur and Bozyazı) and Antalya (Alanya and Gazipaşa) in Turkey and in Cyprus. Globally, it has wide production geography from Africa to Southeast Asia. It is estimated to be one of the first plant species grown by mankind. It is also known as Taro and Gölevez. One piece can be up to 2-3 kg. The world production of Colocassia is 5.7 million tons per year and the production in Turkey is about 1000 tons per year. The leaves of this plant, which attracted an attention especially in recent years with its high potassium content, contain plenty of vitamins and minerals. Colocassia leaves contain thiamine, riboflavin, iron, phosphorus, zinc, vitamin B6, vitamin C, niacin, potassium, copper and manganese. Colocassia's tuber includes high level of starch and fibre. It should not be consumed without cooking because of the high oxalic acid content. Colocassia is easily digestible. During digestion, it helps excretion of carcinogenic substances by adhering them. Colocassia plant can be consumed canned. It can also be consumed as chips by frying its tuber. Due to its high starch content, it can be used as flour. Dried and ground powder is used as food additive in bread production. Leaves can also be used for making stuffed grape leaves. The plant itself is also used as an ornamental plant. Colocassia tubers are more beneficial than potatoes. In recent years it has gained high popularity in large companies due to the fact that it is healthier than potato chips. When the colocassia is cooked, it gives a taste between potato and celery and it is quite tasty. Especially in our country and in Cyprus, it is cooked with beans or chickpeas with meat. The lemon must be brewed while cooking because it secretes mucilage like okra.

**Keywords :**Colocassia, Benefits of Colocassia, Taro, Gölevez, Mersin

***Mediterranean Diet***

***Abstract Reference : 162***

**Rock Samphire Plant Consumed as Food**

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The rock samphire plant is a member of the family of sedum, usually found in rocky crevices on the seashores or in sandy marshland. Rock samphire can be found on the Mediterranean and Black Sea coasts of Turkey and the southern shores of England and Ireland. However, especially in recent years it has been discovered that the plant has spread to northern Norway. Rock samphire likes sandy soil and exposure to sunlight. The flowers of this perennial plant, reaching up to 10-30 cm in length, are bunch-shaped and yellow in colour. Despite growing in all seasons, it is rarely found in winter. For this reason, it is collected between June and October.

Rock samphire leaves contain high amounts of vitamin C and are useful for scorbutic patients. This plant also contains zinc, iron, magnesium and iodine. It is used in the treatment of goitre due to its high iodine content. In addition, rock samphire leaves are very effective on losing weight and treatment of obesity. It is also used in the cosmetic industry because of the fatty acids, essential oils and aromatic components. It is usually consumed fresh or pickled. It is appetizing and consumed as a side-dish in the Mediterranean region. It has also an externally used as an ointment. The green parts are crushed and made into a mush and then mixed with olive oil to obtain ointment. This ointment is used in the treatment of skin inflammation, eczema and callus. Rock samphire can also be used in the treatment of stomach aches and ulcers. The tea prepared from the rock samphire exhibits beneficial effects on the liver.

**Keywords :** Rock samphire, Benefits of rock samphire, Vitamin C, Health effects

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 186***

**The Effect of Exopolysaccharide Producer *Leuconostoc mesenteroides* PFC66 on the Quality Characteristics of Tarhana**

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Tarhana is a traditional fermented food that is consumed favorably due to its nutritive value. Exopolysaccharides (EPS) produced by lactic acid bacteria (LAB) are an important metabolite with a multifunctional function because of both the positive effects on human health and the improvement ability of the structural and textural properties of foods. In this study, the aim was to develop the rheological and functional properties of tarhana by using EPS producer *Leuconostoc mesenteroides* PFC66 strain in the production of tarhana. After preparing the tarhana dough, it was separated into two groups that one was inoculated with the EPS producer PFC66 strain as  $2 \times 10^7$  CFU/g while the other was used as control without inoculation. At the end of fermentation at 25°C for 5 days, in tarhana dough inoculated with PFC66 and control, the LAB count was  $8 \times 10^8$  and  $7,1 \times 10^8$  CFU/g, the TAMB count was  $7.7 \times 10^8$  and  $9.2 \times 10^8$  CFU/g and the yeast and mold count was  $2 \times 10^3$  and  $1.4 \times 10^4$  CFU/g respectively. The pH values of the same dough groups at the end of fermentation were determined as 3.81 and 3.79, and the acidity level in 67% ethyl alcohol was 15.55 and 18.15, respectively. After fermentation, tarhana dough were dried to below 15% moisture content. Then, the consistency coefficients at 50, 60 and 70°C of the soups prepared from the dough added with the EPS producer were measured as 21.417, 17.331 and 10.506 k, Pa.s, respectively. However, the control doughs showed 9.6315, 8.4928 and 4.2923 k, Pa.s. Accordingly, the consistency coefficient of the tarhana produced with the EPS producer was 3 fold higher than that of the control. As a conclusion, it was understood that EPS producer *L. mesenteroides* PFC66 has significant contribution to the rheological properties of tarhana and has a functional starter culture characteristic for tarhana production.

**Keywords :** Tarhana, exopolysaccharide, lactic acid bacteria, viscosity, quality

**Acknowledgments :** *This project was supported by the scientific research unit of Pamukkale University with the number of 296FEBE045*

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 635***

**EFFECT OF GAMMA IRRADIATION ON PROPERTIES OF TRADITIONAL FERMENTED SAUSAGES**

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This study was investigated effect of gamma irradiation in different dose (0, 2, 4, 6 kGy) on microbial and chemical quality of traditional fermented sausages. Fermented sausages are selected by random sampling method belonging to 10 different national brands. According to our study the effect irradiation dose of 6 kGy on protein ratio and pH values of samples was statistically insignificant ( $p>0.05$ ). As a result of increase in irradiation dose, L value (brightness) increased a (redness) and b (yellowness) values decreased. Changes in fatty acid composition of samples irradiated at 6 kGy were small but statistically significant than control group ( $p<0.05$ ). As irradiation dose increased were observed that trans fatty acid content of samples were increased while ratio of its polyunsaturated fatty acids decreased. It was determined that pathogenic bacteria (*Escherichia coli*, *Staphylococcus aureus*) were inhibited by a maximum irradiation dose of 4 kGy. In our study, yeast and molds were been the most resistant microorganism group to the irradiation doses and they are followed by lactic acid bacteria.

**Keywords :** Fermented sausage, gamma irradiation, microbiological properties, composition of fatty acid



***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 358***

**SOME PHYSICAL CHANGES OF TRADITIONAL BISCUIT DOUGH AFTER MODIFIED  
ATMOSPHERE PACKAGING AND SHORT-TERM STORAGE**

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Cereal derived products are an important part of a balanced diet, especially biscuits are one of the most consumed bakery products in bakery products in Turkey as well as in the World. Traditionally biscuits are produced by using wheat flour, fat, sugar, water and baking powder. Fat is an essential ingredients performs shortening and textural functions in biscuits. This high level of fat in biscuit formulation may cause oxidative damages by relative oxygen species and oxidation may affect the texture of products. In many studies, it is determined that packaging foods in CO<sub>2</sub> rich atmosphere delays the deterioration which limits the shelf life initiates by lipid oxidation.

In order to produce desired final products can be possible by using suitable raw materials. Packaging biscuits in modified atmosphere is one way to minimise these problems while at the same time extending their shelf life. In this study, traditional biscuit dough has been packaged in CO<sub>2</sub> rich atmosphere (70%:30% CO<sub>2</sub>:N<sub>2</sub>) and stored for 6 days. Tension values and compressibility of the dough samples were monitored in CT3-4500 Brookfield Texture Analyzer, also the color values were determined by using Hunter *Lab* colorimeter after 2, 4 and 6 days throughout room temperature.

It was found that compressibility of the all dough samples (packaged in control atmosphere (air) and modified atmosphere) were increased, however the increasing rate of the air packages were higher than the modified atmosphere packages. While tension values of the air packages were increased in time, modified atmosphere packages had no significant difference than the control dough. In the color analyses, it was determined that *L*, *a* and *b* values of all the samples were decreased in storage time. Besides, it was found that *L*, *a* and *b* values of the samples packaged in modified atmosphere were lower than the samples packaged in air atmosphere. It is considered that absence of O<sub>2</sub> at the inner atmosphere may causes increasing in darkness of the biscuit dough.

**Keywords** :biscuit, dough, modified atmosphere packaging

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 54***

**Optimization of Thermosonication Conditions in Continuous System for Increasing Shelf Life of Salgam Juice**

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Thermal treatment applying during pasteurization causes significant deterioration of flavor, color and nutritional quality of the fermented product. In recent years, trend in non-thermal process have increased to preserve nutritional and sensory qualities of the fermented foods. The ultrasonic pasteurization of such foods is an alternative technique that allows obtaining the required levels of microbial inactivation at much lower temperatures. For this purpose, ultrasonic pasteurization was applied to reduce microbial load at lower temperature. Response Surface Methodology (RSM) and Box-Behnken design was used to optimize ultrasonic pasteurization parameters namely, flow rate, temperature and ultrasound (US) intensity.

Total mold and yeast count selected as a response. Total yeast and mold was not detected at the highest ultrasonic intensity (400 W) and lowest temperature (56°C). The yeasts were not detected in the sample subjected to the lowest temperature condition (T: 56°C, f: 200 mL/min and UI: 100%) was determined as (R2: 1.000). According to the results, in total yeast-mold and lactic acid bacteria counts, a total inactivation was observed in all treatment conditions and about 5-6 log cfu/mL reduction in the total number of mesophilic-aerobic bacteria was observed. In addition, no coliform bacteria were found in the samples <1 log cfu/mL). This study suggested that the thermosonication process could be considered as an alternative technique to reduce microbial load to desired level at a lower temperature degree in Salgam juice.

**Keywords :** Thermosonication, Salgam juice, Microbial disinfection, Continuous flow system, Response surface method

***Modernisation and Industrilization of Traditional Food Production Processes***

***Abstract Referance : 496***

**TRADITIONAL FOODS AND INDUSTRIAL PRODUCTION**

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In recent years, together with slow food movement, trends towards locally produced traditional food products are increased. In this context, in EU a labeling system was established as “PDO, Protected Designation of Origin; PGI, Protected Geographical Indication; TSG, (Traditional Specialty Guaranteed) to protect product names and quality to recognized know-how. These labels link the products to their geographic origin and to a specific production process (mainly traditional). That kind of products are mainly known with typical quality characteristics (e.g. taste, structure). Production of food products in local and small facilities causes lack of homogenization and standardization since the manufacturing process differ between each one. Moreover, small quantities of production may result with higher costs and limited the consumption in the market. On the other hand, it must be faced to the high demand of a great amount of nutritive, cheap and safe foods. Production and distribution of food stuffs by big industrial and commercial corporations that are looking for consumer satisfaction, may supply homogenization and standardization for the products. Therefore, industrial production and distribution may play a critical role to make easy the access of the consumers to traditional foods which are produced in safe, having a protected quality and taste.

**Keywords :** traditional production, industrial production, standard quality

***Other Traditional Foods***

***Abstract Reference : 515***

**A Traditional Taste in Aydın: Çıntar and İncir Göbelek Mushroom**

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Mushrooms are one of favorite foods for their taste and flavor. Mushrooms that grow spontaneously in the soil are consumed as food in various cultures. Natural fungi are valuable foods because of the low fat content as well as the high protein, fiber, minerals and vitamins they contain and they make important contributions to human nutrition. It is among the indispensable tastes of Aydın, which is the fungus of figs and fig bum mushrooms. The çıntar is belonging to the family of Russulaceae is also called cıntar and kanlıca . İncir göbelek mushroom is a mushroom variety belonging to Morchellaceae family and is named with various names such as kuzu göbeği, Dobalak, Dolaman. Especially after spring rains, these two types of mushrooms are food, as well as economic value. The most important feature that distinguishes from other mushrooms is that it grows under the fig tree in Aydın. Because of this, fig has taken its name. Both mushroom varieties are cooked to the maximum as well as baked. This article gives information about the mushrooms çıntar and incir göbelek , and explains the nutritional value and consumption patterns of these two kinds mushrooms.

**Keywords :** Çıntar, İncir göbelek mushrooms, traditional foods

### *Other Traditional Foods*

#### **Abstract Reference : 184**

### **AROMATIC VOLATILE COMPOUNDS (AVCs) IN HEADSPACE OF SESAME SEEDS AND THEIR SESAME PASTES (TAHINI)**

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Sesame paste (Tahini), a traditional sesame seed (*Sesamum indicum*) product in Turkey, is produced by milling of dehulled and roasted sesame seeds. It is usually consumed by blending with grape molasses and also used for halvah (Turkish sweet)-making. Sesame can be grown locally in Turkey or imported. Generally, sesame seeds grown in Turkey are dark/brown colored and used for dark tahini-making. Imported sesame seeds are lighter/white colored and used for white tahini-making. The object of this study was to determine the aromatic volatile compounds (AVCs) of both white and brown sesame seeds and their pastes, produced on an industrial scale. The AVCs were analyzed by gas chromatography-mass spectrometry (GC-MS) using solid phase micro-extraction (SPME) technique. A total of 16 and 46 AVCs were identified in sesame seeds and their pastes, respectively. The chemical groups identified in white and brown sesame seeds were alcohols (approximately 42%-66%, respectively), ketones (10%-22%), terpenes (23%-1.2%), esters (8%-4%), aldehydes (6%-4%), phenolic compounds (6%-3%) and furans (5%-0%). The common AVCs were ethanol (13-38%, respectively), 3-methyl-butanol (2.2-16.4%), ocimene (15.6-0.1%), acetoin (4.4-19.5%), 1-hexanol (6.6-1.1%), benzene (4.2-2.0%), 1,3-dihydroxy-6-methoxy-1,2,3,4-tetrahydroquinolin-2-one (5.9-2.5%), 4-hydroxymandelic acid ethyl ester (7.8-3.7%), 1-octanol (5.5-0.3%),  $\alpha$ -bergamotene (7.7-1.2%), (E,E)-2,4-decadienal (6.2-3.6%), 2-phenylethanol (13.3-9.1%) and 2,3-dihydrobenzofuran (4.5-0%), accounted for approximately 97% of total AVCs. The AVC groups including alkanes, lactones, acids, heterocyclic nitrogenous compounds, pyrazine and pyrroles identified in sesame pastes only. The majority of AVCs in white and brown tahini constituted 2,5-dimethylpyrazine (25-27%, respectively), benzaldehyde (8-7%), ocimene (7-3%), phenylacetaldehyde (7-2%), (E,E)-2,4-decadienal (6-4%) and 2-ethyl-5-methylpyrazine (6-6%), 2-methylpyrazine (6-9%), 2-furanmethanol (3-5%), 2,3,5-trimethylpyrazine (6-4.0%), which accounted for 73% and 67% of total AVCs, respectively. The brown tahini had the higher percentages of pyrazine, furan, lactone, alcohols and ketones, and also the lower percentages of aldehydes and terpenes than those in the white tahini. These differences may be due to the sesame seed variety and the tahini-making procedure. In conclusion, the sesame seeds are markedly different from their sesame pastes, in terms of the profiles and proportions of AVCs. It is well-known that the major compounds identified in the sesame pastes are the final products of Maillard reaction as a result of the heat-treatment severity.

**Keywords :** Sesame seed, Sesame paste, Volatile compounds

***Other Traditional Foods***

***Abstract Reference : 78***

**A Traditional Meal in Anatolia: “EBEGÜMECİ”**

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Anatolia's fertile lands create the wealth of the Anatolia cuisine, the main reason is a wealth of cuisine culture since ancient times and influenced from different cuisine. Anatolia has a rich vegetation due to its fertile lands and ebeğümeci (*Malva neglecta Wallr.*) is a local kind of these plants. Ebeğümeci is usable as folk medicine. The composition and properties of ebeğümeci plant should therefore be well characterized in order to shed a light on the healthful benefits of this plant. Ebeğümeci is one of the locally grown plants that are not cultured but is widely consumed in their daily meals by Turkish people. The air dried plant parts or fresh plant parts are used in preparation. Especially its meal very delicious and nutritious. Unfortunately ebeğümeci meal which has been slowly forgotten because of uncooked very often and gave place to unhealthy artificial products nowadays. In this review focused on ebeğümeci plant characteristics, human health benefits and introducing local consumption ways. Anatolia's fertile lands create the wealth of the Anatolia cuisine, the main reason is a wealth of cuisine culture since ancient times and influenced from different cuisine. Anatolia has a rich vegetation due to its fertile lands and ebeğümeci (*Malva neglecta Wallr.*) is a local kind of these plants. Ebeğümeci is usable as folk medicine. The composition and properties of ebeğümeci plant should therefore be well characterized in order to shed a light on the healthful benefits of this plant. Ebeğümeci is one of the locally grown plants that are not cultured but is widely consumed in their daily meals by Turkish people. The air dried plant parts or fresh plant parts are used in preparation. Especially its meal very delicious and nutritious. Unfortunately ebeğümeci meal which has been slowly forgotten because of uncooked very often and gave place to unhealthy artificial products nowadays. In this review focused on ebeğümeci plant characteristics, human health benefits and introducing local consumption ways.

**Keywords :** Ebeğümeci, medicinal and aromatic plant, nutrition

***Other Traditional Foods***

***Abstract Reference : 188***

**ÇAKALLI MENEMEN (A Traditional Turkish Dish)**

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The “Çakallı” district is a province of Samsun, which is located on the most important route linking the Central and Eastern Black Sea Region to Central Anatolia and is in the transit area which is as important as the antiquity. The “Çakallı Menemen” was first introduced 60 years ago in the rest houses of this region and consumed by passengers favorably. Since then it has become one of the palate tastes of Turkey today.

Menemen is a favorite Turkish dish. However “Çakallı Menemen” is different from others prepared in other regions of Turkey and requires special ingenuity at its production. The most important features that differentiates the “Çakallı Menemen” are preparing without using the onion but adding local butter and the egg yolk.

In order to obtain the desired consistency and taste in the production of “Çakallı Menemen”, it is essential to select proper raw materials, to cook as its technique. In this sense, the set of the baking time, the consistency of the ingredients, the homogeneous mixing and the baking duration which is 5-7 minutes are all important parameters to be considered to get on a desired “Çakallı Menemen”.

The receipt of “Çakallı Menemen” is as follow; 230 g tomatoes, 50 g butter, 35 g kasar cheese, 10 g fresh green pepper, 3 g salt, 3 g red scaly pepper, 3 g red powder pepper and 2 egg yolks. The chemical analysis showed that its average contents was 6.76% protein, 67.26% moisture, 11.28% fat, 1.50% ash, 0.27% acid and the pH was 5.46. It can be concluded that “Çakallı Menemen”, which is currently produced 2500 servings per day in a specific geographical region and consumed delightfully, has a great economical potential.

**Keywords :** Çakallı menemen, cooking technic, properties

***Acknowledgments :*** *This work was supported by the Samsun Commodity Exchange (Turkey).*

***Other Traditional Foods***

***Abstract Reference : 633***

**A Traditional Snack Food – Lupine (Termiye / Tirmis)**

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Turkish nutrition culture varies according to several factors such as climatic conditions, soil structure, socioeconomic structure. This difference not only manifest itself in dishes but also in snacks consumed as appetizers at the same time. Hackberry, roasted wheat, lupine are examples of local snacks. Lupine known as Tirmis in Antalya district and Termiye around Konya and Isparta is a kind of wet snack belong to Mediterrian countries. In Turkey lupine (*Lupinus albus* L.) is known as various names like; bitter fava bean, wild fava bean, infidel fava bean, wolf fava bean, corn fava bean, Jewish fava bean and mostly termiye/tirmis. Since the grains are bitter, they are sweetened by boiling and keeping in the water and consumed by salting. Boiled lupine is sold in streets by peddlers called as Tirmişçi in Antalya and around while it is sold as Termiye in bazaars in Konya and around. Having 2-3 times more protein than cereals, the lupine is also rich in vitamins, minerals, calcium and iron. Due to the high content of protein, minerals and vitamins, the importance of lupine is gradually increasing. By the reason of the consumers tendency on highly bioavailable food, researches on the possibilities of using the lupine in functional food production have accelerated. In this study, the researches on nutrient content of the lupine, a local snack, and possibilities of usage in the food sector have been reviewed.

**Keywords :** termiye, tirmis, snack



### ***Other Traditional Foods***

#### ***Abstract Reference : 350***

#### **Problems with Homemade Paste of Tomato and Red Pepper and Suggested Solutions**

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The paste is a concentrated product that obtained by chopping, purifying and evaporation processes, respectively. With its history of ages, homemade paste productions have been conducted. Families have been produced their pastes from tomato and/or red pepper based on annual needs. The principle of the production is to make stable products by purifying and intensification (6 hours for boiling – 10 days for sun-drying). People wait for increasing of maturity of fruits for purifying them. Although it looks like more yielded paste, its brix decreases due to some enzymatical and chemical reactions. Homemade product consuming results health problems, too. However, due to its little use and processing in oil at 180°C, healthy risks partially appear. Consequently, people consume much riskier homemade products than industrial and healthier products. Besides, there will not important changes based on nutritional values by daily raw material and daily processing.

#### **Negativity of homemade paste production**

- Inadequate hygiene and control.
- Non-sterile plastic bags/bins usage for storing chopped fruits.
- By natural intensification ways, contamination of air, dust, microbial risks.
- HMF forming during intensification
- The insufficient thermal process to eliminate *Clostridium botulinum* spores.
- Uncontrolled and randomly salt addition.
- Non-sterile glass, plastic or can jar for filling paste.
- Aflatoxin forming, pesticide risks.

Especially in pepper paste production, peppers are milled in the casual and portable pepper milling machines on the streets.

- Thus, the machines could already have a microbial load by the pre-milled product residues. Moreover, the oil and other contaminants may come from the engine or the old and rusted machinery.
- Above all, the cost of homemade production is higher than the industrial's. However, the labor is not considered as a cost, so it can be ignored.

Traditional homemade paste production has a tendency to decrease because productions are carried out by only older producers, and the new generation does not intend to learn this valuable heritage. On the other hand, organic production is being a novel and growing trade area. Thus, it is necessary for the public to raise awareness and control of homemade paste producers.

**Keywords :** Homemade, tomato paste, pepper paste, health risks, public awareness

***Other Traditional Foods***

***Abstract Referance : 197***

**ŞİLOFTA**

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Traditional foods carry a great cultural, social and nutritional importance among indigenous people. With the consumption of traditional foods, one can supply a high intake of vitamins, minerals and proteins. Şilofta is one of the traditional foods, peculiar to Antalya, Turkey. It traditionally contains erişte (Turkish egg noddle), walnut, sesame, cinnamon, ground cinnamon, clove, granulated sugar and honey. For preparing şilofta, at first erişte must be made. For this purpose, the dough ingredients are mixed and kneaded until an appropriate dough is obtained. This dough is divided into 3-4 parts and let rest for about half an hour. Then the dough is rolled into circle about 2-3 mm thick by using a rolling pin and let dry. After that, this circle dough is cut into 3-4 cm wide strips. Those strips are stacked and cut horizontally into stick forms. In this way, erişte is ready to prepare şilofta. Some water is put in a pot and brought to a boil. Erişte, cinnamon and clove is put in the boiling water and stirred gently. After a while, granulated sugar and honey is added to this mixture and continued to boil. Then it is removed from the heat and filled dessert bowls. Before serving, roasted sesame and ground cinnamon is added without mixing. Finally, the melted butter is poured over the soup. It is generally consumed warm. Şilofta is mostly known as a galactagogue soup for puerperants. It is very suitable for consuming right after the breakfast.

**Keywords :** Şilofta, Erişte, Traditional food, Soup, Dessert

***Other Traditional Foods***

***Abstract Reference : 636***

**Pepper Pickle with Milk (Soka)**

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Pickle peppers with milk is a natural dairy product, that is traditionally produced in Kırklareli Province of Trakya Region. Although pepper pickle with milk is a forgotten value of traditional foods, it has begun to be reproduced today. It is known as ‘Soka’, ‘hatça katığı’, ‘katık’ and ‘ekşimikli biber’ in Trakya Region. Soka is a fermented milk product that is more dense and tangy taste than yogurt. It is made with added pre-sliced and salted pepper, ‘ekşimik’ (seems like cottage cheese) or broken cheese and rennet in goat, cow and mixed milk (cow + goat milk) that are pasteurized and cooled. After fermentation for 1-2 day in room temperature its whey is filtered and then soka is stored in fridge 10 to 15 days to get ready to consumption. This local product is used in breakfast food, appetizers and pastries. It is a precious food that can easily be found in the food industry due to its cheap production and high nutritional value.

**Keywords :** Dairy product, Pepper Pickle with Milk, Soka

***Other Traditional Foods***

***Abstract Reference : 89***

**Pickle Production Using Organic Kımı Plant and Whey**

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Effects of fortification with Kımı plants and whey produced from Çeçil cheese on the chemical, microbial and sensory properties of Kımı pickle samples during storage time (20<sup>th</sup> and 40<sup>th</sup> days) were investigated in the study. Differences in microbiological and chemical changes were found to be statistically significant ( $P < 0.05$ ) during storage period. Whey added Kımı pickles containing statistically higher lactic acid bacteria counts than the control samples. Protein and dry matter rates of whey added Kımı pickle samples were also found to be higher than the control groups. According to the results of sensory analysis, control and 10% whey added samples were preferred by the panellists during ripening more than the others. The results of present study may be important both whey can be presented as one of the different evaluation possibilities and Kımı plant, a wild plant, can be opportunity in terms of introduce. The last emphasis may be on lactic acid fermentation as a method of preserving food a good solution for reducing the use of chemical preservatives in fermented vegetables.

**Keywords :** organic Kımı plant, whey, pickle production

***Other Traditional Foods***

***Abstract Reference : 558***

**A General Research on Traditional Food in Bursa**

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Today there is an increased interest in consuming of organic and traditional products which are ecologically characterized, minimally processed and containing limited additives. Traditional foods are products that are famous for their raw materials or production methods and reflect their traditions and cultures. Traditional foods are based on their natural characteristics and the skills, know-how and techniques used for their production. As the first capital of the Ottoman Empire, Bursa is very rich in terms of cultural heritage and traditional cuisine. Based on its climate and geography convenient for agriculture, many vegetables and fruit varieties could be cultivated. For this reason, the city has the plenty of traditional foods which contribute its heritage. Bursa Kebabı, peach, Karacabey onion, chestnut candy, angelica jam, Kemalpaşa Tatlısı, tahinli pide, cantic, pideli köfte can be given example as a traditional food of Bursa region. Gemlik zeytini and İnegöl Köfte are the traditional products of Bursa with geographical indication. In this presentation, general characteristics, raw materials and production methods, nutrients and energy values of traditional products of Bursa will be discussed in detail.

**Keywords :** Traditional foods, geographical indication, nutrition value, Bursa, Bursa traditional cuisine

***Other Traditional Foods***

***Abstract Referance : 648***

**Wild Pear (Ahlat) Pickles**

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Wild pear (*Pyrus eleagnifolia*) is a naturally grown species and its edible small fruits are consumed fresh and pickle by peoples and are called “Ahlat” in Turkey. Wild pear pickles is one of the traditional foods known locally and only home production. Wild pear fruit samples were collected from the local populations which naturally grown in Büyükmandıra town affiliated to Kırklareli/Babaeski.

Unripe, hard wild pears are washed with plenty of water. Water is drained and the surface of drained wild pears is strached with a knife. The jars to be used are determined according to the amount of wild pears. The jars is filled with wild pears to the half of jar. Water is then added. The cover of the jar is closed. It is removed in a cool and sunless place. The jar opens regularly. The gas in the jar is removed. In 7-10 days, wild pears pickles will be ready.

On the pickle sample produced within the scope of our work, the average titration acidity value, total phenolic, total tannin, total flavonoid content and DPPH free radical scavenging capacity of wild pear pickles were determined as 7,4 g/L (lactic acid equivalent); 260 mg GAE/L; 297 mg TAE/L; 143 mg CE/L and 0,3 µmol trolox/ml, respectively

**Keywords :** Wild pear , Ahlat, total phenolic, total flavonoid

***Other Traditional Foods***

***Abstract Reference : 97***

**A Traditional Turkish Beverage Boza: Rheological Characterization**

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<sup>1</sup>Dokuz Eylül University, Efes Vocational School, Catering Services Program

In many Mid – Asian, Middle East and African countries, consumption of lactic acid fermented foods are common. Boza is a highly viscous traditional fermented Turkish beverage; made from cereals. It has a sweet – sour and bread – like taste. The scientific studies indicate that boza is extremely healthy and nourishing with its lactic acid, protein, carbohydrate, fiber and vitamin content but its production is still a traditional family art. Different raw materials at varying concentrations and different fermentation processes are normally used in boza production therefore its quality can vary a lot. However, there is a growing interest in producing boza on a large scale which increases the importance of proper characterization of the product. With this scope flow behavior is an indirect measure of product consistency and quality hence it is crucial to product acceptability. Rheology has many applications in the field of food acceptability, food processing and handling, and the relationship between consumer preferences and rheological properties of foods (psychorheology). Therefore, it is necessary to have theoretical knowledge as related to rheological aspects.

With this perspective in this study, rheological properties of boza at 10, 20, 30, 40, 60 and 80°C were investigated with a Searle rotational viscometer (HAAKE Viscotester 550, Thermo, Germany) by the use of Power Law equation and parameters were calculated. It was observed that boza showed Non – Newtonian pseudoplastic flow characteristics. Flow behavior index and consistency index ranged between 0.5038 - 0.5737 and 1.1246 - 3.6099 Pa.s<sup>n</sup> respectively. These data can serve useful information in process design and control as well as quality control, and sensory evaluation of the product.

**Keywords :** Boza, Rheology, Power Law Model, Traditional

***Acknowledgments :*** The authors acknowledge Prof.Dr. Sevcan Ünlütürk from İzmir Institute of Technology for the use of HAAKE Viscotester 550, Thermo, Germany.

***Other Traditional Foods***

***Abstract Referance : 64***

**Assessment of Ecological Agriculture Possibilities of Bursa Province by SWOT Analysis**

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Ecological agriculture, nowadays contributing to sustainable agriculture, is seen as one of the options to solve the problems created by traditional agriculture. Starting from the 1930s, ecological agriculture, which has developed in different countries and different sizes, has gained commercial size in the 1980s. Reflection of development to our country in 1985-86. The exports are mainly dried grapes, dried figs and dried fruits. Today, approximately 80 million hectares of ecological farming in the world, the number of producers is approximately 2 million, ecological product market has reached the level of 72 billion dollars. Bursa Province has an important place in the whole country in terms of the developments it has shown in recent years in the production of ecological agriculture. In 2016, a field farming activity of 5334 decares has been carried out by 167 farmers in Bursa. In Bursa, especially in the mountain regions, there are mostly organic arable land, and intensive studies are continuing for the development of organic agriculture.

**Keywords :** Bursa, ecological agriculture, SWOT

***Acknowledgments :*** *Ecological agriculture has a important place in local economy. It's development is increasing every year.*



***Other Traditional Foods***

***Abstract Reference : 653***

**Traditional Foods and street foods**

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The food culture of a region consists of food, beverage types and habits that are specific to the region. An integral part of the eating culture of a region is the street food that surrounds it. Street food is an inseparable part of the kitchen and eating and drinking cultures of undeveloped, developing and even developed countries. Street food is usually made up of palate flavors, and the region is shaped and developed according to the eating and drinking culture. Street food is generally consumed in a hurry and informal environment; it provides more opportunities for interpersonal communication and social sharing, depending on where they are indoors and where food is consumed. The consumption of street tastes in this way enables tourists to have the opportunity to get acquainted with local delicacies and culinary cultures of the region as well as to get in touch with the people of the region, to observe the cultures of the region, to live and to be a part of the region culturally. For this reason, street food is becoming more and more important as a new instrument in the diversification and development of tourism in a region, and the importance is increasing more and more. Turkey peculiar, has enriched and changed with the seasons street food and culture. This richness in the culture of Turkish street foods also originates from the differences in flavor between regions.

**Keywords :** traditional foods, street foods, culture, region

***Other Traditional Foods***

***Abstract Reference : 373***

**A TRADITIONAL PICKLE: PICKLED CHERRY LAUREL**

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Cherry laurel (*Prunus laurocerasus* L.), Rosaceae family, Prunoideae subfamily, is an evergreen shrub or small tree which flowers from March to the first half of April and bears small cherry fruits which ripens from July to September. It is native to Asia Minor, Serbia, Bulgaria, western Europe, the Caucasus, Iran, and some Mediterranean countries. Cherry laurel locally called “Taflan” or “Karayemis” in the northern coastal area of Turkey by the Black Sea.

In Turkish folk medicine, the cherry laurel has been used for the treatment of stomach ulcers, digestive and respiratory system problems, eczemas, hemorrhoids and as a diuretic agent, while fresh leaves have an antipyretic, analgesic and sedative effect, as well as for asthma, and, applied to the forehead, have been used for the treatment of headaches and fever while its water and ethanolic extracts showed antifungal, antinociceptive and anti-inflammatory activity without inducing any gastric lesions.

The cherry laurel and its cultivars have been studied for fatty acids compositions in their seeds, phenolic acids, fatty acids and sugar contents as well as volatile constituents in the leaves and fruits, and benzyl- $\beta$ -primveroside in the green fruits. The ripe fruit of the plant was reported to contain high levels of fructose and glucose as sugars, mainly vanillic acid as a phenolic acid, and linoleic acid as an unsaturated fatty acid

Pickles are an essential component of Black Sea region cuisine, and the main source of its characteristically sharp taste. Cherry laurel cultivated throughout black sea region Turkey for its fruits are widely consumed in the eastern Black Sea region in fresh or dried form, pickled or processed into jam, juice, marmalade, and alcoholic drinks. The one of the most popular of them is pickled cherry laurel. Thanks to this method, it could be stored for a long time about three years and enriches the black sea cuisine. It can be consumed as roast or raw. it creates a sour - sweet taste when the foods add in. Generally it is serviced as roast because it is very popular that roasted pickle in this region.

**Keywords :** Pickle, Cherry Laurel

***Other Traditional Foods***

***Abstract Reference : 128***

**Sensory properties of yogurt enriched with different kinds of nuts**

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Functional yogurts were produced by the addition of walnut, hazelnut, almond and pistachio. The effects on sensory characteristics were evaluated during 21-days of storage. In this scope, preference analysis was performed as a general consumer panel by 7 panelists from academic staff of Dairy Technology Department (Ankara University, Türkiye). Yogurts on day 1, 7, 14 and 21st days were evaluated according to the scoring card described by Bodyfelt et al. (1988). Panelists were requested to evaluate color/appearance, body/texture and odor/flavor and to note any perceived defects in sensory attributes. Mean scores were used for comparison of the samples. Enrichment of yogurt with different nuts resulted in significant ( $P < 0.01$ ) variations on judgement preferences for sensorial attributes of the samples. Panelists preferred the yogurt with hazelnut due to its body and texture and odour and flavor among all yogurts, though the scores for the attributes were similar ( $P > 0.01$ ) for all 5 yogurts, including control yogurt sample. The pistachio-added yogurt had an attraction for its color and appearance on the first day, while when storage progressed, the other yogurts were preferred by panelists more than pistachio-added yogurt. The yogurt with pistachio had the lowest scores for body and texture because of its excessive whey separation at the end of storage. Moreover, the yogurt with pistachio had lower score for odour and flavor ( $P < 0.01$ ) than all the other yogurt samples on day 14. Yogurt sample with hazelnut was the best perceived product with respect to odour and flavor, this was probably due to its mild acidity and aroma. Odour and flavor scores of all 5 yogurt samples decreased with the prolongation of storage, whereas the scores for body and texture increased up to 14 d for all yogurts except from walnut-added yogurt.

**Keywords :** yoghurt, functional, nuts, sensory

***Acknowledgments :*** This work was financially supported by The Scientific and Technological Research Council of Turkey (TUBITAK, Project code: TOVAG 113O407)

***Other Traditional Foods***

***Abstract Referance : 284***

**EDIBLE WILD MUSHROOMS IN KASTAMONU CUISINE**

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Nowadays, Kastamonu Cuisine can be expressed as a summary of a geography including Bolu, Zonguldak, Çankırı and Sinop provinces located within the boundaries of Trabzon-Kocaeli-Ankara triangle. As a result of previous researches, it has been revealed that there are 812 dining types in Kastamonu province and 500 of these are unknown by other regions. Kastamonu is one of the richest provinces in terms of the diversity of both agricultural products and natural products due to its fertile soil and suitable climatic conditions. This diversity is also reflected in Kastamonu Cuisine. The province of Kastamonu, located in the Western Black Sea Region, also has a high potential in terms of edible wild mushrooms. In this study, edible wild mushrooms in traditional Kastamonu Cuisine and types of their consumption are emphasized. The main species of edible wild mushrooms that are widely consumed by local people, either collected locally or purchased from local markets are: İçi Kızıl (*Agaricus campestris*); Kokuluca-Sınır (*Calocybe gambosa*); Ebişge-Kurt Kulağı (*Clitocybe geotropa*); Sığır Dili-Dana Dili (*Hydnum repandum*); Kanlıca (*Lactarius* spp.); Cincile-Mıh Başı (*Marasmius oreades*); Tellice-Halı Saçağı-Saçak (*Ramaria* spp.) and Koç Mantarı (*Russula delicata*). These mushrooms are mostly consumed freshly in soup, sauteed, roasted, grilled, fried in the oven or used for making breads and pastry; and moreover preserved by pickling and freezing. The mushroom species such as Ayı Mantarı (*Boletus* spp.), Sarı Mantar-Tavuk Ayağı-Meşe Mantarı (*Cantharellus cibarius*) and Kuzu Göbeği-Ütük Mantarı (*Morchella* spp.), which are present in the mycobiota of the region, are not consumed in Kastamonu Cuisine and are usually exported.

**Keywords :** Kastamonu Cuisine, traditional, edible wild mushroom, consumption, preservation

***Other Traditional Foods***

***Abstract Reference : 387***

**REGIONAL PRODUCT: TİRŞİK (*Arum Dioscorides SM*) SOUP**

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Tirşik (*Arum Dioscorides SM*) belongs to Aracaa family is a plant called lamb's ear, wild beet in litarage. Beet root (tirşik) is a poisonous entobotanical plant that naturally grows in the high parts of humus soils, usually cover with limestone, having scrub vegetation. Adana Osmaniye and Kahramanmaraş in regions is a food consumed soup When it is consumed fresh that is believed toxic, so it can be presented for consumption as a result of roasting applying procedure the fermentantion. Local areas (especially Cukurova) is referred to with names like gentian, snake language due to the poisonous when consumed raw. This wild beet plant is fermented product be consumed soup making December-February in terms of suitability for taste, mainly in November-April grows the terrestrial and Mediterranean climes join in the regions. There are two important issues in the construction of the Tirşik soup. The first making the technigue suitable and fermentation and the second is biochemical changes in plant fermentation process. As a result of this change, poisonous herb has been used which is turned into healing by local people for many years. Tirşik soup is believed beneficial for the healty for many reasons (for example, to protect against cancer, to regulate digestion and excretion, to reduce the risk of colon cancer due to high fiber content etc.). Also, it is appetizer due to foods ( yoghurt, flour, chickpeas etc.) added during processing and nutritious regional is a foods.

**Keywords :** Regional, tirşik, beet, soup

***Other Traditional Foods***

***Abstract Reference : 391***

**A Traditional Turkish Snack Food: Roasted Chickpea (Leblebi)**

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Leblebi is a traditional snack food made from roasted chickpeas (*Cicer arietinum* L.), common and popular in Turkey and several Middle Eastern countries.

Turkey is the fifth producer of chickpeas in the world with a production of 455,000 tons followed by India, Australia, Myanmar and Pakistan according to Food and Agricultural Organization 2016. Chickpea products are highly nutritive and a cheap food for human consumption and have become an essential part of daily diets in the world.

Chickpeas used for leblebi are selected for shape, size, and color and harvesting time. Generally large seeded (5-9 mm in diameter and 25.0-50.0 g of 100 kernel weight), lighter colored, round and smooth surfaced chickpeas are preferred. In leblebi production, chickpeas are subjected to heat treatment in several stages. After heat treatment, water is added to increase the moisture content. Then they are allowed to rest for several hours and roasted.

Producers try to increase product diversity by coating leblebi with salt, red pepper, chocolate, sugar, sesame and cloves at the final roasting stage. Moreover, leblebi has a potential use as a natural “functional food” due to its chemical composition. They have high protein, cellulose, and mineral content, and are low in fat. Leblebi has also a long shelf life due to its low moisture content, and can be stored for 6 to 12 months, depending on the packaging materials used.

**Keywords :** chickpeas, roasted chickpeas, leblebi

***Other Traditional Foods***

***Abstract Reference : 141***

**TRADITIONAL TURKISH COFFEE AND PRESENTATION CULTURE**

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Coffee tree is a plant (genus *Coffea*) native to tropical Africa and Asia at altitudes between 110 and 120 metres. The fruit of the coffee tree that is a plant that always remains green is bitter when it is green but its bitterness decreases when it gets red. Coffee that is an important part of our culinary culture was introduced by both the manuscripts of travellers and writers and wars and conquests; then adopted the name “Turkish coffee” considering its preparation style. In earlier times, coffee would be served in mansions, watersides and landlords’ houses with generous celebrations. Turkish coffee has gained its name from its new preparation manner found by Turks in which coffee is cooked in pots and copper vessels. Turkish coffee is an important tradition since it is cooked over low heat in pots that are carefully selected and is poured into the cup very slowly. It is important that the coffee is prepared with fine grounds by mixing the coffee, water and sugar in a copper pot and heating it close to the boiling temperature. Compared to other coffee preparation techniques, it is the only one that is consumed with its grounds (telve). Roast coffee contains 0,8-1,8% caffeine, 9% protein, 30,3% carbohydrates, 13% lipids, 0,4% essential oils, 4,2% non-essential acids, 1,6% alkaloids, 4% ash, 2,5% water, 35% phenolic substances and pigments. Turkish coffee has spread its fame and it is still well known in today around the world. Our almost national drink that has been consumed for 400-500 years has lead people get familiar with the name “Turkish”. Today, the traditional Turkish coffee is given various flavours with different techniques. This study will demonstrate information about Turkish coffee types and presentation techniques.

**Keywords :** coffee, Turkish coffee, coffee preparation, coffee presentation

***Other Traditional Foods***

***Abstract Reference : 654***

**Water buffalo production and products in Turkey and World**

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The world buffalo population is estimated to be 198.88 million, spreading across 42 countries, of which 96.4% are distributed in Asia, 2.9% in Africa, and the rest in Europe and Latin America. According to the Turkish Statistical Institute's news bulletin dated 07-12 February 2018 and numbered 2770-27703 Total water buffalo numbers in Turkey reached to the 161439 (by increasing by 13.6% from previous year) .Total water buffalo milk production was 69401 tons which is 0.3 % of total milk production of Turkey. Total water buffalo carcass meat production was 1339 tons in 2017. İstanbul has approximately 9 % (13456) of Total water buffalo population of Turkey .The domestic water buffalo (*Bubalus bubalis*) contributes a significant share of global milk production and is the major milk producing animal in several countries. Buffaloes are kept mostly by small-scale producers in developing countries, who raise one or two animals in mixed crop-livestock systems. Increased Consumer preference and demand for water buffalo products lead the tendency of intensive water buffalo farm breeding especially near to the big cities with the advantage of easily access to the market. In recent decades, breeding programs especially in Turkey (community based water buffalo improvement program applied by Ministry of Food and agriculture and livestock) Bulgaria, China, Egypt, India and Pakistan have attempted to improve the milk yield of river buffalo. The buffalo products market is increasing in the same countries where buffalo numbers are increasing since both of these factors are linked to consumer demand. In the world today, products made from buffalo milk and meat are preferred by consumers. Some of these products are; kaymak, mozeralla, yogurt, sucuk, quishada, Karish, Mish, Seekh kabab, Shami kabab, Tikka and Kofta .Consumption of these products will increase even more because of their important nutritional properties.

**Keywords :** Water buffalo, products, production, Turkey, consumption



***Other Traditional Foods***

***Abstract Reference : 427***

**Various physical and chemical properties of salep obtained from different species of wild orchids**

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It is known that the wild orchids belong to the *Orchidaceae* family of which 18,000-20,000 are in the world. Belonging to this family, it is stated to be 24 genera and 90 species in Turkey. It was determined that there are 80 species of wild orchids belonging to 10 breeds including 28 endemic species. Although wild orchids growing in almost every region of Turkey, is widely available, especially in Mugla. About 85% of the wild orchids have tubers. The tubers are of different size and shape according to the species they are obtained and the weight of each of these tubers varies between 0.25 and 1 gram. The main reason why wild orchids are collected from nature is that they are used in the production of salep.

Salep obtained from the tubers of the wild orchids has been used in the production of beverage named salep made with milk and most of Maras ice cream in Turkey. It is known that the unique structure and flavor of Maras ice cream originated from the goat milk used in its production and especially from the wild orchids grown in the mountains.

Although there are 80 species of wild orchids in Turkey, the number of research on the determination of the properties of tubers of these plants is very low. In this study, various characteristics of powdered salep obtained from different species of wild orchids, which characterize Maras ice cream, are examined. For this purpose, a total of 10 species of wild orchids were collected from Mugla, Antalya, Manisa, Siirt, Burdur and Corum and the tubers of the plants were boiled in water and allowed to dry for 10-15 days. The well-dried tubers were grinded and the pH value, moisture, protein, ash, glucomannan and starch contents and rheological properties of powdered salep samples were determined. Thus, various physical and chemical properties of the salep obtained from 10 species of wild orchids have been specified.

**Keywords :** Maras ice cream, Salep, Tuber, Wild orchid

***Other Traditional Foods***

***Abstract Referance : 624***

**Honey Wine (Mead)**

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Honey, the sweet substance produced by honey bees, has been used for centuries to prepare traditional, homemade drinks. Mead, or honey wine, is a traditional alcoholic beverage obtained by the fermentation of diluted honey with an appropriate amount of water performed by yeasts. Mead wort is produced by diluting bee honey with the appropriate amount of water. Honey can be diluted in different proportions, for example, 1:0.5, 1:1, 1:2 and 1:3 (honey:water). It is possible to produce honey wines in a wide range of flavors by using the different types of honey, various aromatic plant mixtures, fruits and spices. Mead fermentation progress depends on several factors, such as honey type and composition, yeast strain, temperature, medium composition, low mineral concentration and pH. Due to the lack of scientific investigation, mead production has suffered in comparison with other alcoholic beverages and so more research is needed to optimize the production process.

It is oldest and easily made fermented drink in the world. Its production has been known since ancient times. Available archaeological evidence for production of mead dates back to 7000 BC. Today it is still consumed as a popular drink in the Central European and Baltic countries.

This beverage has progressively gained economic importance, due to the therapeutic/nutriceutical properties attributed to honey and by an increasing demand for gourmet products. Honey production is an activity of significant economic importance in several regions of Turkey. New honey-based products such as mead must be developed to maintain apiculture as a viable industry.

Since there are very few honey wine producers commercially in Europe and around the world, the expansion of honey wine production in Turkey, which has a major quantity and aromatic variety of honey production, will provide an important added-value economically.

**Keywords :** Honey wine, Mead, Alcoholic beverage

*Other Traditional Foods*

*Abstract Referance : 440*

**DETERMINATION OF TRADITIONAL FOOD CONSUMED IN TURKEY'S BLACK SEA AND  
CENTRAL ANATOLIA REGIONS**

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<sup>1</sup>Ondokuz Mayıs University, department Of Nutrition And Dietetics

**Aim:** Traditional foods; defined as products that are consumed frequently or related to a celebration, transferred from one generation to another, made with special process, naturally produced and differentiated, sensory properties known and related to a local area / region / country. This study was made to determine the importance of consumption of traditional foods, with aim to determine the traditional foods consumed in Black Sea and Central Anatolia Region. **Method:** 135 women aged between 18-83 years, living in two different regions of Turkey were included between September 2015 – January 2016. A questionnaire was applied to all participants including demographic information, habits of preparing and consuming traditional foods, reasons for consuming these foods, frequency of consumption and traditional foods of where they live. The obtained data were evaluated using the SPSS 20.0 package program. **Results:** 83% of individuals live in Black Sea Region, 17% live in Central Anatolia Region. It was determined, a total of 157 kinds of food were consumed in two regions. 92 kinds of these foods were consumed in the Black Sea Region and 47 of them were consumed in the Central Anatolia Region. 55% of answers given to traditional in Black Sea constitute black cabbage, kokkek, kuymak, corn soup, pita, beet soup and pickle roast (14%, 8%, 7%, 5%, 4%, 8%, 4%, 4% respectively). 30% of answers given to the traditional foods consumed in Central Anatolia constitute the arabasi soup, madımak and testi kebab (12%, 9%, 9% respectively). Habits of preparing local foods in home conditions, answers; 43.1% tarhana, 54.2% pickled, 48.9% jam, 47.1% homemade yogurt, 34.5% noodles, 29.0% vegetable drying, 47.1% frozen vegetables were consumed prepared by herself or a relative. Traditional foods prepared at home %38.5 yogurt, %43.1 precimate, %32.7 jam were consumed everyday; %37.5 tarhana, %23.9 yufkah were consumed once in 15 days; %83.6 tea and %63.2 tomato paste were consumed everyday; %33.5 pickles were consumed at least once a week. **Conclusions:** Despite the prevalence of ready-to-eat and fast-consuming foods today, consumption of traditional foods continues. It is concluded that the Black Sea Region consumes more traditional food than the Central Anatolia Region.

**Keywords :** Keywords: nutrition, traditional food

***Other Traditional Foods***

***Abstract Referance : 444***

**EVALUATION THE EFFECTS OF TRADITIONS ON PREPARATION AND CONSUMPTION OF FOODS**

Pınar Sökülmez Kaya<sup>1</sup>, Canan Asal Ulus<sup>1</sup>, Zeynep Uzdil<sup>1</sup>, Caner Özyıldırım<sup>1</sup>, Seda Kaya<sup>1</sup>, Aybike Gizem Kayacan<sup>1</sup>

<sup>1</sup>Ondokuz Mayıs University, Department Of Nutrition And Dietetics

**Aim:** Determining the impact of traditions on the food preparation of women living in different regions of Turkey. **Method:** 397 women aged between 18-83 years, living in different regions of Turkey were included between September 2015 January 2016. A questionnaire was applied to all participants, including demographic information, habits of preparing and consuming traditional foods, reasons for consumption and frequency of consumption. Data was evaluated using SPSS 20.0 statistical package program. **Results:** 72.3% of individuals know the traditional foods of the city they live in; %25.7 cook these foods at home 1-2 times a week, 18.6% cook them once in 15 days. 72.5% of women cook traditional foods at home on special occasions such as weddings, holidays, funerals; 92.2% of them eat traditional foods on special occasions. When the reasons for consuming and cooking traditional foods are questioned; answers were, they are thought to be healthy (62.0%), to keep traditions (%53.4), to feel happy(%45.3), to remember the past (%30.5). When asked about habits of preparing local foods in house conditions, tarhana (43.1%), pickle (54.2), jam (48.9), yoghurt from unpasteurized milk (47.1), noodles (34.5), dried vegetables (%29.0), frozen vegetables (%47.1) were prepared by them or a relative. Rate of preparing traditional food to feel happy was high among women who don't have regular job (for non-working and working 49.4%, 36.5%, respectively) (p<0.05). Married women consume traditional foods more often (married and single, once a week, 29.2%, 20.1%, respectively) (p <0.05). Those consume traditional food to remember the past often live in city center (46.3%) (p<0.05). Those with moderate family income (2500-3500 TL) prepare /consume traditional food to keep traditions alive (p <0.05). **Conclusions:** Consumption of traditional foods continues despite the fact that out-of-home consumption is frequent with ready-to-eat and fast-consuming foods, nowadays. It has been determined that these foods, which are prepared frequently in the home environment, are often prepared and consumed because they are healthy, they make people happy and live out traditions. It has been determined that factors affecting consumption of traditional foods by women are affected by demographic characteristics including marital status, working status and income level.

**Keywords :** demographic features, nutrition, traditional food

*Other Traditional Foods*

*Abstract Reference : 451*

**THE ROLE AND IMPORTANCE OF BACK SLOPPING IN THE PRODUCTION OF  
TRADITIONAL FERMENTED FOODS**

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Traditional fermented foods are fermented with the indigenous microflora which resulted specific characteristics of products such as flavor, rheology and physical characteristics. Therefore, to able to continue fermentation with the same microflora is one of the specific target for producer to meet the consumer demands. Starter culture usage in the production of fermented foods could not always ensure the desired fermented foods due to properties of species of starter culture applied. But as an ancient habit, the production of traditional fermented foods with applying back slopping have many advantages. Basically, back slopping is a method that some of the fermented food is inoculated to the fresh unfermented ones. Back slopping maintains the stable and adaptive microflora at each cycle which guaranteed always standard production. Additionally, the fermentation could be accelerated at forward back slopping cycles. Recently, the back slopping optimal conditions for many traditional fermented foods were determined and successfully used. For instances, İdli; a fermented cereal product consumed widely in India, Roca-madour and Picodon; Switzerland cheeses, İncwanwa; a beverage produced in South Africa, Kenkey; a fermented corn produced in Gana, as well as the sourdough bread that is produced also industrial scale and consumed approvingly. As a conclusion, in this review, back slopping will be introduced and emphasized its importance and role with exemplifying its application at some traditional fermented foods.

**Keywords :** Back slopping, traditional fermented foods, stable microflora, accelerated production

***Other Traditional Foods***

***Abstract Reference : 466***

**An Important Street Food Traditionally Consumed in Turkey: Offal**

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When the historical process is examined, meat is the main food source of the Central Asian Turks because of nomadic culture. Over time, our eating habits have remained unchanged, and the meat still take place as the main component in Turkish cuisine. Offal (sakatat) is the edible parts of the bovine and ovine animals other than carcass. Offal's are commonly known as the edible organs of the animal (liver, heart, tripe, intestine, kidney, spleen, etc.), the trotters and head of the animal. In our culture, we often eat offal from sheep and calf, and some offal of poultry such as chickens and geese. Especially in recent years, meat prices have been so high that low-income people have been able to satisfy meat needs from offal. In the historical process; offal is known as a food for rich people in some cultures, while in others is known as a food for poor people. Offal's find place in the table as Turkey's cultural heritage due to their particularly high nutritional value. Fried calf liver (tava ciğer) is the traditional food in Edirne and culturally contributes to the promotion of the city. The culture of eating liver is quite important in Adana province, the locals consume this food even in the morning for breakfast. Blanket tripe (işkembe) and reed tripe (şirden) are the special parts of stomachs of cud-chewing animals. Many dishes made with them found a place in Turkish cuisine, such as soup, farci (dolma), and stew. Large intestine of bovine or ovine slaughtering animals is called bumar. Kokoreç and bumar dolması are the dishes made from intestine of these animals and are popularly consumed by people in Turkey. In Thrace region, especially in the spring, ciğer sarması is made from lamb coul fat (gömlek yağı) and liver. This meal is a reflection of Balkan food culture like Albanian liver (Arnavut ciğeri). Skinned head (kelle) of a sheep or lamb is consumed; boiled, baked or as a soup. In order to consume cheap meat; meat balls are consumed from ground meat which is prepared from the muscular parts of the calf head. Lamb trotter (paça) is good source of collagens, cartilage and gelatin. Nutritional and healing soup can be prepared with prolonged cooking of these trotter. Offal's are protein sources that have been important in Turkish cuisine for many years. In this study, offal's consumed in Turkish society will be examined.

**Keywords :** offal, liver, tripe, trotter

***Other Traditional Foods***

***Abstract Reference : 484***

**Kastamonu Bagel Brewis- (Kastamonu Simit Tiridi)**

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Kastamonu has been hosted by many civilizations in terms of culture. It is known that during the archaeological research, Kastamonu's food culture dates back to 7000 BC. It is suggested that there are 812 different regional flavors unique to Kastamonu, each of which has a potency to create a strong touristic attraction force. Simit is one of the simple one. It is the most popular street food in Kastamonu region as other Turkish cities. On the contrary, simit is produced without sesame seeds. Simit is delicious when it is fresh after production. Otherwise, it becomes stale. Stale simit is also used as a dish called “Simit Tiridi” - Bagel Brewis and become another traditional food belongs to Kastamonu. It has been prepared by Kastamonu simit (bagel), broth, garlic mixed yogurt, and traditionally fried knife chopped meat (or minced meat) and boiled butter. First of all broth is prepared by calf bones rich by marrow for least 2 hour boiling with little amount of salt. 1- 1.5 amount of Simit is pieced to small parts and just simply wetted without harsh mixing with this broth in a plate. Previously prepared garlic mixed yogurt pour on the top of the plate. Afterwards cooked meat is added on the meal. Finally, it is be ready to serve adding with boiled butter within 15 minutes if all ingredient is ready.

It should also be mentioned that Simit Tiridi (Bagel Brewis) has been recently applied to take *Geographical Indication* to Turkish Patent and Trademark Office (TÜRKPATENT).

**Keywords :** Traditional Kastamonu Cuisine, Geographical Indication

***Other Traditional Foods***

***Abstract Reference : 486***

**Determination of Nutritional Composition of Some Traditional Foods in Turkish Cuisine and  
Establishment of a Data Set**

Mustafa Yaman<sup>1</sup>, Halime Pehlivanoğlu<sup>2</sup>, Ezgi Şenol<sup>1</sup>, Kübra Özkan<sup>1</sup>, Halime Uğur<sup>1</sup>, Mehmet Tevfik Nargül<sup>1</sup>

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Turkish cuisine is one of the richest cuisines in the world that has emerged as a result of the interaction of the Turks with different cultures from Central Asia to the Anatolian soil in the historical process and holds the characteristics of being the world's most nutritious cuisine. Turkish cuisine consists of two different structures; Palace Cuisine and Local Turkish Cuisine. Local Turkish Cuisine includes traditions, customs and habits, economic possibilities, and unique ways of preparing food. Ottoman Palace Cuisine, especially after “Fatih the Conqueror” conquered Istanbul, began to emerge. In the study "The Flavor Map of Turkey", it is seen that Turkish cuisine is one of the richest cuisines in the World with 2205 different kinds of Turkish dishes and drinks. The purpose of this project is to determine the nutritional values of some foods in Turkish cuisine. In the first stage, a total of 20 meals, desserts and pastries were chosen. In these choosings, choices were made of sausages, soup (tarhana, kelle-paça), meat dishes (keskek, fried liver, cag kebab, braised meat), fish, vegetables, meatballs (lentil meatballs), stuffeds (leaf wrapping), pilafs (bulgur pilaf, pilaf with anchovies), mushrooms, pastries (sour bread/sour yeast bread, pasty/turkish ravioli, khinkali, lahmacun, patty with spinach) and desserts (güllaç, boza, kadayif stuff, pumpkin dessert). In the second phase; The nutritional values of the prepared meals, desserts and pastries are determined. In choosing these analyzes, important parameters that are essential for nutrition were selected. These parameters include energy, protein, fat, dietary fiber, vitamins (A, D, E, K, B1, B2, B6, niacin, folate, B5, B7, B12) and amino acids. This dataset is thought to be a reference to food producers, especially dietitians, as well as it will contribute to the gastronomy tourism of Turkey

**Keywords :** Turkish Cuisine, Nutrition, Data set

***Acknowledgments :*** This work was support by İstanbul Sabahattin Zaim University



***Other Traditional Foods***

***Abstract Reference : 177***

**EFFECTS OF USED DIFFERENT DIETARY FIBER ON TARHANA PROPERTIES**

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<sup>1</sup>University Of Sakarya

<sup>2</sup>Van Directorate Of Provincial Food Agricultural And Livestock

Fermented foods, which are regarded as high nutritional and healthy products, show a great diversity depending on raw materials used in production and microorganisms involved in fermentation. Fermented foods, which are mostly produced by traditional methods, have an important place in people's daily diet. Tarhana is one the oldest traditional Turkish fermented food product. Tarhana fermentation is usually carried out by using yoghurt bacteria, such as *Lactobacillus bulgaricus*, *Streptococcus thermophilus*, and bakers' yeast (*Saccharomyces cerevisiae*). It is prepared by mixing yoghurt, cereal flours and a variety of cooked vegetables, including red and green peppers, onions and tomatoes; flavouring agents are also added, including salt, mint, paprika and various herbs. The resulting material is then air-dried and consumed as a soup, giving a product with high nutritional contents of protein and vitamins. Tarhana, a popular traditional fermented mixtures form an important part of the diets of many people in the Turkey. The amount and type of ingredients used in tarhana production may effect its nutritional content and sensory attributes. Fermentation results in significant increases of riboflavin, niacin, pantothenic acid, ascorbic acid and folic acid contents of tarhana. Also it is a good source of protein and vitamins. Therefore is used largely for feeding children and elderly people.

**Keywords :** Tarhana, dietary fiber, sensorial properties, functional properties.

***Other Traditional Foods***

***Abstract Reference : 179***

**THE EFFECTS OF THE ADDITION OF DIFFERENT INGREDIENTS ON THE KEFIR**

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Kefir is a fermented dairy product obtained to cow, sheep, goat or mare milk by adding kefir grain. It is known that originated in the Caucasus. Ethyl alcohol and lactic acid fermentation takes place together in the kefir. It has a slightly acidic character, refreshing, typical yeast taste and specific aroma of its own. The kefir grains are surrounded by the polysaccharide matrix called “kefiran”. Bacteria and yeasts are found to embedded in this gel-like polysaccharide matrix and live symbiotically within the grain. From kefir grains which are added to the milk, the microorganisms pass into the milk and carry out fermentation. At the end of the fermentation of milk performed by lactic acid bacteria and yeasts, lactic acid, CO<sub>2</sub>, small amounts of alcohol and aromatic molecules (acetaldehyde, acetone, diacetyl) are formed. These molecules contribute to the formation of unique sensory properties of kefir. Kefir is a rich source of folic acid, biotin, phosphorus and vitamin K, B<sub>1</sub> and B<sub>12</sub>. It also contains tryptophan which is essential amino acids, calcium and magnesium that have a relaxing effect on the nervous system. The amount of lactose present in the kefir is lower than the milk. Therefore, kefir is a good dietary source for people with lactose intolerance. Antimicrobial, anticarcinogenic, antiallergic, cholesterol regulating, blood sugar regulating, blood pressure lowering effects of kefir were proven by various studies. The flavor and content of kefir varies greatly depending on the source of the milk (cow, sheep, goat, mare, buffalo, camel), the amount of the milk fat (whole fat, low fat, fat free), the used kefir grain or starter composition and the used production technique. In this review, the effects of the addition of different ingredients (such as orange, grapefruit, mint, fat replacer, blueberry, dried citrus peels, dietary fiber) on the sensorial and physicochemical properties on the kefir were summarized

**Keywords :** Kefir, ingredients, sensorial properties, physicochemical properties.

***Other Traditional Foods***

***Abstract Reference : 508***

**Effects of Vinegar Production Process on Bioactivity of Some Traditional Fruits:**

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Vinegar is the product of a two-step fermentation process involving the alcoholic fermentation of sugars into ethanol by yeasts and subsequently, the oxidation of ethanol into acetic acid by acetic acid bacteria (AAB). Several types of vinegars are used in foods as flavouring and acidifying agent especially for salad vegetables. It is commonly used as an ingredient in the food systems and it is a good solvent for the essential oils of herbs and spices. The vinegar, which dates back to wine history, has a lot of positive effects on health such as promoting recovery exhaustion, regulating blood glucose level, blood pressure, aiding digestion, stimulating the appetite and promoting calcium absorption. It is considerable that antioxidants, total flavonoids, total phenolic compounds formed in vinegar have a good health effect.

In this study, medlar, blueberry, hawthorn and persimmon which are grown up in Black Sea region were used to make vinegars. For this purpose, the fruits were cleaned, sorted and pressed. *Saccharomyces cerevisiae* (3 %) were inoculated into 10 % pulpy of the fruits for the first fermentation (marc fermentation) and then filtered for the second fermentation. The fruit concentrates were left for ethyl alcohol fermentation until ethyl alcohol content reached 8-10 % for formation of wine. Old vinegar was added to initialize acetic acid fermentation (1:20) and when the acetic acid amount was reached to 4 %, the fermentation process was finished. In this study, it was aimed to determine the bioactive components and physicochemical properties of the products during these vinegars production.

**Keywords :** Vinegar, Traditional Fruits, Bioactivity

***Other Traditional Foods***

***Abstract Reference : 598***

**Gilaburu (*Viburnum Opulus*) Plant Fruits’ Seed Oil, Refractive Index And Fatty Acids Composition**

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Gilaburu is the name of the *Viburnum opulus* fruit that grows in a tree with dwarf and leaves in physical appearance. This fruit like grape in great rate. It is the outcome of his taste that he has a red, large and juicy appearance. As in the same grape, there are use many areas from the beauty to health of Gilaburu trees in clusters. Gilaburu is a plant that has been cultivated since the 16th century. There are records of the use of *V.opulus* crustaceans and leaf extracts, diuretics, and swelling in the glandular tissues, in the treatment of coarse ear and eye diseases, by locals in ancient times in northern America. In our country, it is widely found in the Central Anatolia region in general. Soil and climatic structure of the region provides the optimal level for its growth. Kayseri, Yozgat, Sivas, Konya and many Central Anatolian cities are intensively grown. Gilaburu, which is fully compatible with sandy, low-stony and steppe lands is well-known within the region.

In this study, the oil content, refractive index and fatty acids composition of fruit seeds of gilaburu plant were determined that respectively seed oil 9.53%, essential fatty acids 61% oleic and 31% linoleic and unsaturated fatty acids were found high.

**Keywords** : *Viburnum opulus*, seed oil, refractive index, fatty acid composition

***Other Traditional Foods***

***Abstract Reference : 599***

**Demirhindi (*Tamarindus indica*) Plant Seed Oil and Fatty Acids Composition**

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Demirhindi (*Tamarindus indica*) is a species of tree from the Fabaceae family of African descent, which has been planted in all tropical countries, especially in India and Egypt. *Tamarind*, *Tamarinda*, *Tamarindus indica*, *Temir turkey*, *Indian date* also known as names. It is one of the first fruits used as a spice in Africa. India, Senegal, Sudan, Central America, Guatemala, Mexico. Old Greeks and Egyptians In the 4<sup>th</sup> century, they started to use tamarind. In some parts of Africa, the fruit and shells of the sacred tree, tamarindin, were fed to the filler. Fruits, leaves, seeds are traditionally used. As a spice, the fruits are used as whole or only with fleshy parts. Indian, middle eastern and south eastern Asian dishes are often used with sweet and sour taste. In the sugar industry is used as a thickener.

In this study, the composition of fat, refractive index and fatty acids of fruit seeds of gilaburu plant was determined that respectively seed oil 2.82%, essential fatty acids, 9.72% palmitic acid, 18.22% oleic acid and 60.42% linoleic acid and unsaturated fatty acids were found high.

**Keywords :** *Tamarindus indica*, seed oil, fatty acid composition, food industry.

*Other Traditional Foods*

*Abstract Reference : 660*

**DETERMINATION OF SOME PHYSICOCHEMICAL AND MICROBIOLOGICAL  
CHARACTERISTICS OF ÇEKME HALVAH**

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In this study, 10 different samples of çekme halvah belonging to various brands produced locally in Kastamonu province were examined in terms of chemical and microbiological properties. Samples taken from industrial firms in the local area have been evaluated for compatibility with TSE 13028 Çekme Halvah standard.

The moisture, ash, total sugar and fat contents of the samples were found as 1.37, 0.29, 37.02 and 17.26 weight percent, respectively. While all of the samples were below the highest values specified in the relevant standard in terms of moisture, ash and total sugar ratios, the amount of fat in 70% samples exceeded the value specified in the standard.

On the other hand, none of the samples had coliform and *S. aureus*, and yeast/mold, total Mesophile Aerob and total Mesophile Anaerob bacteria counts were below the values specified in the relevant standards in the all samples.

The results of the research show that a local product can be produced hygienically in high quality by utilizing advanced technology in the stages of production, packaging and storage.

**Keywords:** Kastamonu, çekme halvah, chemical properties, microbiological properties

***Safety of Traditional Foods***

***Abstract Reference : 538***

**THE COMPARISON OF THE MICROBIOLOGICAL CHARACTERISTICS OF THE TARHANA'S  
PRODUCED BY DIFFERENT TRADITIONAL METHOD**

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Tarhana is a important traditional food commonly produced and consumed widely in Turkey. But the traditional methods of production and the materials used in production are changing according to the region. Tarhana generally prepared by mixing yogurt, wheat flour, yeast and a variety of vegetables and spices followed by fermentation for a few days and then the mixture is sun dried and kept usually as a dried powder. Nevertheless, there are also tarhana's which are kept in the form of dough without drying as produced in the city of Kastamonu. This tarhana dough is fermented by occasionally mixing with dill and basil stalks for a few weeks. Then the dough is taken into storage containers and stored in the refrigerator. Due to these different production and storage conditions, it is expected that the microbial characteristics of the tarhana's will vary. For this reason, total yeast and molds, total mesophilic aerobic bacteria, E. Coli and enterococci bacteria amount of tarhana's from different regions of Turkey were investigated in this study. While the microorganisms examined in this study were found in all of the dough tarhana's, there are only two types microorganisms in the a few powder tarhana's. The highest total yeast and molds, total mesophilic aerobic bacteria, E. coli and enterococci bacteria amounts were determined for the dough tarhana samples as 2.2.10<sup>6</sup>, 6.6.10<sup>7</sup>, 1.2.10<sup>6</sup> and 1.9.10<sup>6</sup> cfu/g, respectively. The E. coli and enterococci bacteria were not detected for any of the dry powder tarhana's. Microbial characteristics of tarhana species which the tests carried out after the samples were kept at room temperature for 5 days were found similar to the above. Thus shown that the dough tarhana's have a greater risk of microorganism development and human health. Keywords: Tarhana, Food safety, yeast, mold, bacteria.

**Keywords :** Tarhana

***Safety of Traditional Foods***

***Abstract Reference : 357***

**The Occurrence of Biogenic Amines in Seafood and Seafood Products: Formation, Toxicity, Analysis and Control**

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Biogenic amines particularly histamine and tyramine are harmful substances causing poisoning in human and animals from consumption of food that contains high level of these amines. They are present in a wide range of food products, including fish, fish products, meat products, eggs, cheeses, fermented vegetable, fruits, soybean products, beers, wines, nuts, and chocolate. Biogenic amines are usually formed by microbial decarboxylation of amino acids in food products. The most significant biogenic amines occurring in foods are histamine, putrescine, cadaverine, tyramine, tryptamine, 2-phenylethylamine, spermine, spermidine and agmatine. The importance of estimating the concentration of biogenic amines in seafood and seafood products is related to their impact on human health and food quality. Biogenic amine formation in seafood depend on amino acid content of fish, presence of bacterial biogenic amine decarboxylases and favourable environmental conditions, which allow the growth of bacteria and production of their decarboxylase enzymes. Certain types of bacteria generate decarboxylase enzymes, which act on free amino acids in the fish muscles during the spoilage. There are various analytical techniques used to determine the concentration of biogenic amines including thin layer chromatography (TLC), high-performance liquid chromatography (HPLC), gas chromatography (GC) and capillary zone electrophoresis (CZE). Among these techniques, HPLC is widely used because of its sensitivity, reliability and reproducibility. Seafood should be kept clean and chill temperature which can help to minimize or delay the growth of bacteria as well as formation of biogenic amines.

**Keywords :** Biogenic Amines, Seafood, Formation, Toxicity, Analysis, Control



***Safety of Traditional Foods***

***Abstract Reference : 363***

**Elimination of the bacterial growth and their biogenic amines formation using lactic acid bacteria (LAB) in seafood products**

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Foodborne pathogens (FBP) and spoilage bacteria (SB) possess a vital risk to the consumers' health and food quality & safety as they can cause various foodborne diseases and spoil the food, respectively. The formation of biogenic amines (BA) by pathogens and spoilage bacteria in seafood can cause the deterioration of their nutritional and sensory qualities. BA production can also have toxicological influences and result in different types of intoxications. The growth of FBP & SB and their BAs production should be monitored and avoid these undesirable circumstances. Thus lactic acid bacteria (LAB) has become a popular biopreservative for food quality since they play a crucial function to inhibit bacterial growth and decrease the biogenic amines production. LAB is applied by the food industries to produce fermented products with their antibacterial effects as biopreservative agents to prolong their shelf-life and preserve their nutritive properties. LAB produces numerous microbicidal compounds including organic acids, diacetyl, reuterin, and bacteriocins, which can have an impact on food flavour and texture. LAB also has probiotic effects and competes against pathogenic bacteria colonizing the gastrointestinal tracts. Moreover, LAB is traditionally used as starter cultures for the fermentation of foods to improve the storage quality and nutritive value of perishable food such as seafood and seafood products since LAB possesses a powerful and natural tool. Accordingly, LAB has many applications in food industry in which they have been used as food biopreservative against microbial spoilage and foodborne pathogens as well as their harmful toxins.

**Keywords :** Seafood, Biogenic amines, Lactic acid bacteria, Pathogens, Spoilage bacteria, Biopreservative

***Safety of Traditional Foods***

***Abstract Reference : 365***

**Investigation of some bacterial pathogens in Hosmerim dessert**

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In this study, the presence of *Listeria monocytogenes*, *Salmonella* spp., *Staphylococcus aureus* and *Escherichia coli* were investigated in a total of 100 Hosmerim dessert samples sold in the province of Balıkesir in Turkey. *L. monocytogenes* was detected in 3% of Hosmerim dessert samples. *Salmonella* spp. and *E. coli* were not detected in any sample. The high prevalence and contamination levels of *S. aureus* were found in Hosmerim dessert (64% and mean 2.0 log CFU/g) samples. The presence of foodborne pathogens in Hosmerim dessert samples indicate that this food could create a risk to the public health.

**Note:** These data have been published in to the following article:

*Food Control (2012) 26: 337-340.*

**Keywords :** Bacterial pathogens, Hosmerim dessert, Turkish traditional food

***Safety of Traditional Foods***

***Abstract Reference : 643***

**Probiotic *L. rhamnosus* NRRL B-442 and Aflatoxin B1 Binding Properties**

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Probiotics that have various types of microorganisms including yeasts, algae and bacteria - especially *Lactobacillus* genus of lactic acid bacteria- species, confer a health effect when consumed adequate amounts. *Lactobacillus* spp. is commonly used in food industry as starter and preservative culture, also plays role natural fermentations. Aflatoxin B<sub>1</sub> (AFB<sub>1</sub>) is the secondary metabolite of several *Aspergillus* species and prevalently found in dairy and cereal based foods. As stated by International Agency for Research on Cancer (IARC) AFB<sub>1</sub> is the Class 1A carcinogen and potent hepato-carcinogen. It is important that inactivation of AFB<sub>1</sub> without any by-products is a safe inactivation method. In this study, it is aimed to determine the AFB<sub>1</sub> binding ability of *L. rhamnosus* NRRL B-422 in the artificially contaminated phosphate-buffered saline solution. Samples were taken from AFB<sub>1</sub>-*L. rhamnosus* suspension at 0., 3., 6., 12. and 24<sup>th</sup> hours and analyzed immediately with high performance liquid chromatography-fluorescence detector (HPLC-FLD). Results showed that *L. rhamnosus* NRRL B-442 was removed efficiently and *L. rhamnosus* NRRL B-442 bound the 78.10 %  $\pm$  7.24 of the AFB<sub>1</sub> in the PBS. Chromatograms obtained from samples showed that the detoxification effect of the *L. rhamnosus* due to cell wall toxin binding effect since increasing incubation times of *L. rhamnosus* cell-AFB<sub>1</sub> suspension was instable, had tendency to desorption and led to increase of AFB<sub>1</sub> amount in the PBS. However, no by-product was observed.

**Keywords :** Probiotics, *Lactobacillus* spp., *Lactobacillus rhamnosus*, Aflatoxin B1

***Acknowledgments :*** This project was funded by Abant Izzet Baysal University, Scientific Research Projects Coordination Unit (Project number: 2015.09.04.843).

***Safety of Traditional Foods***

***Abstract Reference : 49***

**Prevention of Acrylamide Formation in Turkish coffee**

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Acrylamide is a chemical used mainly in certain industrial processes such as in treating drinking water and in making paper, plastics and dyes. In 2002, Swedish scientists first found that acrylamide can form in some heat-processed foods like potato chips, French fries, biscuit and bread. This discovery has caused great concern because acrylamide has genotoxic and carcinogenic features. Even though people have been consuming coffee for thousands of years, researchers have only recently discovered that coffee contains acrylamide. Scientists analysed the levels of acrylamide in different coffee products and they found that a cup of different types of coffee contains varied amount of acrylamide.

According to numerous studies, acrylamide level of coffee can be affected by a number of factors such as raw material composition, defective coffee beans, roasting conditions, storage conditions and brewing methods, and coffee is the major source of acrylamide for regular *coffee* consumers in many *countries*. Although Turkish coffee is one of the most popular *traditional* drinks at home in Turkey, few studies have conducted to determine its acrylamide level. Acrylamide content of Turkish coffee was found between 29-75 µg/L in a limited number of studies. Moreover, there is no published study about the reduction of acrylamide level of Turkish coffee. The amount of acrylamide in the human diet is an important cancer risk factor. In order to reduce people's exposure to this toxic compound, new processing techniques of Turkish coffee can be developed. Maillard reaction is the major pathway for acrylamide formation in foods. Therefore, acrylamide reduction strategies such as changing the processing condition or using additives like asparaginase enzyme are usually based on preventing the Maillard reactions. Reduction procedures that modify the Maillard reaction may negatively affect flavour and colour of product so it is important to maintain sensory quality while decreasing the acrylamide content. This review aims to provide information about what can be done to decrease acrylamide content of Turkish coffee.

**Keywords :** Acrylamide, Turkish coffee, Mitigation Strategies

***Safety of Traditional Foods***

***Abstract Reference : 225***

**Acrylamide Reducing Strategy in Traditional Potato Fries: Wax Addition Approach**

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Vegetable Oils and fats have been extensively consumed in large quantities in both homes and food industry all over the world. With the developing technology, consumer habits have been changing and fast-food products become much more preferable. Among this food products potato fries are largely consumed either alone or as side-meal. Deep-frying can be described cooking any food material in hot oil. In such process, vegetable oils has exposed to oxidative degradation, which can be resulted in oxidation products including hydrogen peroxide, aldehyde, ketone, esters etc. These side-products can be toxic and decrease the quality of oil by reversely affecting the taste, flavor and chemical composition of oil. Refining process is applied to the vegetable oils to prepare for ready-to-consume. One of the refining steps is winterization, which is performed in order to remove the turbid materials. In winterization stage, waxes, presented in oils, are removed from the matrix. Plant waxes are complex compounds that consist of fatty acids, hydrocarbons, alcohols, aldehydes, ketones, esters, triterpenes and sterols. To date, plant waxes have been used in many fields like pharmacy, food, cosmetics and petro-chemistry. In the present study, it was aimed to increase stability of oils and obtain healthier food products in the traditional frying process. For this purpose, different concentrations of waxes were added to the frying oil and performed frying with same oil 5 times. Following frying, free fatty acids, peroxide value and total polar material of oil and acrylamide amount of potato samples were analyzed and compared to the traditional frying. Findings displayed that FFA %0,222, peroxide value 19 meq/kg, polar material 10,5 and acrylamide 54 ppm were measured in the %0,5 carnauba wax sample.

**Keywords :** potato fries, deep-frying, wax, acrylamide

***Safety of Traditional Foods***

***Abstract Reference : 394***

**Screening of *Escherichia coli* and *Staphylococcus aureus* from Some Traditional Cheese Produced in Turkey**

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Cheese is a dairy product that has a very important place in nutrition and widely consumed. In all regions in Turkey, a large number of traditional cheese varieties are produced, varying depending on such factors as a breed of animal, climatic and regional differences in which they are obtained. Milk, which is a cheese raw material, is a very good food source for microorganisms and these microorganisms can also be transported from milk to cheese. In addition to saprophytic microorganisms that may affect deterioration of cheese, pathogenic microorganisms may also be involved, which may be disease-affecting as a result of consumption. *Escherichia coli* and *Staphylococcus aureus* bacteria can pass cheese from unpasteurized or inadequately heat treated milk, as well as from cheese production stages. The presence of *E. coli* in cheese indicates that insufficient hygiene conditions and probability of pathogenic bacteria from intestinal origin. *Staphylococcus aureus* despite being a sensitive bacterium to heat treatment is capable of producing heat-resistant enterotoxins which are toxic to humans. In this study, it is aimed to examine the traditional cheeses of our country, which are sold in Istanbul wholesale food distribution, in terms of these bacteria. For this purpose, a total of 36 cheese samples including 12 varieties were analyzed. *E. coli* was found in 12 samples of the analyzed cheese samples, coagulase negative staphylococci have been extensively detected, although *S. aureus* has never been observed.

**Keywords :** traditional cheese, *Escherichia coli*, *Staphylococcus aureus*.

***Safety of Traditional Foods***

***Abstract Reference : 304***

**Contamination Sources in Tarhana for Food Safety**

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The origin of tarhana word is from Central Asia and Persian. Tarhana is a very important indigenous food produced by lactic acid fermentation of a mixture, which is prepared from flours or wheat, yoghurt, red or green pepper, salt, onion, tomato and different kinds of spices. Depending on demand, yeast can also be used for the development of fermentation in tarhana production. After fermentation this mixture is dried, ground and stored on a shelf for future use.

The chemical composition of Tarhana varies depending on the raw material and region used. Composition of Tarhana has been detected as pH 6.19, average humidity 8.38%, ash 0.64%, salt 3.86%, protein 10.53%, acidity grade 2.92, total phenolic substance 205.91 mg GAE / g, antioxidant activity 8.07% by some researchers.

Tarhana is exposed to microbiological, toxicological and cross contaminations in terms of the food used and the process steps followed during construction. Personal contamination is the most important cross-contamination source. Mold contamination, which occurred in flour and spices during storage, is the other important contamination source. On the other hand, microbial contamination of milk, which is used for yoghurt production is a risk for tarhana. During drying stage of the product, rodents, birds and pests can cause contamination.

In this review, the determination of contamination sources and prevention of this risk in tarhana production has been discussed.

**Keywords :** Tarhana, contamination sources, food safety

***Safety of Traditional Foods***

***Abstract Reference : 396***

**Microbiological Evaluations of Traditional Special Breakfast Sauces “Ajvar” for Balkan Countries**

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<sup>1</sup>Trakya University, Arda Vocational School, Department Of Food Processing

Along with a better understanding of healthy nutrition concept, there has also been an increased interest in traditional food all over the world. There are many traditional foods available all over the world, especially from the products grown in that region. Some of them have always been widely consumed during the history, and some of them are almost forgotten. Ajvar is one of the traditional foods, often produced and consumed in Balkan countries and Thrace region of Turkey. This food is a kind of breakfast sauce prepared in summer from roasted redbiber and eggplant, flavored with tomato, onion and garlic to be consumed in winter. In this study, 10 traditionally prepared homemade ajvar samples in Thrace region were collected and analyzed microbiologically. The samples were analyzed for total aerobic mesophilic bacteria, total yeast and mold, coliform bacteria, *Escherichia coli* and *Staphylococcus aureus*. The coliform bacteria, *E. coli*, *S. aureus* and molds were not observed in any of the samples, whereas yeasts were found in 60% of samples ( $2.0 \times 10^2$  -  $4.4 \times 10^5$  CFU / g).

**Keywords :** ajvar, breakfast sauces, microbiological properties



***Safety of Traditional Foods***

***Abstract Reference : 397***

**SOME MICROBIOLOGICAL PROPERTIES OF SCRATCHED GREEN OLIVE PRODUCED BY  
TRADITIONAL METHODS**

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Programme

Olive is commercially important foods that have valuable nutritional components and has been consumed since ancient times. Olive fruits have a bitter taste due to the oleuropein and for this reason it cannot be consumed directly. For many years, various methods have been applied in order to make olive consumable. One of these methods is scratched green olive production method and with this method the olive reaches to edible taste in a short time. Therefore, this method is widely applied in domestic production in Turkey. At the same time, the method is one of the preferred production methods for the industrial production of table olives. The shelf life and taste of olives can be different due to traditional production methods and storage techniques applied in homes. In this study, the microbial quality of scratch green olive samples made by traditional methods in homes was investigated. While coliform group bacteria were not observed in the samples examined, yeasts and molds were found in all samples. Lactic acid bacteria were also observed in 25% of the samples. These results showed that the microbiological properties of scratched green olives were changed according to their production methods.

**Keywords :** scratched green olive, microorganisms, Turkey

***Safety of Traditional Foods***

***Abstract Reference : 403***

**Polycyclic Aromatic Hydrocarbons Isolated from Traditional Breads Cooked at Different Ovens in Bolu and Its Inactivation by *Lactobacillus reuteri***

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Polycyclic aromatic hydrocarbons (PAH's) are by-products of insufficient combustion of organic materials. Cooking at high-temperatures leads to form of these PAH's whose compounds are found usually together. One of the most encountered sixteen compounds is used for confirmation of contamination of PAH's to the air, soil, agricultural products and food. Probiotic bacteria are known for their digestion system benefits and natural members of human microbiota. Recent years there has been an improving attention to inactivation of several genotoxins using probiotics of gut microbiota. In this study it is aimed to reveal the DNA-bioprotective effect of *Lactobacillus reuteri* as probiotic bacteria against the polycyclic aromatic hydrocarbons isolated from traditional breads cooked at different fuels in Bolu area. In PAH analysis, to prevent the differences from dough, all the breads were made at laboratory conditions and cooked in traditional, electricity and home-type ovens. After cooking, immediately bread samples were extracted. After detection PAH compounds, genotoxicity test (Comet test) was applied using human colon adenocarcinoma cell line (HT-29). In control group slight tail formation ( $34,5 \text{ AU} \pm 1,26$ ) was observed when only *L. reuteri* was applied to the HT-29 cells. Similarly, results were obtained from co-incubated *L. reuteri* and PAH mixture ( $40 \text{ AU} \pm 2,17$ ) slight genotoxic damage were seen in comparison to the negative control group ( $28,33 \text{ AU} \pm 4,71$ ). For positive control only PAH applied HT-29 cells ( $115,69 \text{ AU} \pm 2,55$ ) highly damaged. During the incubation of *L. reuteri* in PBS ( $9,39 \pm 0,13 \text{ log CFU/mL}$ ) and PBS+PAH mixture ( $9,46 \pm 0,01 \text{ log CFU/mL}$ ) kept viability. Our results clearly indicated that *L. reuteri* are able to bind the PAH compounds especially known carcinogenic PAH compounds and prevented the genotoxic damage in HT-29 cells.

**Keywords :** *Lactobacillus reuteri*, probiotics, polycyclic aromatic hydrocarbons, genotoxicity

**Acknowledgments :** *The authors thank Abant İzzet Baysal University, Scientific Research Project Funding (AIBU BAP) for their financial support [Project number: 2015.09.02.915].*

***Safety of Traditional Foods***

***Abstract Reference : 26***

**The importance of the monitoring of drug residues in traditional food-animal products and practices  
in Turkey**

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Antibiotics are drugs that are widely used in the treatment of infectious diseases and as a means of enhancing the growth of farm animals that are food value. Drugs such as  $\beta$ -lactam, tetracyclines, chloramphenicol, macrolides, spectinomycin, lincosamide, nitrofurantoin, macrocyclic, nitroimidazole, trimethoprim, polymyxin, quinolone and sulphonamide are most commonly used in the field for these purposes. However, illegal use of antibiotics in unfavorable shape and dosage at the field results in residues in meat, milk, eggs, honey and other edible tissues of animals. Residue; is defined as the active substance itself, the degradation products or the metabolism products, which have the pharmacological effect in the form of infectious or infected animals and plants. Residuals may cause allergic reaction to consuming these foods, increased antibiotic resistance in pathogenic bacteria, toxic symptoms, reproductive disorders and neurological disorders. In addition, the residues cause low quality of fermented foods obtained from meat and milk. Due to all these dangerous and serious problems, the identification of drug residues in foodstuffs has become an important issue. The maximum residue limits allowed for the presence of many medicines are determined within the scope of the Turkish Food Codex in accordance with UN regulations. Food, Agriculture and Livestock Ministry controls the use of medicines in food-grade animals and their monitoring according to national residue monitoring plan. In the National Residue Monitoring Plan, sulfonamide group drugs are analyzed in poultry meat, beef and milk. Items to be searched according to animal species and food type and the number of samples to be searched are prepared in accordance with the EU directive 96/23/EC. Analyzes are carried out by the institutions affiliated to the Ministry. In this respect, Veterinary Control and Research Institute-Elazığ/Turkey analyze  $\beta$ -lactams and sulphonamides by using Charm II methods while Bornova Veterinary Control and Research Institute-Izmir/Turkey is the institution that performs analyzes sulfonamides and quinolones. Consequently, in the field of food safety in Turkey, the executive mechanism of the Ministry of Food, Agriculture and Livestock, researchers, law makers identify risks and constitute the necessary precautions. In such topics as identification of risks, development of analytical techniques, sensitivity enhancement, process abatement and cost reduction necessary work is still continuing in our country.

**Keywords :** Antibiotics, food-animal product, food safety, residue, sulfonamide

***Safety of Traditional Foods***

***Abstract Reference : 317***

**Effects of Different Spices on the Chemical, Microbiological and Sensory Properties of Pickled Cucumber**

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<sup>1</sup>Namık Kemal University, Food Engineering Department

Cucumber is one of the vegetables most used for pickle production all over the world. Since consumers have been looking for better quality products, food manufacturers are looking for new applications which protect the product for a long time, prevent softening, give desired color, flavor, smell to product. In order to achieve pickle fermentation regarding food safety, it is important that growth of yeasts, molds and other bacteria making a layer on the surface of pickles and damage the product should be prevented. Restriction of air contact with brine, cleaning of the layer formed on the surface of the brine, addition of some preservatives and high salt concentration of brine may help to maintain the product safety and quality. Though, the high salt concentration of brine can slow the growth of lactic acid bacteria and delay the fermentation process. The aim of this study was to offer some spices as preservatives instead of high salt concentration. For this reason, 10 different spice (mustard, thyme, mint, marigold, clove, coriander, laurel, cumin, fennel, cinnamon) 0.5% of were added to boiled water and infused for 10 min to make brine solution. Then 8% salt was added to brine. For each pickle, 400 ml of brine was added to 300 gr cucumber. The mean pH of all samples was 6.64 at the beginning of fermentation and 3.72 at the end of fermentation. Total mesophilic aerobic bacteria count of the control was  $3 \times 10^4$  cfu/ml at the beginning, while it was determined as  $1.2 \times 10^4$  cfu/ml at the end of fermentation. The highest decrease (from  $1 \times 10^5$  to  $1 \times 10^2$  cfu/ml) was observed on the fennel added pickle. The yeast population was under the detection limit ( $< 10$  cfu/ml) on the samples excluding control and mustard, marigold, coriander added pickles before the fermentation start, but it increased to  $1.5 \times 10^3$  cfu/ml for mint-added and cumin-added pickles. Initially, the mold population was between  $1 \times 10^1$  and  $2 \times 10^2$  cfu/ml expect for clove and cinnamon added pickles and the number of molds in all samples was determined as  $< 10$  at the end of fermentation. All spices used in this study prevent the mold growth. Although mustard, mint and cumin did not any inhibition activity on yeast, mustard, coriander, laurel and fennel resulted in decrease on total mesophilic aerobic bacteria count. According to sensory evaluation, pickles fermented in marigold added brine was the most-liked. The pickles fermented in cumin added brine was the least liked. Panelist give highest score to coriander added pickles in terms of color but marigold added sample was given highest score in terms of flavor and texture. This study showed that addition of marigold, laurel and fennel to brine solution in pickle fermentation can lead to positive result considering microbial and sensory quality of pickles.

**Keywords :** cucumber, pickle, spice, fermentation

***Safety of Traditional Foods***

***Abstract Reference : 318***

**The Presence of Sorbic Acid and Benzoic Acid in Tomato Paste Offered for Sale in Istanbul Province**

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<sup>1</sup>Namık Kemal University

Mould contamination of tomatoes start in the fields. Both and biological and physical damages during the harvest and transportation phases and insufficiency of hygienic conditions during tomato paste production effect the quality of the tomato paste directly by promoting the saprophyte and pathogenic mould production. Moreover initial high contamination levels make it difficult to reach the desired success during sterilization phase. Tomato sauce is a produce conserved through decrease in humidity, thus preventing the evolution of microorganisms. According to the “Food Additives Regulation” in the Turkish Food Codex, as preservative sorbic acid should not be more than 1000mg/kg in tomato paste (except in tins or glass packaging). In this research, thirty tomato paste samples bought from markets and public markets in Istanbul were analyzed in terms of sorbic acid and benzoic acid contents by means of HPLC and the results were compared with the maximum values anticipated in the “Food Additives Regulation” in the Turkish Food Codex. As in eight of the tomato paste samples there have been found sorbic acid presence in the range of 667,66 mg/L and 4,8 mg/L, in 10 of the tomato paste samples there have been found benzoic acid in the range of 1059,98 mg/L and 0,4 mg/L. It is determined that in the five of the tomato paste samples containing sorbic acid, the sorbic acid was found between the limits put by the law because of the production in plastic package, and in the three of the samples sorbic acid was not between the limits because of the production in tin package. In addition, it was determined that ten of the tomato paste samples contain benzoic acid which is not allowed to be in tomato pastes according to the law. Among the analyzed samples, it is found that 20 of the tomato paste samples were produced in comply with Turkish Food Codex Food Additives Regulation on the ground of containing neither benzoic acid nor sorbic acid. Firstly, instead of using the additive substance in the tomato paste, the microorganisms can be reduced by using the quality tomato, washing tomatoes very well, disinfecting the process line very well, preventing the contamination in the all process stages. Also, the dry matter should be increased enough during the evaporation stage, packaging should be done on aseptic conditions, storage conditions should be observed.

**Keywords :** Tomato paste, sorbic acid, benzoic acid, HPLC

***Safety of Traditional Foods***

***Abstract Reference : 164***

**The Microbiological Quality of Çiğ Köfte Sold in Sakarya**

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<sup>1</sup>Sakarya University

Çiğ köfte is a product traditionally consumed in Turkey and other Middle East countries. Meatless çiğ köfte is prepared with bulgur, onion, garlic and different spices. It is prepared without any treatment which is heat treatment or microbial inactivation and it is consumed raw and therefore it is among microbiologically high risk foods. In this study, a total of 15 çiğ köfte samples sold in Sakarya were microbiologically analysed in order to determine their microbiological quality. The numbers of total mesophilic aerobic bacteria, coliform, yeasts and molds were determined. According to the analysis results. the mean numbers of total mesophilic aerobic bacteria, were 10<sup>9</sup> cfu/g. The mean number of coliform was 10<sup>4</sup> cfu/g. The levels of yeasts and molds were 10<sup>3</sup> and 10<sup>1</sup> cfu/g, respectively. The numbers of *Escherichia coli* 0157H7, was 10<sup>4</sup> cfu/g the samples. Salmonella was not isolated from any of the samples analysed. The result is that hygienic qualities of çiğ köfte are low and may constitute a potential danger in terms of public health. We concluded that the çiğ köfte samples analysed were of very poor microbiological quality and could pose a risk to public health.

**Keywords :** Çiğ köfte, microbiological quality, food hygiene

***Safety of Traditional Foods***

***Abstract Reference : 621***

**EFFECT OF LOW AND HIGH TEMPERATURE ON THE PROPERTIES OF HAZELNUT MILK  
OBTAINED FROM HAZELNUT CAKE**

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The present study was aimed to investigate the effect of low (65, 72 and 85°C) and high (105, 110 and 115°C) heat treatments at different time periods on the physicochemical and microbiological properties of hazelnut milk. Hazelnut milk produced from the by-product of cold press extraction process and homogenized at 100 MPa by using high pressure homogenizer. Low and high temperature conditions were applied with a temperature controlled water bath and an autoclave, respectively. Heat treatment caused to slight decrease in the pH values of hazelnut milks, however there was no important change in milk pH as a result of heating time and temperature. The total soluble content and soluble protein values of hazelnut milks were significantly decreased after heat treatments compared to non-thermal treated sample and therefore serum separation was negatively affected. The viscosity values of hazelnut milk samples significantly increased depend on temperature except 65°C heat treatments. The changes in color parameters (*L*, *a* and *b* values) indicated browning occurred in the hazelnut milks with thermal treatment. The number of total aerobic mesophilic bacteria decreased by the effects of heat treatment and not detected after heat treatments at 72°C (for 20 and 30 min) and higher conditions. Our findings indicate that heat treatment except 65°C treatments caused significant changes on chemical composition of hazelnut milk and ideal temperature-time parameters were determined as 72 °C for 20 min and 105 °C for 1 min based on microbiological and structural results.

**Keywords :** By-products; Hazelnut milk; Low temperature; High temperature; Heat stability.

***Acknowledgments :*** *The authors acknowledge financial support provided by Turkish Scientific and Technical Research Council (TUBITAK) for the project (Project Number: TOVAG 110174).*

***Safety of Traditional Foods***

***Abstract Reference : 431***

**Herbs used in Traditional Foods: *Coriandrum sativum* and *Rhus coriaria***

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Traditional foods are products made from locally available raw materials depending on the culture and tradition of the region. The majority of countries and regions have their own traditional foods and traditional cuisine depending on local consumption habits, methods of cooking and preparation as well as food ingredients. The herbs grown in the region have an important contribution to the rich culinary culture of the Southeastern Anatolia Region. *Coriander sativum* "Coriander" and *Rhus coriaria* "Sumac", which have been known since ancient times, are often used for traditional food and beverages in the region's cuisine due to their intensive cultivation in the Southeastern Anatolian region. These herbs, which constitute an integral component of the Southeastern Anatolia cuisine, are also effective in suppressing some undesirable effects and preserving food for long periods of time as well as imparting flavor, aroma and flavor to food. These herbs, which are used in the traditional foods in Turkey as well as in the traditional foods in other countries where they are grown, are widely used in traditional medical practices because of their antimicrobial, anti-diabetic, antioxidant properties. The aim of this study is to evaluate the use of *Coriander sativum* and *Rhus coriaria* in traditional foods, their functions and their health effects.

**Keywords :** Coriander, Sumac, Traditional Food, Southeastern Anatolia, Herbs,



***Safety of Traditional Foods***

***Abstract Reference : 434***

**RAPID ELEMENT ANALYSIS OF SEVERAL DEHYDRATED FOODS COMMONLY CONSUMED  
IN TURKEY**

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Element analysis of food samples is important as a quality parameter and in terms of food safety. Basic elements, such as C, H, N, S and O comprising the organic compounds can be detected by classic chemical techniques, i.e. by means of a relevant chemical reaction. However, while highly accurate, these techniques are single-element, labor- and time-intensive.

Automated element analysis devices made by a few companies are available. The main advantage of using such devices is decreased element analysis time of organic compounds thanks to automation. These devices are based on the catalyzed high temperature decomposition of the analyzed substances in the oxygen medium, followed by the GC-analysis of the resulting gas products. The contents of C, H, N, S and O by mass could be determined with these devices in food samples. This is especially important for dried fruits and vegetables.

Dehydration techniques provide advantages such as easy transportation and prolonged shelf life. However, elements become highly concentrated due to drying. Abundance of some elements, such as oxygen, can cause problems like rapid oxidation, loss of nutritional value, and discoloration. Therefore, in our research, we worked with traditionally dried spinach, peas and pistachio, which are commonly produced and consumed in Turkey, to determine their C, H, N, S and O amounts (%).

Average mass value of carbon (%) in our samples are as follows: spinach: 35,74%, peas: 62,46, pistachio: 63,46, nitrogen (%) in samples: spinach: 3,99%, peas: 3,65%, pistachio: 3,13%, sulfur (%) in samples: spinach: 0,55%, peas: 0,36%, pistachio: 0,21%, oxygen (%) in samples: spinach: 36,41%, peas: 40,18%, pistachio: 18,93%, and hydrogen (%) in samples: spinach: 13,37%, peas: 9,43%, pistachio: 5,42%. Thanks to this method, element analysis of traditional foods can be completed faster and easier. Also it may be used for determine new quality parameter for traditional foods.

**Keywords :** element analysis, dried food, spectroscopy

## ***Safety of Traditional Foods***

### ***Abstract Reference : 56***

#### **Contamination Sources of Beyşehir Tarhana**

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<sup>2</sup>Harran University

Beyşehir tarhana, which is a traditional grain product produced in the district and close villages of Beyşehir of Konya province, is consumed as soup and chips. Beyşehir tarhana consumed as chips have some risks in terms of food safety because of no heat treatment is applied before consumption. In this study, sources of contamination, which will create a risk in terms of food safety in Beyşehir tarhana, have been examined.

Tarhana contains ayran, chopped wheat, salt and butter. Ayran, which is made from concentrated yoghurt by adding water, is boiled in copper cauldron on wood fire and is cooked until becomes a dough form after addition of chopped wheat, salt and butter. Then the tarhana dough is cooled down in the cauldron and kneaded a little with hands for obtaining homogen mixture. After kneading tarhana dough is divided into beads, which is a ball shape about 45-50 cm circumference size firstly, then is divided into small beads to be shaped. Tarhana dough with a thickness of about 1 cm and a diameter of about 15 cm is laid on mats made of reed or sunflower body, called *çığ* at sunrise and left to dry for 1-2 days.

As seen in the production stages, contamination sources of production of traditional Beyşehir tarhana are raw materials for tarhana production, copper cauldron, people who is kneading and shaping, *çığ*, drying area, insects and air. Beyşehir tarhana, which is a traditional grain product produced in the district and close villages of Beyşehir of Konya province, is consumed as soup and chips. Beyşehir tarhana consumed as chips have some risks in terms of food safety because of no heat treatment is applied before consumption. In this study, sources of contamination, which will create a risk in terms of food safety in Beyşehir tarhana, have been examined.

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**Keywords :** Beyşehir tarhana, food safety, contamination sources

***Acknowledgments : Thanks to Zade Karahan and Azime Uruç for receipt of Beyşehir Tarhana***



***Safety of Traditional Foods***

***Abstract Reference : 447***

**Current Food Safety and Hygiene Practices Applied in Traditional Food Production**

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<sup>3</sup>Trakya University, Arda Vocational School

Like other foods, traditional products may also contain naturally occurring toxic materials, antioxidants or allergens that can cause concern if they are above critical limits or consumed by vulnerable people. In all over the world, an increase in the tendency to the "tradition" due to the health and natural life concerns has increased the consumption of traditional foods. Therefore, food safety, which has become one of the decisive factors in the demand for food products, has been one of the most important factors affecting the consumption of traditional foods due to the increasing sensitivity of consumers. Given that both the consumption amount and the variety of traditional foods will continue to increase in the near future, there is no doubt that optimizations and applications for food safety in the production of traditional foods will become more important. In general, food safety includes a series of precautions to be taken in order to provide healthy and reliable foods to the consumers by preserving chemical, physical, sensory and biological qualities of the food from the production to consumption. In this regard, while the implementation of various quality systems, hygiene practices and technical procedures to large-scale companies progress systematically, many problems are encountered in smaller enterprises that produce traditional foods. For instance, although changes in the processing techniques may increase the capacity, such kind of innovation can also remove the traditional features of products. Additionally, economic inadequacy, complexity of the production process and lack of infrastructure are among the other problems. However, recently various researches have been carried out covering the nutritional, chemical, microbiological and safety aspects of many traditional products unique to different countries. In this respect, improvements in the processing, preservation, packaging and safety of these products have been achieved through simple applications. Therefore, it is thought that it would be beneficial to create quality and safety plans for production of traditional foods by groups that consist of food scientists and sector experts. In this regard, the main purpose of the study is to explain current food safety and hygiene practices applied in the production of traditional foods.

**Keywords :** Traditional foods, Food safety, Quality systems, Hygiene practices

***Safety of Traditional Foods***

***Abstract Reference : 453***

**Some compositional properties of sesame seeds used in tahini production**

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Tahini is a traditional food that is produced from sesame seeds after being roasted. It is very rich in oil, protein, dietary fiber and some minor food components. The final composition of the tahini is mainly related to the composition of sesame seeds as no additive is used in the production. In this study seeds of seven different sesame varieties (Cumhuriyet 99, Kepsut 99, Osmanlı, Tanas, Sarısu, Tan 99, Orhangazi 99) were kindly provided by Aegean Agricultural Research Institute. For comparison sesame seeds imported from Nigeria, which is commonly utilized in tahini production due to its lower price, were also analyzed. Protein content, oil content, acidity was determined by standard AOCS methods. Heavy metals, which are limited by the Legislations, namely iron, copper, lead, arsenic and zinc were determined by atomic absorption spectrometer. Protein content of local varieties varied between 20.32 and 21.76% whereas in Nigerian variety a slightly higher protein content (22.59%) was measured. Total oil content however were higher in local varieties (52.01-54.20%) compared to Nigerian sesame (48.22%) except the variety Tan 99 (43.88%). Total acidity was measured in Nigerian variety as 2.46% while it was measured to change between 0.89 and 1.47 in local varieties. Heavy metals were measured to changed in the range of 98.26-323.60, 14.65-45.89, 0.01-0.40, 0.08-0.81 and 43.86-65.11 for iron, copper, lead, arsenic and zinc, respectively. Nigerian sesame was not the richest among samples in any of those metals analyzed.

**Keywords :** tahini, sesame, protein, heavy metals

***Acknowledgments :*** *This study was supported by Şitoğlu Company*

***Safety of Traditional Foods***

***Abstract Reference : 170***

**Food Safety Risks for Traditional Homemade Canning**

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Homemade canning is very common method to preserve food from spoiling by applying heat in a closed-glass jar and removing air from the jar to create seal. In summer times, people prefer canning method for fruit and vegetables. A significant proportion of foodborne disease is attributable to improper food preparation practices in consumers' homes. Home-canned vegetables remain a leading cause of foodborne botulism. *Clostridium botulinum* strains A, and proteolytic strains of B and F, collectively have very heat resistant spores. The spores usually do not cause people to become sick, even when they're eaten. But under certain conditions including low-oxygen or no oxygen (anaerobic) environment, low acid, low sugar and low salt, these spores can grow and make one of the most lethal toxins known. Temperatures associated with home canning would be required to kill these spores in a reasonable period of time. Foodborne botulism is a potentially lethal illness caused by ingestion of neurotoxin produced by the spore-forming bacterium *Clostridium botulinum*. Historically, home-canned vegetables have been the most common cause of botulism outbreaks. Although foodborne botulism is occasional, the illness is very serious and can result in death. Botulism is caused by eating foods that are contaminated with the botulinum (botulism) toxin. Most cases of foodborne botulism are the result of eating home-canned foods that have been improperly canned. Close adherence to established home-canning guidelines can prevent botulism and enable safe home-canned products.

**Keywords :** Homemade canning, *Clostridium botulinum*, botulism, neurotoxin

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 62***

**Determination Of Brand Awareness And Preferences Effects Of Köşk Vocational School Students’  
On Food Consumption**

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<sup>1</sup>Graduate School Of Natural And Applied Sciences

This study was carried out in February via a questionnaire of 169 students who are studying at KÖŞK Vocational School 2016-2017 Academic Year Spring term. In this survey 7 questions are related to socioeconomic and 16 questions are about brand awareness and preference on food. According to data, 93 %of students stated that “I am pay attention to the brand while I am buying food’. According to the question whether brand is important or not, for 93 % of the students the brand is important in ‘Chicken and Chicken Meat Products’. Besides, according to % 72 of the students, ‘brand preference for food consumption, ‘authenticity of the brand’ is the main preference reason. Consumption and preferences of pasta, dried foods, fruit, vegetables, cookies, sparkling beverages, water, legumes and sugary products (biscuits, chocolate) was found to be statistically significant (p <0.05). These results showed that student preferences as wells as consumer preferences on food brands. This survey is important in terms of gives idea to the food firms although it is not including whole country and not exactly covers general.

**Keywords :** Vocational school, Food, Brand, Preferences

***Acknowledgments :*** *Thanks to all our Köşk Vocational School students who participated in this practice.*

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 647***

**The role of women in the production of traditional foods**

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Traditional foods; experience and tradition that is geographically specific to a region or province and consists of qualities and natural characteristics of the region. The use of raw materials and production inputs in the region in this way is a product of cultural identity that is produced by promoting economic development and employment in this area. The fact that traditional foods are produced economically in large industrial enterprises, reaching to consumers with local tastes of products / foods produced with traditional methods in rural areas is important both for survival of cultural heritage and for rural development. It is necessary for women to take the place they deserve in terms of contribution to the production process and rural development and to contribute to the family and business income of the products marketed in order to ensure continuity of it. Women who are actively involved in almost every stage of production also play a decisive role in food production at home and in the purchase of foodstuffs. Women have assumed the role of an educator who transfers knowledge from generations to generations in the production of traditional foods. Necessary steps should be taken to market traditional foods produced by women and economic value should be produced.

**Keywords :** traditional foods, role of women, economical value, rural area



***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 65***

**Organization in Turkish Agriculture and Agricultural Cooperatives**

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<sup>1</sup>Uludağ University

The strength of agricultural organizations is possible when the producers have the necessary knowledge about the benefits of this activity. European Union (EU) countries are at the forefront of countries where agricultural organizations are most developed. In EU, agricultural cooperatives have an important place in the development of policies for agriculture, and nearly 50% of agro-based industry is directed by these cooperatives. Even though there are many organizations that practice in agriculture such as cooperatives, chambers of agriculture, unions, foundations and associations in Turkey, these organizations don't have a strong structure where farmers can follow innovations, be in cooperation and protect their rights. Even though there are 13 437 agricultural cooperatives that have more than 3.5 million farmers as partners, agricultural cooperatives are still not at a desired level.

**Keywords :** cooperatives, agriculture, food marketing, Turkey

***Acknowledgments : Cooperatization is the product of the demand to act planned and organized by benefiting from the power that is the result of acting as one. Thus, the strength of agricultural organizations is possible when the producers have the necessary knowledge about the benefits of this activity.***

***Social Aspects of Traditional Food and Nourishment***

***Abstract Reference : 510***

**Traditional Fast Food**

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The traditional fast food concept has emerged with increasing search of healthy nutrition and local products instead of fast food chains which are concurred with globalization. As a result of consequence as “healthy food is a product which is local”, at first step fast food chains add products that will create traditional sensation in their menu such as, sausage added pizza, sausage spiced mixture kofte, walnut baklava, chocolate covered wardrobe, hamburger made from sesame seed added pita breads. With favorable economic benefits of this tendency, traditional products involved in food chains evolved into formation of traditional fast food chains. Turkish bagel (simit), Turkish pide (pide), kokoreç, çiğ köfte are most popular traditional fast foods which are having chains. In this study, it was aimed to present perspective about traditional fast foods in the context of global – local interaction by investigation of menus of international fast food chains and some Turkish traditional food chains and consumer demands.

**Keywords :** Traditional, fast food, food chain

***Acknowledgments :*** The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support of PAU-ADEP.

***Social Aspects of Traditional Food and Nourishment***

***Abstract Referance : 659***

**THE MIRACLE FOOD IN THE NOBLE QUR'AN: HONEY**

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There are many lessons in the Qur'an for people. One of these lessons is the messages given on animals. Islam emphasizes that these are created for the people as trust and service. In this context, the first message of the Qur'an is to respect the animals and treat them well. Because of the importance given to them, their names are mentioned in the verses. Some of them are the names of Sûrah. The Qur'an mentions about bee which is full of many wisdom and the miraculous food honey it produces. Thus, according to the Qur'an, Allah, ordered bee to nest in nature. *“...Take for yourself among the mountains, houses, and among the trees and (in) that which they construct...”* (Nahl 16:68). The “revelation” here is the inspiration has been given to animals and the inner instinct that has come to bear on them. The tasks and modes of action given with this instinct were reported to them. Therefore, Allah Almighty teaches to make honey. With this order, honey keeps making honey for the same quality as the first day they were created. They supply the healing resource for the human beings. In this way, the bee is placed in all the flowers with the inspiration of *“... then eat from all the fruits...”* (Nahl:69). Then they extract honey from their stomach to produce honey, while the other bees in honeycomb produce wax. In this way, without any laziness, this production is provided as a miracle. As a result, it's pointed out in the verses that honey is a healing food *“... There emerges from their bellies a drink, varying in colors, in which there is healing for people...”* (Nahl:69). There are also Prophet's hadiths pointing out the healing effect of honey. (Buharî, Tıbb, 4; Tirmizî, Tıbb, 31; İbn Mace, Tıbb, 7, 22; Ahmed b. Hanbel 4/19, 20, 92) Besides the miraculous honey production and healing, the Qur'an emphasizes the importance of honey bees, especially for medicine, health, hard work. Therefore, it is stated at the end of the verse: *“...Indeed in that is a sign for a people who give thought.”*

**Key Words:** Qur'an, Verse, Healty, Food and Honey.

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 639***

#### **THE EFFECT OF IRRIGATION ON OLIVE OIL CHARACTERISTICS OF SARI ULAK VARIETY**

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The aim the work was to determine the changes in olive oil characteristics of Sarı Ulak variety in response to irrigation. Olives were harvested at Mersin province from irrigated and non-irrigated (rain-fed) trees and processed to olive oil with a laboratory scale system. Olive oil samples were analyzed for their fatty acid, triacylglycerol and sterol composition. Results have shown that individual fatty acids were not affected significantly by irrigation. The main fatty acid was oleic (71.35-73.24 %) and the prevailing polyunsaturated fatty acid was linoleic acid (8.61-10.01%). The main triglyceride was triolein (35.38-36.29 %) and supplemental irrigation was found to decrease OOO ratio of olive oil. OOP, existed as the second important triglyceride (25.97-23.36 %) and OOP values decreased by water treatment. Total sterol content of oil samples were above the minimum established limit of 1000 mg/kg determined by national and international regulations for virgin olive oil (1181-1321 mg/kg). Total sterol content of the oils increased by water application. The main sterol,  $\beta$ -sitosterol, was increased by irrigation.  $\Delta$ -5-avenasterol was the second predominating sterol (55.87-56.26 mg/kg) and determined to increase by water supplement.

**Keywords :** Irrigation, fatty acid, olive oil, sterol, triacylglycerol

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 640***

**THE EFFECT OF MALAXATION CONDITIONS ON QUALITY PARAMETERS AND OXIDATIVE STABILITY OF MEMECİK AND EDREMIT YAGLIK OLIVE OILS**

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The aim of the study was to determine effect of malaxation time and temperature on quality parameters and oxidative stability of virgin olive oils obtained from Memecik and Edremit yaglik varieties. For this purpose, olives of two cultivars were processed to olive oil using a laboratory scale mill. Olives were first crushed, then malaxed at various temperatures (30, 45 and 60 °C) and times (30, 60 and 90 minutes). Resulting pastes were pressed with a hydrolic press and the liquid phase was centrifuged to obtain virgin olive oil. Oil samples were analyzed for their free fatty acidity, peroxide index, conjugated dien and trien values, oxidative stability, total phenol content and antioxidant acitivity. Results have shown that free fatty acids, peroxide values, K<sub>232</sub> and K<sub>270</sub> values, total phenol contents of Memecik olive oils were found to be higher; whereas longer induction periods and higher antioxidant activities were determined for Edremit yaglik olive oils. Malaxation time and temperature did not influence free fatty acidity significantly for both cultivars. A slight increase was determined for peroxide values with increase in malaxation time; however the same tendency was not observed for K<sub>232</sub> and K<sub>270</sub> values. Induction periods were found to increase with the increase in temperature for both cultivars.

**Keywords :** Edremit yağlık, malaxation, Memecik, oxidative stability, quality

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 402***

**Improvement of Olive Products Quality As a Traditional Food Source: Some Analytical and Technological Properties of The Promising Hybrid (UM 66) from Domestic Olive Breeding Combination (UsluxMemecik)**

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The first cultivated olives (*Olea europea*) were evaluated by natural hybridization from the wild-olive (*Olea oleaster*, *kotinos in ancient Greek*, *Delice in Turkish*) by living people around eastern Mediterranean basin. Olive breeding (clonal selection and controlled crossbreeding methods) is the one of important ways in improvement of olive products quality. In today's, although there are remarkable studies made in some of Mediterranean countries (Spain, Italy, Tunisia and Israel) on olive breeding and hybridization, there is no information on technological properties of Turkish olive hybrids in literature. Olive breeding covers some important agronomic objectives and technological aims (table and oil properties) in terms of development of olive oil industry. In the beginning of 1990's, a controlled cross breeding project was started on Turkish domestic olive cultivars by Bornova Olive Research Institute, Izmir. In this study, some analytical (table and oil) properties of the promising hybrid (UM66) obtained from crossed *Uslu* (Table) and *Memecik* (oily) combination, economically important domestic olive cultivars, were examined during two harvest years. The table properties were fruit number 200–220 in kg./tree, fruit weight 7.71g, pH:4.83, moisture 60%, reducing sugar 2.72 %, total phenol content 540 mg/kg and fruit hardness 998 mN. The oil quality properties of UM66 hybrid were FFA 0.17– 0.19 oleic acid %, PV 2.59 – 4.25 mequiv O<sub>2</sub>/kg oil, the ultra violet (UV) absorption values at K<sub>232</sub> and K<sub>270</sub> 1.36 – 1.53 and 0.07 – 0.19 respectively, total phenolic content 98.64 – 213– 34 caffeic acid mg/kg oil, total chlorophyll content 0.94 – 1.48 mg/kg oil, oxidative stability (Rancimat 20 lt/h at 110 °C ) 9.70–16.53 hours. The values of cis FAs of hybrid individual (oleic [75.96 – 77.79%], palmitic [9.88 – 10.63%], linoleic [7.66–8.50 %], and stearic acids [1.91–2.22 %] major FAs and palmitoleic [0.64–0.67 %] , linolenic [below max 1%]) and total trans FA isomers (below max 0.1%) conformed to those of the international and national regulations. There is no remarkable sensory defaults for UM 66 hybrid oils during crop years. The hybrid (UM 66) had more characteristic than parents in terms of agronomic features and technological (high total phenolics and desirable flavor) properties.

**Keywords :** Olive, Turkish, Hybrid, Table, Oil, Quality

***Acknowledgments :*** This project is supported by Olive Research Institute, Bornova-Izmir (Ministry of Food, Agriculture and Livestock of Republic of Turkey).

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 311***

**THE CHANGES IN OXIDATIVE STABILITY, FATTY ACID COMPOSITION AND QUALITY  
PARAMETERS OF ÇEKİŞTE OLIVE OIL DURING HEATING**

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Olive oil, the fundamental source of fat in Mediterranean diet, is known as a functional food due to its high nutritional value and contains high quantities of monounsaturated fatty acids when compared to other seed oils such as sunflower oil, besides having various minor components with biological properties having beneficial effects on human health. Owing to the increasing popularity of Mediterranean diet, the production of olive oil has an increasing significance. The objective of the current research was to investigate various properties of Çekişte olive oil, obtained from Aydın province of Aegean region of Turkey in 2017, upon heating. The oil samples were heated for totally 50 hours at 100°C under 20 L/h air flow and collected every 10 hours. The olive oil samples were then evaluated for their free fatty acid content, peroxide value, spectrophotometric indexes at 232 and 270 nm, fatty acid profile as well as total phenol, chlorophyll and carotenoid contents and oxidative stability expressed as induction time. Results have demonstrated that chlorophyll and carotenoid contents decreased; peroxide value, conjugated dienes, trienes and the amount of free fatty acids increased during heating. The main fatty acid was oleic acid ranging between 76.10% and 77.17% followed by palmitic (10.40-11.42%) and linoleic acids (7.56-8.97%), respectively. The induction time measured by rancimat instrument decreased gradually during heating which is an indicator of oxidative stability. Positive and high correlations were observed among total phenols and antioxidant activity.

**Keywords :** Çekişte, Fatty acid composition, Heating, Olive oil, Oxidative stability

***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 464***

**Quality Characteristics of Olive Oil Produced by Traditional and Conventional Methods**

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The sensory and nutritional qualities of olive oil are influenced by the minor components (phenolic compounds, sterols, tocopherols, hydrocarbons, volatile compounds etc.). The quality of olive oil depends on many factors such as olive variety, climate, soil structure, growing conditions, harvesting method and olive maturity. Apart from these, olive oil production methods and the applied process conditions are quite important on the quality of the olive oil. In traditional method; olives are both crushed and kneaded with stone mills. Then olive paste is pressed, liquid phase (oil+water) and solid phase (pomace) is separated from each other. Finally, the oil and waste water are separated from each other by using centrifugal separators. In conventional method; olives are crushed in metal mills then olive paste is mixed in malaxators. Decantor separators are used to separate the liquid phase from the olive paste. In these two methods, warm water can be added to the olive paste to increase the oil yield. The temperatures and times of crushing, kneading or malaxing, the amount and temperature of added water, are significantly affect the quality of olive oil. The hydrophilic phenolic compounds are the minor components in olive oil, that responsible for the sensory and antioxidant properties of olive oil. Especially the amount of these compounds vary in olive oil depending on the process methods and conditions. The used centrifuging and pressing techniques also affect the amount of phenolic substances in the olive oil. The sensory properties of olive oil are directly related to volatile compounds. The volatile compounds formed by the enzymatic oxidation of fatty acids provide the unique aroma of the olive oil. Especially the temperature and time applied during the malaxation is very important for providing the desired aroma in the olive oil. Nowadays these two main methods and their modifications are used in different enterprises. In this review, the effects of traditional and modern methods on olive oil quality were examined.

**Keywords :** olive oil quality, phenolic compounds, olive oil production



***Special Topic: Olive Oil (production methods, oil quality, functional compounds, health effects)***

***Abstract Reference : 178***

**EVALUATION OF OLIVE OIL INDUSTRIAL SOLID WASTE**

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Food industries produce large volume of solid and liquid residues, which represent a disposal and potential environmental pollution problem. Likewise, olive oil production, one of the foremost agro-food industries in Mediterranean countries, generates different quantities and types of byproducts depending on the production system adopted. Turkey is the 6<sup>th</sup> in olive production in the world and according to FAOSTAT data olive and olive oil productions in the country were 1 700 000 and 190 000 tonnes, respectively, in 2015. The undeniable nutritional merits of olive-oil are well known, thus increasing the demand for it. However, if the undeniable nutritional merits of olive-oil are well known, the extraction process generates an amount of solid residue called “olive cake,” which is obtained after extracting the oil from the fruit. Currently, from 100 kg of olives, about 20% of oil is recovered, and 30% of olive cake and about 50% of aqueous liquor are generated. There are many areas where solid waste of olive oil industry is evaluated. Such as, production of bio-composite materials, their use as fuel, animal feedstuffs and their use as adsorbents after activation. The literature research were confirmed the usability of olive solid waste as cheap reinforcing filler for the bio-composite material, thus, opening new perspectives for the use of this agricultural by-product. Also, many studies have shown that activated carbon obtained from olive solid cake by activation acts as a well adsorbent for the removal of pesticides, heavy metals, dyes from aqueous solutions. The research studies indicated that it can be achieved a more valuable and functional product from olive oil industry solid waste which is only used as animal feed currently.

**Keywords :** Olive oil, solid waste, bio-composite material, adsorbent

***Traditional Cereal Foods***

***Abstract Reference : 525***

**Tarhana Types Produced in Turkey**

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Tarhana which is a traditional fermented product and has an important place in Turkish society. Tarhana is rich in lycopene, carbohydrates and proteins, and strengthens our immune system. It is produced by drying and grinding of the dough produced by mixing wheat flour, crushed wheat, semolina or a mixture them, yeast (*Saccharomyces cerevisiae*), various vegetables and spices, after fermentation at ambient temperature for one to three weeks. Tarhana produced in different regions vary according to the changes in the raw materials which differ from the locally and the different production techniques. Therefore every region of Turkey has typical tarhana varieties. But Uşak and Kahramanmaraş are the most popular proveniences as tarhana has been produced industrially. The tarhana diversity produced in Turkey are as; göce, ball, kiren (Cranberry), immigrant, milk, meaty, grape and sweet tarhana. However, Tarhana in Turkish standards TS-2282 is classified as flour, semolina, göce and mixed. Uşak tarhana is a flour type and it is differed from the others by the positive effects of the length of the fermentation period on the taste and flavor, and by adding the vegetables in its production without cooking. Uşak tarhana are widely used at industrial scale and has relatively high protein content. The other popular tarhana is Maraş tarhana which is produced with using wheat flakes and known as Göce tarhana. It is widely used to make a tarhana chips in industry. Uşak and Maras tarhana has received geographical indication registration. Semolina is used instead of wheat flour in semolina tarhana and it is obtained by drying after the components are kneaded and fermented. In this study, a comparison of traditionally produced tarhana varieties in Turkey and their general characteristics will be reviewed.

**Keywords :** Tarhana, fermented traditional food, characteristics

***Acknowledgments :*** *The authors greatly acknowledge to the Pamukkale University Scientific Research Project Unit for the support of PAU-ADEP.*

***Traditional Cereal Foods***

***Abstract Reference : 195***

**TARHANA SOUP: A TRADITIONAL TURKISH FOOD**

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Traditional products are very important to exhibit cultural wealth of the society. Tarhana is believed to be one of the world's oldest foods produced by Turkish people in Central Asia. Nowadays, tarhana is one of the most popular traditional Turkish foods. Although the production process of tarhana differ depending on the region, it is generally made by mixing yoghurt, wheat flour, baker's yeast (*Saccharomyces cerevisiae*), some raw and cooked vegetables (tomatoes, onions, green and red peppers), salt and spices (basil, mint, thyme, dill, paprika, tarhana herb, etc.) followed by fermentation for one to seven days. With fermentation, the nutritional properties and flavor of tarhana is improved. After fermentation period, the tarhana dough is sun dried to obtain dry tarhana. Then it is ground to a powder (<1 mm). According to TS 2282 (Turkish Standards) tarhana standard, the level of protein in dry matter must be at least 12 %, the moisture level must be less than 10 % and the salt level must be less than 10 %. In Turkey, tarhana is generally consumed as soup. In the first step, the tarhana powder is mixed with some cold water and let dissolve for about half an hour. Then some butter or olive oil is heated over medium heat in a saucepan. The prepared mix is cooked with stirring constantly over a low flame for one minute. Then it is added some water and mixed well. When the tarhana powder is dissolved completely, it is added some more water and continued to stir. After boiling, heat is reduced to medium-low and let simmer for 2-3 minutes, stirring occasionally. Then the prepared soup is tasted and some salt can be added if necessary. This soup must be served warm. It can be also consumed as a snack by drying the dough as a thin layer and eaten directly. Tarhana is considered as a good source of B vitamins, organic acids, minerals and free amino acids. Its rich content, appealing to taste buds of Turkish people, possibility of keeping for a long time easily, being cheap and prevalent makes tarhana more attractive.

**Keywords :** Tarhana, Traditional food, Fermentation, Functional food

***Traditional Cereal Foods***

***Abstract Reference : 638***

**Investigation of Microbiological Quality of Boza Produced in Thrace Region**

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Boza is a traditional fermented beverage in Turkey. Its origin date back to the ancient populations that lived in Anatolia and Mesopotamia. The name “boza” comes from the Persian word, buze, meaning millet. Boza is made by lactic acid bacteria and yeast fermentation of various kinds of cereals; millet, maize, wheat and rice flours. Boza is a traditional cereal-based fermented beverage that has pale yellow color, sweet-sour taste and viscose structure. Especially this beverage is consumed widely Turkey, Bulgaria and some other countries of the Balkan Peninsula in winter.

The aim of the present study was to investigate the microbial quality of Boza. In the research, microbiological characteristics of 5 different boza samples obtained from Thrace region were examined. With intent to determine the microbiological quality of boza Total Mesophilic Aerobic Bacteria (TMAB), mold and yeast, total coliform, spore bacteria and *Escherichia coli* analysis were done. In the studied samples the average values of Total Mesophilic Aerobic Bacteria (TMAB), mold and yeast, total coliform spore bacteria and *Escherichia coli* were as  $2,4 \times 10^8 \log \text{ cfu/g}$ ,  $1,3 \times 10^8 \log \text{ cfu/g}$ ,  $0 \log \text{ cfu/g}$ ,  $7,9 \times 10^8 \log \text{ cfu/g}$  and  $0 \log \text{ cfu/g}$ , respectively.

**Keywords :** boza, microbial quality, fermented beverage

***Traditional Cereal Foods***

***Abstract Reference : 605***

**Textile Fabrics Used for TARHANA Packaging**

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TARHANA is a traditional food which has a very important role in Turkish people's feeding. It has been used since before immigrating from Middle Asia and afterwards distributed to most of the neighboring countries and Balkans.

Regarding the facts that the production of TARHANA is both a very tiring and an expensive process and it has a very high nutrition value it has to be packed and stored well. Due to its high nutrition value it is advised both to pregnant and babies. As a result of realizing these facts TARHANA has been stored in 100 % cotton sacks for ages traditionally. Nowadays as a result of industrialization some other textile materials are used for packaging TARHANA as cotton is expensive. In this research the textile fabrics widely used in the market for flour type TARHANA are investigated. Three types of textile packaging materials are found out:

1. 100 % cotton woven fabric which has been traditionally used for many years,
2. Nonwoven Polypropylene (PP) fabric,
3. Woven PP fabric.

Air permeability, weft density, warp density, weight, tear strength and breaking strengths are determined for the characterization of all of the three fabrics.

In a future study TARHANA will be stored for 1 year in these three packages and change in quality properties will be observed and the optimum packaging material will be chosen.

**Keywords :** Tarhana, traditional food, packaging textiles

***Acknowledgments :*** The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support of PAU-ADEP.

***Traditional Cereal Foods***

***Abstract Reference : 368***

**USE OF TEXTURE ANALYSIS TO DETERMINE THE FRESHNESS OF LEBLEBI**

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Traditional foods are commonly consumed in ancient times by native people whole world country. These foods are accepted and highly consumed by the local populace for a long time, and the methods of preparation of such foods have been transmitted from generation to generation. The one of the most commonly traditional snack in Çorum (a central anatolia region city) is the roasted chickpea product, called leblebi. The processing stages of leblebi simply include cleaning and grading, soaking, tempering, boiling, resting, roasting, and dehulling. At the end of the production process, the chickpeas swell, soften, and after roasting, become crisp. Chickpeas's shape, size, color, and harvesting time are directly effected quality of leblebi. Also each processing stages of leblebi determine quality of leblebi. Moreower, costumer feelling is very important part of the quality sense. Some methods like questionnaire or texture analyses are used to determine consumer feeling in food industry. In our research, we compared the fracturability of two leblebi using a texture analyzer that were roasted at different times: a freshly roasted leblebi that was roasted the day before the analysis and another one that was roasted three months before the analysis. The leblebi were stored in plastic bags at room temperature until the analysis. Fracturability is ability to break into pieces food when it is bitten using the incisors so it's directly related with human sense. We detected that the fracturability of the leblebi that was roasted three months ago was 20% less than the fresh one. In the light of this data, it's show that this parameter, fracturability, can be usefull for the determination of freshness of the leblebi. It can be a new and fast approach to determine fressness of leblebi.

**Keywords :** fracturability, leblebi, texture

***Traditional Cereal Foods***

***Abstract Referance : 121***

**A traditional flavor from the inner Anatolia: Arabaşı**

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Arabaşı (Ara aşı) is a locally produced and consumed in especially Yozgat region in central Anatolia region. At first times, it is not the main meal, usually after dinner and collectively consumed. (Ara aşı) the name of this local food's began to change as over time and is called as a Arabaşı and usually consumed in cold winter nights. Arabaşı dough is obtained by mixing 1 part flour with 6 parts water. The final dough mixture is cooked until a certain consistency in the fire and salt is added. The obtained dough is poured on the tray in a thickness of 1 cm and in equal thickness everywhere and it is cooled on snow or in a cold place. After the dough is cooled (the consistency is ready), the dough is cut in the form of a baklava (rectangle) slice and is available for consumption. Although the Arabaşı dough is cooked in the fire, it is in the appearance of raw dough. Even though it is a meal, it is preferred not to be consumed by itself, but to be accompanied by a boiling Arabaşı soup. Arabaşı soup is made with butter, red crushed pepper and white meat (chicken, turkey or partridge). The Arabaşı soup is evaluated as a nourishing product with sodium, potassium and vitamin A content.

**Keywords :** Arabaşı, Anatolian Food, Traditional Cereal Foods

***Traditional Cereal Foods***

***Abstract Reference : 124***

**Mahluta Soup**

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Mahluta soup is one of the different tastes of Antakya region which has valuable local flavors in its culture. Mahluta soup, which is often consumed in the region of Adana as well as Antakya region, is a soup type made by boiling with water, green or red lentil and / or adding rice. One of the most important features of the Mahluta soup, which is not well known due to local consumption; it is served with plenty of cumin, sumac and butter poured on it. Mahluta soup, which has a intense consistency, than many soup types, is preferred with bread and onions. When the Mahluta soup is made, the lentils and rices are first subjected to washing process and filtered. After the lentils and rices that are washed and filtered are taken in a pot filled with hot water, olive oil and roasted onion are added on top. With the addition of cumin and salt, the soup is cooked between 25-30 min. Finally, melted butter is poured over the soup in a skillet and the soup is ready for servicing.

Mahluta soup contains fiber and minerals such as iron, calcium, sodium, copper, zinc, phosphorus and it is a very nutritious food. On the other hand, it is known that Mahluta soup has antihypertensive properties due to its high potassium content. In addition, in a porsion Mahluta soup (250 g) there are an average of 25.1 g carbohydrate, 12 g protein and 4.7 g fat.

**Keywords :** Mahluta, soup, Traditional cereal foods



***Traditional Cereal Foods***

***Abstract Reference : 378***

**Effect of Drying Temperatures on Drying Kinetics and Some Quality Characteristics of Hot Air Dried Couscous**

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Couscous is an important traditional food that is consumed worldwide nowadays. It is manufactured commercially using different technologies in addition to traditional production by women in Turkey using bulgur and milk instead of semolina and water. Drying of couscous produced traditional methods is performed at open air conditions generally. Depend on climate conditions drying process takes at least 10 days that is rather long period. Hot air drying experiments as thin layer were made using a cabin type dryer by convection method. A centrifugal fan was used in order to accelerate the drying air which will be sent to the dryer. Changing of sample weight was determined periodically to determine drying kinetic. Drying temperature values of 55, 65 and 75 °C were used to dry couscous. As a quality parameters, color values (L, a, b) and water activity values were measured for fresh couscous sample and all dried samples. As a result, increasing of drying temperature decreased drying time. 22.8% (w.b.) moisture content of couscous sample was obtained after 810 minutes using 55 °C while 16.3% (w.b.) moisture content value was obtained after 360 minutes using 75 °C drying temperature. Total color deviation of sample dried under 55 °C was found higher suprisingly compared to values obtained after 65 and 75 °C drying. This can be explained by exposing of sample to hot air rather longer period compared to drying process that were performed using higher temperatures. Similarly, highest brightness deviation value (26.56) was found also for the couscous sample dried using 55 °C. Water activity values of fresh sample and dried samples using drying temperatures of 55, 65 and 75 °C were measured as 93.1, 42.1, 38.8 and 37.6, respectively. Namely, water activity values of all dried samples were found lower than 0.62 that is critical value for storage.

**Keywords :** Couscous, Hot air drying, Color, Water activity

***Traditional Cereal Foods***

***Abstract Referance : 381***

**ZERFET**

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Zerfet is a traditional food which is peculiar to Tunceli, Erzincan, Elazığ, Bingöl, Muş, Sivas, Gümüşhane province, it can be also consumed in special day and every time in daily life. In preparing this meal, which is also called Zirfet, Şir, Babuko in different regions; dough is prepared with flour, water and salt then cooked by giving circle shape. The top surface of the cooked dough is cut by leaving 2-3 cm from the edges and the inside is carved out with the help of a spoon. The removed interior in small pieces is put into this cooked hard-shelled structure which takes the shape of a plate. When serving, a concentrated ayran with garlic and hot butter are poured over it. Zerfet with rich carbonhydrate and fat content, has a privileged place in local culture especially during winter months. In this study, it is aimed to introduce Zerfet by the traditional production and production stages.

**Keywords :** Zerfet, cereal dishes, Anatolian cuisine, traditional food

***Traditional Cereal Foods***

***Abstract Reference : 285***

**A Traditional Dessert from Western Black Sea: Akçakoca Melengücceği Dessert**

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Akçakoca Melengücceği dessert which has 700 years of history, is also a taste of Ottoman Palace cuisine. This dessert is a unique taste that is kept alive by preserved its traditional form nowadays by who is migrated from Middle Asia to Akçakoca who is called as “Manav Turks”. It is related that, the name of this dessert is taken from the “Melen River” which is poured into the Black Sea from the town of Akçakoca. “Güccek” means “Little Bread” in old Turkish. Namely, “Melengücceği” means “Melen Little Bread”. The unique taste of Melengücceği dessert originates from the inner material called “dartı” which is obtained by processing the water buffalo milk cream grown on the edge of the Melen River.

This dessert dough prepared with wheat flour, egg, milk, hazelnut oil, baking soda, vinegar, and salt. This dough is rolled up with a rolling pin and then “dartı”, hazelnut or walnut is added in the dough. The prepared dough is fried in hazelnut oil and waited in the sherbet. The product obtained by frying can also be consumed with not waited in the sherbet. It can be consumed with not only a kind of traditional cheese “keş” but also can be sweetened with wild strawberry jam which is grown in the mountains of this region and have a special flavor or chestnut honey. Finally, this dessert served with cream, hazelnut or walnut.

The Geographical Sign Registration Certificate of this dessert was taken by Duzce Directorate of Provincial Food Agriculture and Livestock.

**Keywords :** melengücceği, melen little bread, dessert, cream, Akçakoca

***Traditional Cereal Foods***

***Abstract Reference : 286***

**A Novel Simit: Duzce Kabak Simiti**

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Simit (bagel) is the most consumed bakery product after bread in TURKEY. The simit, especially produced in cities is widely consumed by all parts of the society and has a long history. Depending on the location and the producer, simit has different production technique and the formulation. So it has varied taste and varieties.

Duzce Kabak Simiti has a quite different from the common simit type. Most of all it isn't covered with sesame. Already it was named owing to this feature. Among people, it is also called as Kaba Simit or Susamsız Simit (simit without sesame). This product attracts attention with its bright yellow color. Another important characteristic of this simit is that it is baked in the stone oven with beech or oak wood. In this study, the production method and product properties of Duzce Kabak simiti have been examined.

**Keywords :** kabak simit, kaba simit, susamsız simit, bagel

***Traditional Cereal Foods***

***Abstract Reference : 142***

**Changes in Chemical Composition of Wheat During Bulgur Processing**

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Bulgur is a traditional grain product preferably produced from *Triticum durum*. It is cheap, durable, nutritious and easy to prepare food. Traditional bulgur process stages are cleaning, boiling, sun drying, dehulling, crushing and classification by sieving, respectively. Nowadays, bulgur is produced in modern enterprises by continuous method, steam or pressure cooking, drying in artificial dryer.

In bulgur process, lower bran layers and germ of wheat kernel are not separated, only the upper layers (epidermis and hypodermis) are removed at a certain extent. Therefore, nutrient loss is not so much. During boiling, the proteins of the grain become denatured and the starches gelatinize. After drying, the grain structure becomes hard and glassy. Although there is little fiber loss during dehulling, contrary to many products made from wheat, bulgur can be regarded as an important fiber source.

Most of the vitamins in wheat kernel are localized in the aleurone layer and the germ. Peeling and bulgur flour separation may lead to some loss of thiamine and riboflavin, but the main thiamine loss occurs during the cooking stage. Drying method does not affect the thiamine content. Riboflavin, unlike thiamine, is not affected by the cooking. Due to the fact that it is a vitamin that is sensitive to sunlight, sun drying causes significant loss of riboflavin.

Phytic acid is found especially in the germ and the aleuron layer of wheat kernel. It forms insoluble complexes with many minerals such as Fe, Ca, Zn and Mg and also interferes with proteins and lowers their bioavailability. Phytic acid is reduced during bulgur boiling process. This is especially observed in the cooking under pressure. While boiling and drying do not cause any change in the amount of minerals, peeling and bulgur flour separation reduce total ash content.

Although there are some changes in the physical and chemical properties of wheat grain in bulgur production, it is stated that the nutritional value of bulgur produced by modern methods is close to that of wheat.

**Keywords :** Bulgur, fiber, thiamine, riboflavin, phytic acid

***Traditional Cereal Foods***

***Abstract Reference : 143***

**Leblebi by-product: chickpea hull, and its effect on dough rheological properties**

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<sup>1</sup>Ankara University

The fibrous part of food was once thought to be an unnecessary or even undesirable by-product. Now, it plays an important role in human diet due to its reported health benefits including reducing diabetes symptoms and preventing chronic diseases such as cancer, stroke and obesity. Cereal brans have been widely used for fiber enrichment of baked products; however, their high phytic acid (PA) content is generally overlooked. PA is an antinutrient which has a high affinity to form complexes with protein and minerals, and impairs their bioavailability. Therefore, it is necessary to find new alternative dietary fiber (DF) sources with low PA.

Roasted chickpea, so-called leblebi, is a traditional snack in Turkey and Middle East. The leblebi process includes cleaning and grading of chickpea, soaking, tempering, boiling, resting, roasting, and dehulling. During this dehulling stage, outside of roasted chickpea or simply hull is removed and disposed. This disposed chickpea hull can be a valuable DF source considering legume brans have considerable amount of fiber. Additionally, PA content of chickpea is quite low and most of this PA degrades with high temperature during roasting.

In this study, 3 different particle sizes of chickpea hull (100 µm; 200 µm; 350 µm) were obtained by sifting and subsequently added to flour at rates of 0%, 5%, 10%, and 15% and their effect on dough rheological properties is investigated with farinograph and extensograph. DF content of chickpea hull is 69.32%. Farinograph water absorption increased with increasing chickpea hull level and it increased even more in the case of 100 µm chickpea hull was used. Development time and stability decreased with increasing level of chickpea hull, but this adverse effect of hull on these two rheological properties was diminished with decreasing particle size. Dough degree of softening increased with increasing level of chickpea hull for all particle size.

Effect of chickpea hull on dough rheological properties was similar to other fiber rich cereal brans. Chickpea hull has a great potential to be used in bakery industry considering its high DF and low PA contents and clearly should not be considered as an undesirable by-product.

**Keywords :** Dietary fiber, phytic acid, chickpea hull, rheological properties

***Traditional Cereal Foods***

***Abstract Reference : 398***

**Changing of drying kinetics and quality parameters during vacuum drying of traditionally produced couscous**

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Couscous is a major ingredient especially in North African and Turkish cuisine and it can also be used as a side dish. It is popular because of its great taste and good nutritional benefits. The fresh couscous is a very perishable product therefore be consumed or dried rapidly. Traditionally drying of couscous namely in open air conditions causes very long drying period and also a undesirable color. Therefore in this research, it was aimed to study on the drying kinetics and changing of some quality parameters of couscous to determine the optimal vacuum drying temperature. Vacuum drying experiments were carried out using a 23 liter capacity Vacucell brand vacuum dryer. Pressure and temperature settings were set as 55 °C, 65 °C, 75 °C and 0.98 bar from the control panel on the dryer. Initial moisture content value of couscous was determined as 35.6% (w.b.) and drying lasted 960 minutes at 55 °C, 920 minutes at 65 °C, and 600 minutes at 75 °C to obtain final moisture content of 16.3% (w.b.). It was observed that the drying time decreased while drying temperature increases. When the drying temperature increased from 55 °C to 75 °C, reduction of drying time was determined as 37.5%. The moisture content curves obtained at 55 °C and 65 °C were found close to each other after about 750 minutes. Total color deviation for samples that were dried at 55 °C was determined as 31.79 while minimum value was measured for 65 °C as 22.06. The closest brightness value to brightness of fresh sample was found for sample dried at 65 °C. It can be concluded that the total color deviation value for sample dried at 55 °C is due to the long drying time in other words longer exposure period to hot air. Water activity values of fresh sample and dried samples using vacuum drying temperatures of 55, 65 and 75 °C were measured as 93.1, 36.1, 35.5 and 32.2, respectively. Namely, water activity values of all dried samples were found lower than 0.62 that is critical value for storage.

**Keywords :** Vacuum drying, Couscous, Color, Drying kinetic, Water activity

***Traditional Cereal Foods***

***Abstract Reference : 147***

**Effect of process conditions on phytic acid content of corn bread**

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<sup>1</sup>Ankara University

Corn bread is a traditional bread type commonly consumed in Black Sea Region of Turkey. Depending on the region, corn bread can be produced with only whole corn flour or whole corn flour/wheat flour mixtures. Whole corn flour has a considerable amount of phytic acid (PA) like other types of whole cereal flours. PA is an antinutrient that has a high affinity to interact with some cations including Ca<sup>+2</sup>, Mg<sup>+2</sup>, Zn<sup>+2</sup> and Fe<sup>+2</sup> and decreases their bioavailability. PA also forms insoluble complexes with protein and binds 70% of phosphorus. PA content of whole-meal breads is a concerning issue considering regular consumption of these kinds of foods may led to a mineral deficiency. However, PA content of breads is very dependent on raw material, production methods and process conditions and it is possible to decrease PA content of bread with optimum process conditions that degrade PA.

In this study, corn bread was produced with whole corn flour mixed with wheat flour at rates of 0%, 15% and 30% using different yeast level, fermentation time, and baking temperature and the effect of these different process conditions on PA content of corresponding bread was investigated. PA contents of corn bread decreased with increasing level of wheat flour and yeast level in the bread formulation. Same trend was observed with longer fermentation time and higher baking temperature.

**Keywords :** Corn bread, phytic acid, bread processing conditions



***Traditional Cereal Foods***

***Abstract Reference : 407***

**Tarhana: A Traditional Turkish Fermented Food**

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Tarhana is a fermented traditional Turkish food made from cereal flours, yogurt, and vegetables. It is one of the most important traditionally fermented products of Turkey, and has a high nutritional value. Tarhana is a good source of B vitamins, minerals, organic acids and free amino acids. Due to its rich nutritional value, it is known to be a healthy food for children, adults, and patients. It is mainly produced at home-scale level, but is also made commercially on larger scales.

Tarhana is a traditional Turkish cereal-based food obtained mainly from lactic acid fermentation. It is produced by mixing cereal flour, yogurt, baker's yeast (*Saccharomyces cerevisiae*), vegetables (tomatoes, onions, green peppers, and red peppers), salt and spices (mint, thyme, dill, etc.), followed by fermentation for 1 to 7 days. Next, the fermented dough is either sun dried at a domestic level or oven dried at an industrial level and ground to particles smaller than 1 mm. Lactic acid bacteria represent the major microbial group for tarhana fermentation. They take part in the generation of aromatic compounds typical for the final product and strongly participate to the stability of the product during storage by inhibiting several unwanted microorganisms.

The low moisture content and low pH value of tarhana provide a bacteriostatic effect against pathogenic and spoilage microorganisms and increase the shelf life of the product. Tarhana is not hygroscopic and can be stored for up to 2 years under dry and cold conditions without any signs of deterioration. It is used for making soup by adding water and boiling until thickened, and is generally consumed at lunch and dinner.

**Keywords :** tarhana, lactic acid fermentation, cereal flour

***Traditional Cereal Foods***

***Abstract Reference : 157***

**Ovma**

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Ovma pilaw is one of the traditional dishes that the Turks who migrated from the Balkans to Anatolia consume during the lunch and dinner and in the Sahur throughout the month of Ramadan. Materials needed for the production are ovma boat made of wood, coarse flour, small particle size bulgur, eggs, milk and salt. For approximately 3-4 kg ovma, liquid egg from 3 to 4 eggs is added into milk. A dessert spoon of salt is then added and the mixture is whipped for 1-2 minutes. The whipping process continues until the liquid egg is completely mixed with the milk. This mixture serves as liquid part to be used in ovma preparation. Before the scrubbing process, about 1 kg of bulgur is soaked in some water to enable swelling. The swollen bulgur is spread in the ovma boat. Flour having coarse particles is mixed with salt and spread over bulgur layer. On top of the flour, the previously prepared liquid part is sprinkled little by little with the help of a spoon and is rubbed between palms by circular movements in the same direction. This process is continued until bulgur particles reach to the size of the lentil by sticking flour onto them. At this stage, the scrubbing water should be poured carefully to prevent the granules from sticking together. After 30 minutes-lasting process, ovma is taken from ovma boat and sieved using a large mesh sieve. The lentil sized portion on the sieve is spread over a clean cloth, and the undersize ovma particles are transferred again to the ovma boat and scrubbing process is continued. Scrubbing and subsequent sieving process are continued until all of the granules reach to the size of lentil. The ovma is then placed on a clean cloth, aerated for 1-2 hours, taken to the tray and left to stand for 1-2 hours in a warm stone oven. Dried ovma obtained by baking in the oven can be stored in cloth bags for 6 months without losing its freshness. When it is to be consumed, ovma is cooked in boiled water in a ovma to water weight ratio of 2/3, and is cooked until it absorbs water. It can be consumed by spreading melted butter over or cheese can be shredded on ovma upon request.

**Keywords :** Ovma, Traditional food, Pilaw, Balkan Turks

***Traditional Cereal Foods***

***Abstract Reference : 159***

**Fırın Kuru Bread**

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Fırın kuru bread is a kind of bread that is produced and consumed in the Black Sea region and especially around Sebinkarahisar. Based upon the passage of Silk Road from Şebinkarahisar, it is known that this bread type has spread to other parts of the Black Sea from Şebinkarahisar. Production of fırın kuru bread includes three stages; yeast production, bread making and drying process. Preparation of the yeast is performed by storing the dough prepared using 300 g flour, 500 ml water and 50 g rock salt for 15 days. It is used as yeast source for bread making. Stone ovens are first burned using thick woods in the baking of the bread. After burning the oven, the dough is ready for baking. The dough is prepared by kneading of a mixture of 50 kg flour at 30-35 °C, 20 L of water and 500 g of rock salt. Pasted dough is flaked with a thin layer so that it does not stick to the cover. After kneading, it is left in a cover for a period of 1.5-2 hours for the dough fermentation. Ready to cook dough is cut with a special spoon, floured and spread in an oven room lined on the cover. The dough to be cooked is transformed into a bagel and placed into an oven. It is cooked approximately 5 minutes. After, all the dough prepared for baking has been cooked, drying process begins. For the drying process, the rods in the oven are removed and waited for 10-15 minutes in order to avoid burning of breads. After the temperature of the oven is decreased by cooling the oven, the breads are placed into the oven again. Baked breads are rotated 3 times with intervals of 30 minutes. After rotation, they are held and dried for 3-4 days. The dried breads are transferred to the bags, where it may be stored for at least 2 years depending on moisture conditions. These breads are mostly consumed by the people of the region, but they are also consumed outside the region. Because the bread is dried, before consumption, the bread is soaked in water for 10-15 seconds, let the stand for 4-5 minutes and consumed.

**Keywords :** Fırın kuru, Bread, Traditional food, Şebinkarahisar

***Traditional Cereal Foods***

***Abstract Reference : 418***

**SOME PHYSICOCHEMICAL AND SENSORY CHARACTERISTICS OF KÖMBE**

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<sup>2</sup>Ondokuz Mayıs University

Kömbe is a kind of cookie that is harder and dry than traditional cookies, which is also known as festival kömbe in çukurova region and can be preserved without deterioration for a long time. Kömbe made by people in the region for a long time which with different names to also known as french feast. There is no known definite description, and those who are not intended to be stored for a long time change their recipes to make them softer or crisp, sweet, walnut. When it comes to the festival in the region, it comes to mind the spice of the kömbe.

First the dough is prepared with sugar, yoghurt, liquid and solid fat and then the most important feature is obtained with an which is sold in the region as extraordinary mixture, added vanillia . Kömbe which there are a lot of spices that include cinnamon, cloves, ginger, muskat, mahlep, new spring and drop gum. Finally, flour and baking powder are added and mixed. It becomes an oily, soft dough. In addition, walnut or date may be put into it depending on demand. So it is dipped in white thirst which is not frying in the oven and are abundant in those regions , and the pattern is created by pressing the wooden carved motif styler. It is cooked in round steel ovens. Prepared kömbe can be consumed freshly other put into glass jars and stored for months.

In this study, some physicochemical and sensory properties of kömbe which is the traditional product in the especially mediterranean region were investigated. It is aimed to promote this product that everyone loves in the Mediterranean region and not forget this product by people and future generations. Traditional foods are take the day off, being forgotten with this study, even to the transferred to industry provided to be consumed by everyone.

**Keywords :** Kömbe, traditional food, cookie.

***Traditional Cereal Foods***

***Abstract Referance : 421***

**UTILIZATION OF QUINOA FLOUR IN TRADITIONAL TURKISH NOODLE (ERİŞTE)  
PRODUCTION**

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<sup>1</sup>Niğde Ömer Halisdemir University

Erişte is a typical pasta of Turkey, is obtained by cutting the matchstick size of dough which is prepared with flour, water, salt and egg. *Chenopodium quinoa* Willd, called quinoa, is a pseudocereal in the family of *Chenopodiaceae*. In recent years works on the quinoa have increased, as it is gluten-free and important for human nutrition. In this study quinoa flour was used in erişte formulation at different levels (0, 5, 10, 20, 30% w/w) to improve nutritional properties of erişte. Some physical (colour), chemical (moisture, ash, protein,), cooking (cooking loss, volume expansion, weight increase) properties of samples were investigated. Quinoa flour increased the protein content of erişte from 14.5% to 17.6%. Erişte with 30% quinoa had the highest ash amount (2.06%). The moisture contents of the quinoa added samples were higher. Increased quinoa amount caused decrement on brightness (L\*) and increasement on red/green (a\*) of erişte samples. Cooking loss value increased with the quinoa level. As the quinoa amount increased, the cooking time of the erişte increased. Quinoa flour showed a positive effect on the protein content while adversely affecting the quality characteristics of the erişte.

**Keywords :** Erişte, Quinoa, Traditional Turkish Noodle

***Traditional Cereal Foods***

***Abstract Reference : 244***

**Phenolic compounds profile of ancient grains (*Triticum* spp.)**

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The intense breeding programs carried out after the Second World War resulted in the selection of new varieties, less subjected to crop lodging, with high yield and able to provide high strength flour, suitable to withstand mechanical processing. This resulted, in turn, in the replacement of many local varieties and consequently in the loss of genetic variability. Recently, there has been a renewal of interest by consumers, manufacturers, farmers, and researchers to the so-called “ancient grains”, the varieties used in the last century or even earlier. “Green-minded” consumers consider the sensory and nutritional properties of the derived products the main features that drive this tendency. In this scenario, seed banks and field collections take on a paramount importance. Since 2011, at the Inter-Departmental Centre BIOGEST-SITEIA - University of Modena and Reggio Emilia - a project that has allowed the installation of a germplasm bank for the conservation and enhancement of cereals, with particular attention to wheat varieties (*Triticum* spp.), has been running. Seven ancient cultivars of bread wheat (*Triticum aestivum* L.), Autonomia, Gentil rosso, Inallettibile, Leone aristato, Mentana, Risciola, Terminillo, and one cultivar of durum wheat (*Triticum durum* Desf.), i.e. Poulard di Ciano, have been characterised for their phenolic profile. Hydroxycinnamic acids, hydroxybenzoic acids, flavones, and vanillin contained in the extracts of whole meal flour were subjected to separation and determination by LC-ESI-MS/MS. Ferulic acid, vanillic acid, sinapic acid, and syringic acid were the most abundant components. For the first time some flavones were also determined. Poulard di Ciano showed a peculiar phenolic profile. Also known as Turgido Reggiano, this variety is nowadays considered a real autochthonous wheat of Reggio Emilia province. The nutritional characteristics of the caryopsis, rich in micronutrients and compounds with nutraceutical activity, and the opportunity of increasing a more sustainable model of agriculture, urge biodiversity conservation practices and actions of valorisation of the wheat ancient varieties.

**Keywords :** Wheat, Ancient grains, Germplasm bank, Phenolics, LC-ESI-MS/MS approach

***Traditional Cereal Foods***

***Abstract Reference : 422***

**BUCKWHEAT (KARABUĞDAY) AS A FUNCTIONAL PSEUDOCEREAL**

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<sup>1</sup>Niğde Ömer Halisdemir University

Buckwheat belongs to family Polygonaceae, unlike major cereals is a pseudocereal. Buckwheat was first cultivated in the Balkan region of Europe about 4,000 B.C., but it was said to history of buckwheat is more than 8000 years. The basic structural difference that separates buckwheat from cereals it is structure of cotyledon that is not monocotyled, it is a bivalve plant. The most commonly grown buckwheat species are *Fagopyrum esculentum* Moench and Tatar buckwheat (*Fagopyrum tartaricum* Gaerth). Buckwheat is a rich source of starch, protein, dietary fiber, antioxidants and minerals. Buckwheat is considered functional food because of its rich nutritional content. It also contains high-level linoleic acid than other cereals. Buckwheat is a good source for celiac patients due to not contain gluten. Buckwheat has also rich dietary fiber source especially resistant starch. Resistant starch content of grain is proximately 45% of starch in grain. Thus it play a role of decreasing of glisemik index and prevention of colon cancer. Buckwheat is a good source of rutin and quercetin that are flavonoid. They are important antioxidants. They have effect on decreasing of LDL cholesterol level and high pressure blood. Moreover, buckwheat contains higher levels of zinc, copper, and manganese than other cereal grains. Buckwheat flour provides many benefits to food technology. For example texture was enhanced in erişte samples that was produced using buckwheat flour. In addition it has been stated that the pore structure of the bread has improved but the bread volume has decreased. The tarhana's functional properties and nutritional value have been increased by addition of buckwheat flour. Biscuits produced with buckwheat flour had acceptable color, texture, aroma and high nutritional value. Various buckwheat food products, such as tea, alcoholic beverages, vinegar, noodles, biscuits and cakes are widely consumed in China. Beneficial effects of buckwheat on health and on food technology will further increase the use of buckwheat for food applications.

**Keywords :** Buckwheat, pseudocereal, functional food

***Traditional Cereal Foods***

***Abstract Reference : 424***

**A traditional foods: Composition and production of Malatya Tarhana (Darhane)**

Didem ŞAHİNGİL<sup>1</sup>, Ali Adnan HAYALOĞLU<sup>1</sup>

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Fermented foods play an important role in the diets of many people in Asia, the Near East and parts of Africa. Cereal products are important sources for the daily protein, carbohydrate, vitamin, mineral and dietary fiber needs. Tarhana has significant place in Turkish culinary and it can be produced with many different methods and materials in many regions of Turkey. It is an important food because of suitable for the Turkish people's tastes, easily stored, produced, and cooked, being of common an economic and it has valuable nutrition content. Tarhana is generally consumed as soup in winter days. The amount of Malatya tarhana (Darhane) production is about 75 tonnes (industrial production 60 tons; traditional household production 15 tons) per year. In the production of Malatya tarhana with 'wheat dövme' (special product of wheat) is kneaded, as well as adjunct ingredients such as flour, mint and baker's yeast which contribute to the taste and nutritional value of the product are added. In production method; the wheat dövme is cooked with boiled water and added so that the salt content does not exceed 1% (w/w). After the mixture has cooled down, yoghurt and other ingredients are added and the resulting mixture is allowed to fermentation (for 3 days). Then, the mixture is lay out on scrim (in small portion) and the water of the tarhana is removed to provide fermentation and drying of the tarhana. After the drying process, the tarhana is taken from the packed and stored. The production methods were explained here and also chemical composition of Malatya Tarhana has been studied.

**Keywords :** Cereal foods; Tarhana; fermentation



***Traditional Cereal Foods***

***Abstract Reference : 432***

**MOST DELICIOUS FORM OF BULGUR: FELLAH PATTY**

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Fellah patty be named the Arab people who are farming in Adana and Hatay in Turkey. This food, which is originated from Arab cuisine, is basically bulgur dish and also known as garlic patty in some regions. For preparing the patties, the ingredients are bulgur (1 kg), semolina (500 grams), wheat flour (30 grams), egg (50 grams), red pepper paste (10 grams), salt (5 grams), chili pepper (2 grams), dry mint (2 grams), dry basil (2 grams), cumin (2 grams), black pepper (2 grams), for preparing the sauce, add the following ingredients: tomato puree (1 kg), olive oil (96 grams), tomato paste (10 grams), pepper paste (5 grams), garlic (105 grams) and parsley (75 grams) to decorate. After the dough is prepared, it cuts into small pieces, rolled and shaped by thumb. All these dough pieces are thrown into the pot which is filled with hot water, and boiled. In another pan, tomato puree, olive oil, pepper and tomato paste and garlic roast for about five minutes. When the prepared sauce and patties are served, chopped parsley is poured on it. In Turkey, Central Anatolia, Eastern Mediterranean, Southeast Anatolia and Eastern Anatolia is a widely consumed cereals which are obtained from wheat and wheat varieties (bulgur, thick bulgur, cracked wheat, semolina, etc.). People who live in these regions generally use wheat and its products in the meals. Bulgur is obtained from wheat and a whole grain product. It has dietary fiber, oligosaccharides, minerals, vitamins (especially B group vitamins), antioxidants and phytochemicals and because of that it is important food which has protective properties against chronic diseases such as obesity, diabetes and cardiovascular diseases when daily dietary consumption is preferred. When Fellah patties are prepared and served properly, it can be nutritious, high-quality meal. A portion of patties contains about 527 calories, 94 grams of carbohydrate, 14 grams of protein, and 10 grams of fat. In addition, it contains 0,4 mg B1 (Tiamine), 0.18 mg B2 (Riboflavin), 7.2 mg B3 (Niasin), 0.5 mg B6 (Pyridoxine) vitamins. It is a healthy meal when it is consumed with a yoghurt.

**Keywords :** Bulgur, Fiber, Oligosaccharides

***Traditional Cereal Foods***

***Abstract Reference : 437***

**TARHANA FOR CELIAC DISEASE**

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Tarhana traditional fermented food in Turkey. Tarhana comprise result of lactic acid fermentation kneaded dough with yogurt, wheat flour, salt, vegetables (tomatoes, onions, green and red peppers) and spices. Since it is a fermented food made from cereal, dairy products, and different vegetables, a good source of B vitamins, minerals, organic acids and free amino acids. Cereal grains provide significant quantities of energy but celiac disease can not consume cereal grains including gluten. Celiac disease occurs in genetically predisposed individuals who demonstrate a permanent intolerance to gluten, found in wheat, barley, and rye. certain cereals (rice, maize, sorghum and millet) and pseudocereals (amaranth, buckwheat and quinoa) do not contain gluten. Celiac disease is a syndrome characterized by damage to the small intestinal mucosa (villi structure) caused by genetically predisposed individuals, the gliadin fraction of wheat gluten, and similar proteins soluble in alcohol in barley, rye and oat (hordein, secalin and avidin). Tarhana includes gluten protein due to use of wheat flour and thus for celiac diseases carry out gluten free tarhana. According to a study gluten-free formulations of tarhana, instead of wheat flour, 40% buckwheat flour, 30% rice flour and 30% corn starch in the first formulation and 60% buckwheat flour, 20% rice flour and 20% corn starch in the second formulation were handled. As a result of the study, magnesium, potassium and phosphorus contents of gluten-free tarhana increase has detected. In another study, corn flour and hydrocolloid has used instead of wheat flour in tarhana production, and the water holding capacity of the use of baked corn flour has decreased viscosified and viscosity has increased with guar gum addition. In another study gluten free tarhana by using kinoa flour, potato starch and rice flour instead of wheat flour. The use of kinoa flour led to decrease in fermentation loss values of the tarhana samples and affected the colour ( $L^*$ ,  $a^*$ ,  $b^*$ ). High kinoa flour addition levels increased the ash, protein, fat and mineral (K, Mg, Ca, and Fe) contents of tarhana samples.

**Keywords :** gluten, tarhana, celiac, disease

***Traditional Cereal Foods***

***Abstract Reference : 333***

**MICROBIOLOGICAL, CHEMICAL AND ANTIOXIDANT PROPERTIES OF TRADITIONAL  
TARHANA CHIPS WITH FERMENTED KEFIR**

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Tarhana chips are a popular traditional fermented food consumed widely in the Kahramanmaraş region of Turkey. Tarhana chips are different from many other types of fermented food in that they are produced in the form of tortilla chips. Cereal and yoghurt are the main ingredients in Tarhana chips. Hence, Tarhana chips can be recognized as a dairy (yoghurt)-based fermented food. In this study, the effect of replacement yogurt in tarhana chips by adding kefir on fermentation and some properties (antioxidant properties, colour, microbial and chemical composition) was investigated. The tarhana samples which fermented with kefir showed higher antioxidant activity than tarhana samples which fermented with yogurt (without kefir grains). The difference in antioxidant activities of traditional tarhana chips and tarhana with kefir grains was statistically significant ( $P<0.05$ ). The analysis of total coliform group bacteria, total aerobic mesophilic bacteria, total *Lactobacillus* spp., and yeast-mould counts were conducted. None of the samples contained coliform group bacteria. At the end of fermentation, count of *Lactobacillus* spp. and total aerobic mesophilic bacteria for traditional tarhana chips and fermented chips with kefir changed between 8.47-8.94 log<sub>10</sub> cfu/g and 7.43-7.95 log<sub>10</sub> cfu/g, respectively. Yeast counts in the samples of chips fermented with kefir was found 6.89 log<sub>10</sub> cfu/g. In conclusion, the antioxidant properties of kefir-supplemented tarhana samples were found to be higher, no significant differences were observed in L, a\* or b\* values between the samples, fermented kefir or control and as kefir had a complex microbial flora, yeast counts were only determined in samples fermented with kefir. The results confirmed that kefir is a suitable ingredient for tarhana chips production. Kefir had some improving effects on nutritional and functional properties of tarhana.

**Keywords :** Tarhana chips, kefir, antioxidant

***Traditional Cereal Foods***

***Abstract Reference : 460***

**Traditional Kastamonu Bread of Tarhana**

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Tarhana, commonly consumed as soup in Turkey, is an important traditional food in Turkey, prepared by fermenting the dough prepared by mixing wheat flour, yoghurt, various vegetables (paper, onion, tomato, dill) and spices. Takes the role of yogurt bacteria and Baker's yeast in the fermentation of Tarhana. Because it contains both animal and vegetable raw materials, nutritional value is high. There are important differences according to regions in both content and production methods of tarhana. For Kastamonu wet tarhana Kastamonu wet tarhana is different from the other the fermented dough can be stored as wet without drying process and flavored using plenty of dill (*Anethum graveolens*). When Tarhana is prepared firstly milk and milk slip and dill are fermented like yoghurt. The onion and pepper are added to the yogurt and incubated at room temperature for sour about a week. Sour yogurt is mixed with flour and salt and tomato, then kneaded the dough and fermented for about a week (the dough sometimes is kneaded gently). Bread of tarhana is a sourdough made kneaded gently wet tarhana and wheat flour and salt and water and fermented. After fermentation sourdough is shaped and baked.

**Keywords** :traditional bread, sourdough, Kastamonu wet tarhana

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***Abstract Reference : 338***

**TRADITIONAL PRODUCTION METHOD AND BASIC CHARACTERISTICS OF DRIED BREAD  
“PEKSIMET”**

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The scientific studies to extend the shelf life of bread, which is the basic food source of mankind, have continued for years. In the past, making bread more durable was especially important for sailors. There are many methods to keep bread for longer storage times, lowering of its moisture by long-term drying is one of them. Peksimet is the type of sourdough bread which is obtained as a result of dropping its moisture for a long period of time drying in stone ovens after baking and slicing. This product is still produced in Muğla Region of Turkey traditionally. In the region, peksimet has been produced generally in summer by using white wheat flour (white peksimet, WP) or whole wheat flour (dark peksimet, DP) and consumed during winter. Low moisture content helps it to withstand 2 years without deterioration. Dried peksimet has been softened by soaking in water before consumption.

In this study some basic characteristics such as; acidity, pH, moisture, ash, salt, crumb and crust color and sensorial evaluation of WP and DP were determined. White wheat bread produced commercially was taken as control bread (CB). Acidity level of both WP and DP were found twice as much as than CB. As expected, the sourdough in the peksimets was led to significant decrease of pH value and increased the acidity level. Moisture content of CP was observed 36.0 % while for WP and DP it were measured as 6.0 and 7.9± 0.2 % respectively. Ash content of WP and DP were found significantly higher than CB. There is also significant differences was determined between brightness, redness and yellowness values of CB and peksimet samples. In the test of organoleptic quality, the WP and DP were rated in the same score in terms of overall appearance, structure, crust and crumb color, texture, odor, aroma and taste but all these scores were rated lower than CB. Only chewiness values of DP was taken same points with CB. As a result, the spreading of the production and consumption of this local breads will be beneficial both in terms of increase the storage times of bread and in the presentation of different flavors to the consumer.

**Keywords :** Sourdough, Muğla, peksimet, drying, stone oven

***Traditional Cereal Foods***

***Abstract Reference : 468***

**Traditional Cereal Beverage: Boza**

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Fermentation is a desired biochemical modification process of primary food products resulting from the activity of microorganisms and their enzymes. It is widely used almost all over the world, for its benefits to enhance some food properties such as taste, flavor, texture, nutritional value and shelf life.

Lactic acid fermentation is practiced commonly in many Mid-Asian, Middle East and African countries. Boza is a traditional Turkish beverage made by fermentation of millet, cooked maize, wheat, or rice semolina or flour with yeast and lactic acid bacteria. Boza can also be produced by the combination of any of the cereals mentioned. It is a highly viscous colloid suspension, pale yellow in color and can be classified as sweet or sour boza depending on acid content. Boza contains about 0.50 - 1.61 % protein, 12.3 % carbohydrate and 75 – 85 % moisture. In general the pH of the boza ranges from 3.16 to 4.02 and the alcohol content is 0.13 – 0.86 % (w/v).

The typical boza is known by its sourish taste. The taste of boza depends on the ingredients used and the preparation method. The refreshing effect of lactic acid enables boza to be consumed during summer time; however, the high temperatures during that season result in rapid growth of indigenous microflora and, consequently, dramatic changes in sensorial attributes . Thus, boza is usually consumed in winter. It is served with roasted chick peas *leblebi* and cinnamon in Turkey. The popularity of the drink is due to its pleasant taste, flavor and nutritional properties. In Turkey, boza is produced in the artisanal way and industrial scale.

The purpose of this study is to introduce traditional Turkish cereal-based fermented beverage Boza and supporting the increase of the consumption of Boza.

**Keywords :** Boza, Fermented beverage, winter, roasted chick peas

***Traditional Cereal Foods***

***Abstract Reference : 478***

**EFFECT OF DOUGH THICKNESS ON DRYING KINETICS OF TARHANA**

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In this study, the effect of dough thickness on drying kinetics of tarhana dough was investigated. First, tarhana dough is prepared with the formulation determined in the preliminary experiments. Then the dough was fermented at 30 °C for 7 days. After fermentation, tarhana dough samples were dried in a hot air drying cabinet at a temperature of 30 °C and 30% relative humidity and at a drying air velocity of 0.3 m/s. The dough samples to be dried were placed in the dryer at a thicknesses of 0.5, 1 and 2 cm. The highest drying rate was obtained for the dough with the smallest thickness of 0.5 cm. The data obtained from drying of samples were modeled using Lewis, Henderson and Pabis, Page, Modified Page and Logarithmic Models. The most suitable models describing the drying kinetics of all thicknesses were the Page and the Modified Page Models. The effective moisture diffusivity ( $D_{eff}$ ) values for 0.5, 1 and 2 cm dough thicknesses were  $8.79 \times 10^{-11}$ ,  $1.48 \times 10^{-10}$  and  $1.24 \times 10^{-10}$  m<sup>2</sup>/s, respectively.

**Keywords :** Tarhana, drying kinetics, dough, thickness

***Acknowledgments :*** The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support of PAU-ADEP.

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***Abstract Reference : 501***

**Replacement of Sugar and Wheat Flour with Grape Marc in Cake Formulation: Effect on Textural Properties**

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In the last few years, there has been a growing interest in the use of industrial food wastes in terms of both the nutritional content and economical purposes. In particular grape residues have attracted attention because they are rich in polyphenolic compounds. The primary aim of this study was to recycle the grape marc, one of the grape residues emerged in some industries like beverage and wine industries. In the present study, usage possibility of grape marc instead of wheat flour and sugar was investigated. For this aim, mixture design was performed to model and study the effects of the concentration grape marc, wheat flour and sugar on the hardness and springiness values of the prepared cake samples. Usage of grape marc in the cake formulation instead of sugar and wheat flour significantly affected the textural characteristics of the cake. Considering sugar and flour amount, cake sample including 44.7% wheat flour, 49.8% sugar and 5.5% grape marc The results of this study revealed that wheat flour, sugar and grape marc should be used 44,7%, 49.8%, 5.5% had lower hardness and higher springiness values, which is desired for good-quality product. In addition, usage of grape marc up to optimum concentration did not adversely affect visual characteristics of the cake samples such as pore structure and color. Based on the results, some grape marc can be used in the cake formulation instead of some sugar and wheat flour content can be replaced by grape marc without affecting quality characteristics of the cake. Using by-product can also potentially reduce final product costs, represents an environmentally friendly way to operating industrial waste and improving functional characteristics of the end products.

**Keywords :** Cake, Waste, Grape marc, Mixture design



***Traditional Cereal Foods***

***Abstract Reference : 511***

**Couscous (Kuskus): Production Methods and Some Enrichment Studies**

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Couscous is a traditional cereal product produced in Turkey, Middle East and some African countries. Couscous is known as “kuskus” in Turkey, “couscous” in Morocco, “matfoul” or “moghrahieh” in Lebanon and “kuskhi” in Libya. It is produced by hand (traditional production) or using extrusion technology. Industrially produced couscous is a kind of pasta product made from semolina and water by the use of extrusion technology. Traditional production methods differ from country to country. For example, in Turkey it is traditionally produced by coating bulgur with wheat flour and milk. Bulgur is a quick-cooking form of whole wheat that is cleaned, boiled, dried, dehulled, reduced and sifted into distinct particle sizes. Bulgur has a good nutritional value and this phenomenon makes it an ideal food in a vegetarian diet. But in North Africa, in the traditional method of couscous production, bulgur and milk replace semolina and water.

Limited number of studies have been reported in literature previously. In the studies which use traditional Turkish method; bulgur coated with different flours such as soy flour, oat flour and chickpea flour to enhance nutritional value of couscous. In another study, gluten-free couscous was produced by traditional African method and rice-field bean, rice-proteaginous pea and rice-chickpea flour mixtures were used in couscous formulas.

The aim of this study is to introduce couscous production methods and give information about the results of couscous studies.

**Keywords :** Couscous, production method, enrichment

***Traditional Dairy Products***

***Abstract Reference : 521***

**Effect of Temperature on Rheological Properties of Strained Yogurt Produced from Goat Milk**

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Rheological properties of at different strained yogurt produced from goat milk were determined at temperatures between 5-23 °C. Strained yogurt was produced from the goat milk supplied from a local goat milk producer in Denizli. For the production of strained yogurt, the yoghurt produced from the goat milk were strained at 4°C during 9 hours by using a special cotton cloth and after that homogenized by a kitchen homogenizer. Rheological measurements were done with rotational viscometer. Samples were sheared with increasing order at different shear rates. Strained goat milk yoghurt was behaved as a pseudoplastic power law fluid at 5, 8, 11, 14, 17 and 23°C. Effect of temperature on consistency coefficient ( $K$ ) was explained by Arrhenius type equation, and value of  $K$  was increased from 66.99 Pa.S<sup>n</sup> to 93.26 Pa.S<sup>n</sup> as temperature decreased from 23°C to 5°C. Activation energy of the poppy seed paste were found as 11618 kJ/kmol. Flow behavior index were changed between 0.2299-0.3322 and its value decreased significantly at higher temperatures analyzed.

**Keywords :** Rheology, Strained Yogurt, Goat Milk, Consistence

***Acknowledgments :*** *The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support with project No: 2011FBE016*

***Traditional Dairy Products***

***Abstract Reference : 625***

**Determination of Lactoferrin in Buffalo Milk by HPLC Method**

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Lactoferrin (LF) is a basic serum glycoprotein with a single-chain, approximately 80 kDa molecular weight consisting of 692 amino acids with two iron binding sites. Lactoferrin is found in three forms: lactoferrin- $\alpha$ , which has iron-binding but no ribonuclease activity, and lactoferrin  $\beta$  and lactoferrin- $\gamma$ , which have non-iron-binding rubidase activity. The lactoferrin colostrum is found in milk and other body secretions and in the body cells of many mammals. Lactoferrin has antimicrobial/antiviral effect against many pathogenic organisms such as *E. coli*, *Clostridium perfringens*, *Candida albicans*, *Haemophilus influenzae*, *Helicobacter pylori*, *Listeria monocytogenes*, *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *S. enteriditis*, *Staphylococcus aureus*, *Streptococcus mutans*, *vibrio cholera* and hepatitis C, G and B virus, HIV-1, polio virus and rotavirus.

In addition to this feature, LF has been considered to be an important defense molecule and has a diverse range of physiological and biological functions such as antioxidant, anti-inflammatory, anticancer and immune regulator. Since the discovery of these properties of LF has been the subject of many investigations, there were developments of different analytical methods for determining LF in milk. Most commonly used methods are HPLC, SDS-PAGE, and MS.

In this study, lactoferrin levels were determined using C18 HPLC column (250 × 4.6 mm, 5  $\mu$ m) in the serum obtained by precipitating the acid casein after seperating fat by centrifuging the 40 samples of buffalo milk collected at different times.

**Keywords :** Lactoferrin, iron-binding protein, immunomodulation

***Traditional Dairy Products***

***Abstract Reference : 626***

**The importance of milk proteins in athletes' nourishment**

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The purpose in nutrition of athletes is providing to athletes on a sufficient level and balanced nutrition by age, sex, physical activity, nutrition habits and energy expenditure. Protein uptake is very important in improving sport and exercise performance in athlete nutrition. Proteins are important macro nutrients in nutrition due to their numerous functional effects on metabolism. Milk contains high quality proteins with high biological value in its digestibility. Milk proteins are basically divided into two groups, named casein and serum proteins. Serum proteins have functional properties that can positively affect athletes' health as well as their structural functionality. Compared to other protein sources, it contains branched-chain amino acids that support muscle activities at a high rate and is therefore preferred as a source of protein in the nutrition of athletes. In recent years, studies on milk proteins and bioactive peptides born of therefrom have increased. Different concentrations of serum proteins have different positive effects and bioactive proteins and peptides. Bioactive peptides derived from milk proteins are potential regulators of various metabolic events in the body and have beneficial physiological effects for the athletes. Antioxidant activities offer new applications that suit the needs of individuals with active lifestyles. As a result of the researches carried out especially athletes, bodybuilding athletes, those who are engaged in sports that require strength and endurance, emphasizing the importance of milk proteins as a factor in increasing muscle protein synthesis, providing a healthy and strong immune system, shortening the recovery period after training and competitions, reducing the healing period of wounds, and reducing stress in competitions. In this review, the importance of nutrition and health of athletes engaged in activities based on exercise and performance in terms of human health of milk proteins has been examined.

**Keywords :** Milk proteins, casein, serum proteins, athletes' health

***Traditional Dairy Products***

***Abstract Reference : 627***

**The effect of adding fruit marmalade into probiotic and standard yoghurt on the phenolic content and antioxidant activity**

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In this study, antioxidant activities and total phenolic contents of standard and probiotic fruit yoghurt prepared using strawberry and blackberry marmalade were determined. In the production of standard yogurt, *Streptococcus thermophilus*, *Lactobacillus delbrueckii* subsp. *bulgaricus* starter cultures were used, whereas, *Lactobacillus acidophilus* LA-5 and *Bifidobacterium bifidum* BB-12 starter cultures were used for the production of probiotic yoghurt. After yogurt productions, changes in antioxidant and total phenolic content of yoghurt were investigated during 21 days of storage. During the storage period, physicochemical properties and microbiological analyzes were performed to determine bacterial growth in all yoghurt samples.

Addition of fruit marmalades promoted the growth of all studied starter cultures. *Streptococcus thermophilus*, *Lactobacillus delbrueckii* subsp. *bulgaricus*. Also, *Lactobacillus acidophilus* LA-5 and *Bifidobacterium bifidum* BB-12 in probiotic yoghurts were found to be at bioterapeutic levels ( $>10^6$  log kob mL<sup>-1</sup>). In addition, the antioxidant activity and total phenolic content of probiotic yoghurt was found higher than standard yoghurt ( $p < 0.01$ ).

As a result, it was determined that the addition of fruit to probiotic and plain yogurts was effective in the development of probiotic bacteria and bioactive properties of yoghurts.

**Keywords :** Probiotic yoghurt, fruit concentrate, antioxidant activity, total phenolic substance,

***Traditional Dairy Products***

***Abstract Reference : 346***

**Plasmid presence and antibiotics resistance of lactic acids bacteria in traditional food**

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Extrachromosomal DNA plasmids are extensively distributed in lactic acid bacteria and encode various functions important for dairy fermentation as protein and lactose metabolism, aroma and exopolysaccharide synthesis. Plasmids are common in fermentative bacteria, and differences are found in size, function and distribution. Plasmids are able to encode important molecules such as protein and carbohydrate metabolism, exopolysaccharide production, bacteriocin synthesis and bacteriophage defense systems, thus affecting industrial fermentation incomes. On the other hand, plasmids carry antibiotic resistance genes called resistance transport factor.

*Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus* are used as starter to produce yoghurt. Recently, home-made yoghurt consumptions have become very popular issue, reflecting the use food additive in industrial production. Most of the industrial starter strains were plasmid-free while strains isolated from home-made yoghurt carried plasmids. Home-made yoghurt starter can acquire antibiotic resistances from other bacteria in the natural environment and different resistant mechanisms via mutation. The resistance of fermentor bacteria to antibiotics is an increasingly important public health problem worldwide. In this study, 90 *Streptococcus thermophilus* and 30 *Lactobacillus bulgaricus* strains were isolated from yogurt samples obtained from numerous villages in different regions of Turkey and plasmid presence and antibiotic resistance of these isolates were investigated. Results showed that most of the natural isolates resistant to different antibiotics and carrying different number of acquired plasmids. Therefore acquired plasmids and antibiotics resistance of traditional fermenter microorganisms should be taken into account before use.

**Keywords :** antibiotic resistance, plasmid, starter, lactic acid bacteria

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***Abstract Reference : 347***

**Usage of Spices and Herbs in Traditional Cheeses produced in Hatay region**

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Carra and Sürk are traditional Turkish cheese products produced in Hatay region in the southern of Turkey. Some specific spices and herbs are added to curds formed with mainly acidification of milk with lemon. The addition of spices has led to improve its sensorial properties and to reduce microbial load of the product. Antimicrobial activity of spices or herbs such as black cumin, thyme, mint etc. comes from containing high amount of bioflavonoids and terpenes. *Nigella sativa*, commonly known as Black cumin, Black seed, or Black cumin seed is added into Carra cheese which means “earthenware jug”. It was reported that although black cumin has antioxidant and antibacterial activities, Carra cheese should be produced using pasteurized milk instead of raw milk and the stored under refrigerated conditions. In a study, *Listeria monocytogenes* had been inoculated into Carra cheese and followed fading of the growing. The number of *L. monocytogenes* had increased during manufacture and reached 4.89 log cfu/g at the first day of ripening, while decreased to 4.19 log cfu/g during the first 15 days of ripening which indicating contaminated cheese can cause serious illnesses.

Sürk cheese includes more than nine various spices that are olive oil, black pepper, basil leaves, flaked pepper, clove, thyme, pimento, cinnamon, cumin, nutmeg, garlic and hot pepper paste. These spices are well known for their antibacterial and antifungal activities. In a study, *Staphylococcus aureus* had been inoculated into Sürk cheese and it had been claimed that during storage of cheeses while *S. aureus* was inhibited continuously, the flavor had remain same. The usage of spices into production of cheese can help to reduce microbial load as acting natural antimicrobial agent. In order to improve shelf life and increase product diversification or development new products in cheese industry, spices have great potential to obtain high quality traditional products. However it was emphasized that using of spices is not enough to complete protection, hygienic conditions during these cheese productions should be taken into account and they should be kept in refrigerator.

**Keywords :** Cheese, Sürk, Carra, Spices, Herbs

***Traditional Dairy Products***

***Abstract Reference : 536***

**Determination of Milk Adulteration in Dairy Products Using Chromatographic Techniques**

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Dairy products are important protein sources. Milk proteins are important food components for the development, growth and self-renewal of the organism and are essential organic compounds for life in terms of chemical reactions. The milk proteins are indispensable for human life due to contain all essential amino acids that are not synthesized in the body. There are several methods used for the detection of milk proteins and some of the most effective methods are chromatographic methods, including Thin Layer Chromatography, Ion Exchange Chromatography, Affinity Chromatography, Hydrophobic Interaction Chromatography, Gel Filtration Chromatography, Reverse-Phase Chromatography. Peptides and proteins are separated based on surface hydrophobicity or differences in surface charge. Proteins can be detected more easily by analytical instruments compatible with liquid chromatography. Milk proteins are large molecules with a polymer structure (for instance;  $\alpha_{S1}$ -casein: 22.068 – 23.724 Da). For this reason, mass detectors with wide range of mass are needed for working with Time-of-Flight (ToF) or orbitrap MS instruments. These devices have been primarily developed for the analysis of proteomics and peptides. The milk origin can be determined by detecting milk proteins, which are distinctive proteins depending on milk origin. Quick, easy and precise chromatographic methods based on determination of milk origins can be developed for detection milk adulteration in dairy products.

**Keywords :** Milk adulteration, chromatography, milk proteins



***Traditional Dairy Products***

***Abstract Reference : 193***

**KURUT (GURUT): A TRADITIONAL DRIED DAIRY PRODUCT**

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Kurut (Gurut), a traditional Turkish product, has its origin in Central Asia and can be described as a dried dairy product briefly. It is generally produced by passing yoghurt through the cheesecloth and drying the pellets in the air. The production process and usage of kurut varies from region to region. In fact, the word “kurut” is used for all dairy products which are dried to be kept without any spoilage. There are several types of kurut named “kaymak kurutu”, “ayran kurutu” and “keş” apart from yoghurt kurut. Kurut is one of the most important long life foods for Turkish people who live the nomadic life in the past. It is also used in the preparation of several foods.

About 1 kg kurut is obtained from 12-18 kg yoghurt. For this purpose, the fat free yoghurt is filtered through a cheesecloth or a cloth bag and waited for a day to obtain its typical sourish flavour. After filtering, the pellets are shaped by hand in different forms, put on a clean cloth and dried in the air for a few days. Except this, buttermilk, the residue of butter made from yoghurt, is cooked in a cauldron. Sometimes, while cooking, some salt is added to buttermilk. It is continued to cook until a part of buttermilk is coagulated. After coagulation, the buttermilk is put in a cloth bag and hung to remove clear green supernatant liquid. A weight is put on the bag to remove the liquid as far as possible. After this, the salt content of the pellets is controled and made some round, egg-shaped and trigonal pieces weighted at 30-40 g by hand. These pieces are dried on the clothes by turning upside-down.

Kurut can be consumed as “kurut soup” especially in the winter prepared by diluting the pellets with some warm water and also it is mixed with hot butter and added as sauce on some traditional foods like “Hengel” and “Haşıl”.

**Keywords :** Kurut, Yoghurt, Milk products, Soup, Traditional foods

***Traditional Dairy Products***

***Abstract Reference : 198***

**GREEN CHEESE OF KONYA**

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Green Cheese of Konya (also known as moldy cheese), which is a traditional product of Konya province in Turkey, has attracted special attention over the last decade. It is a special kind of tulum cheese that is commonly produced in Konya. Moldy cheese is conventionally ripened like all tulum cheese varieties then stored under mild and moist conditions to produce mold-ripened cheese. Sheep milk or mixed combinations of milk (sheep, goat or cow) is used as a raw material. Milk to be used for the production of moldy cheese must be skimmed to prevent formation of mycotoxins. Starter mold cultures are used in the production of moldy cheese varieties of Europe since the pasteurized milk is used. However, raw milk is used in Konya green cheese production, the use of starter mold cultures are not required. Different types of molds have been identified in Konya moldy cheese; *Penicillium roqueforti*, *P. verrucosum* var. *cyclopium*, *P. camemberti*, *P. brevicompactum*, *P. chrysogenum*, *P. frequentans*, *P. echinulatum*, *Aspergillus flavus*, *A. versicolor*. It has a distinct blue-green color due to the mold growth. Intensive aroma, salty taste, hard and dry texture are among characteristics of Konya green cheese. In Konya region, it is preferred to add into toasts, sandwiches, macaroni, salads thanks to its delicious ripened aroma and creeping characteristic when it is heated. Since its production is permitted and regulated by Turkish Food Codex, it has attracted special interest outside of Konya region and sales figures have been increasing in the last years. Like moldy cheeses from Denmark and Italy, Konya Green Cheese can be popularized internationally and it helps uplifting of rural regions of Konya by being an important export item. In order to meet increasing public demand in a sustainable way, safe conditions of production should be standardized and assured. In engineering and scientific perspective, publications on Konya green cheese are limited and more studies are needed to determine its aroma and flavor compounds, microbiological properties, ripening and textural characteristics and to improve its production process in the industrial level.

**Keywords :** Konya Green Cheese, Moldy cheese, Tulum cheese

***Traditional Dairy Products***

***Abstract Reference : 200***

**SÜRK: A TRADITIONAL CHEESE IN HATAY**

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Cheese, has been produced since ancient times, is a fermented dairy product. According to official sources, more than 50 traditional cheese varieties are known in our country. Among these cheeses Çökelek also produced. Çökelek cheese is an important dairy product because it is cheap, has low fat content and is one of the best sources of animal protein. Sürk cheese (Moldy cheese) which produced from the çökelek is a traditional dairy product at Hatay. Sürk means çökelek in Arabic. This cheese is traditionally produced from acidic cow milk and yoghurt. Acid-heat curd which is obtained by diluted nonfat finished yogurt is mixed with different types of spices (thyme, black pepper, hot red pepper, cumin, black seed or pepper paste) and salt. The mixture is kneaded, shaped (pear/conical), dried (3-4 days in the shade), then packaged (fresh consumption) or ripened. For ripened consumption, each cheese ball is wrapped in a piece of paper and placed in a jar for 20-25 days at room temperature to promote mold growth. For fresh consumption, the cheese balls are immersed in olive oil or before wrapped with stretch film, surface of them are covered with olive oil to prevent cheeses from mold growth. The production is usually carried out in villages or small companies. Therefore, standardization of production methods (spice quantity and variety, salt ratio...), identification of the product and improvement of the storage conditions are necessary. In this way a standard product can be produced and used in a large area. Besides studies about different spices addition to the Sürk can be important due to the demand for natural additives.

**Keywords :** Sürk, traditional cheese, çökelek, spices

***Traditional Dairy Products***

***Abstract Reference : 651***

**The nutritional and economic value of curd cheese**

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Curd cheese, although obtained from cow milk, does not contain antigenic proteins in cow cheese. There is serum protein which is a very valuable protein not found in other dairy products. Curd cheese is a milk product that should be consumed especially for sportsmen, young people in the age of growth, elderly people, weak immune system and those who want to eat healthy. The serum protein on the curd cheese provides the synthesis of whole body and muscle proteins. There is a healing effect on muscle injuries that can occur as a result of excessive exercise. For this reason, especially sportsmen know the value of this cheese and consume it. It protects against cancer, strengthens the bones and especially strengthens the immune system. The immune system is a food that weak people, athletes, dietitians and blood pressure patients cannot give up on feeding. Especially the serum proteins and the cheese which contributes to the strengthening of the body's immune system is the first place in the healthy nutrition list of the athletes. According to the Turkish Food Codex, 100 grams of curd (full fat) cheese meets 90% of your daily calcium needs. There are 700 mg of calcium in 100 grams of curd cheese. Economically, the price is very affordable compared to other dairy products. This review is about the precious of nutrition value and economical value of curd cheese.

**Keywords :** Curd cheese, nutrition, economical value, protein content

### ***Traditional Dairy Products***

#### ***Abstract Reference : 44***

#### **A Traditional Food, Kefir**

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Most published research results indicate that homeland of kefir is Caucasus Mountains and it was randomly produced by nomadic people. It is a viscous, slightly carbonated dairy beverage and contains small amount of alcohol (Farnworth 2005; Yüksekdağ and Beyatlı 2003).

Turkish Food Codex defines kefir as: a kind of fermented dairy production which kefir grains are used and includes lactose-fermenting yeasts (*Kluyveromyces marxianus*), non-lactose-fermenting yeasts (*Saccharomyces unisporus*, *S. cerevisiae* and *S. exiguus*) as the starter cultures, and some strains of *Lactobacillus kefir*, *Leuconostoc*, *Lactococcus* and *Acetobacter* species (Anonymous 2009). Kefir grains are used for the production of kefir that has naturally high concentrations of lactic acid bacteria and yeasts (Güzel-Seydim 2012). Various microorganisms were identified in kefir grain such as *Lactobacillus kefiranoferiens*, *Enterobacter amnigenus*, *Enterobacter hormaechei*, *Saccharomyces lactis*, *S. cremoris*, *S. fragilis*, *Lactobacillus casei*, *Lb. brevis*, *S. thermophilus*, *Lb. acidophilus*, *Kluyveromyces fragilis*, *Torulopsis kefir* (Dertli and Çon 2017; Karagözlü 2013).

Moreover, steps of industrial production of kefir can be outlined as follows: it starts with homogenization of milk. Then, the milk is cooled to 18-24 °C after thermal processing at 90-95 °C for 5-10 min. Subsequently, milk is inoculated with 2-8% kefir culture and fermented at 20-25 °C for 18-24 h. Afterwards, the curd is broken and the product is matured for another 18-24 h at 20-25 °C. Finally, kefir is packed and become ready to eat or sold (Gökçe and Üstün 2011).

According to dairy industry statistics of Turkey National Dairy Council, total exports and imports of buttermilk, coagulated milk, cream and kefir were, 1.050.056 and 80.592 kg in 2012, respectively (USK 2013).

**Keywords :** Kefir, Proteolytic activity, Bacteria, Yeast

***Traditional Dairy Products***

***Abstract Reference : 268***

**TRADITIONAL PRODUCTION OF HATAY SURK CHEESE**

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<sup>1</sup>Traditional Production Of Hatay Surk Cheese

Surk cheese is a special and traditional dairy product and is commonly consumed in Turkey. Surk is a cheese containing various spices and herbs produced by acid/heat combination in the southern part of Turkey, particularly in Antakya (Hatay). It is derived from casein and fat produced and formed by coagulation of the milk. After production of surk cheese added spices-herbs which affects texture and flavour properties of cheese.

Generally, the flavour of a cheese is formed as a result of a complex balance between volatile and non-volatile compounds. In Turkey, acid-type cheeses are usually produced by heating of acidified milk using indigenous microflora of milk or diluted yogurt. Surk cheese is traditionally made from diluted yogurt (ayran) through boiling. The ayran, the liquid remaining after the manufacture of butter from yogurt, is boiled for ~30 min to precipitate milk proteins. The precipitate is pressed for 5–6 h to remove excess whey, and then added to various spices and herbs (peppermint, thyme, mint, cumin, black papper, cinnamon, and ginger) (0.1–0.3%) and chili pepper (2–3%). After kneading, salt is added (~5%). It is usually consumed as fresh without aging after air-drying 3–4 days. There is no standardized manufacturing method of Surk cheese. This cheese is immersed in olive oil and in this way it can be consumed.

Spices have long been used in foods due to their flavouring, antimicrobial effects on bacteria, fungi, and virüs. Surk cheese-making can play an important role in promoting human health because of their anticancer, antioxidative, and antiinflammatory properties. Additionally, Surk cheese may contain high levels of organic acids and volatile compounds, which may differ from those of the other cheeses.

In this review it will be focussed on the properties of Surk cheese given above.

**Keywords :** surk cheese, Hatay, spices, healthy properties, texture, flavour

***Traditional Dairy Products***

***Abstract Reference : 269***

**Evaluation of thermal properties of some traditional cheese types known in Turkey**

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Gaziantep, Kahramanmaraş and Hatay (named as künefelik) cheeses, traditionally produced in Turkey's southeast, are semi-hard cheese, and unfermented cheese and known as in Sıkma (squeezed) cheese group. The cheeses produced in each region show differences in their flavor, structure and physical properties. During cheese production, they are subject to different mechanical and thermal changes; therefore the characteristics of the final product may be different. Cheese contains mainly fat, protein and water, and important data can be obtained about the cheese structure which is important in cheese acceptance by determining the structural changes (crystallization, melting, oxidation, denaturation etc.). In this study, differential scanning calorimetry (DSC) and thermal gravimetric analysis (TGA) devices were used to determine the thermal properties of the mentioned cheeses.

The cheeses were obtained freshly from local producers (two different producers for Hatay and Kahramanmaraş and six different producers for Gaziantep) and were stored in the refrigerator for maximum two days before they were tested. TGA results can help to evaluate changes on oil-protein amounts and structure of cheese, especially at free and bound water levels.

DSC results showed that melting points of Gaziantep and Hatay cheese samples are lower than Kahramanmaraş's. This behavior might be due to the higher ratio of saturated / unsaturated fatty acids of Kahramanmaraş cheese samples. TGA results showed that total moisture and relative humidity levels in Gaziantep cheese were found higher than the other cheeses but lower free moisture content. Bound moisture content of Gaziantep cheese was found to be 70% and 30% higher than Hatay and Kahramanmaraş cheeses, respectively.

**Keywords :** Sıkma (squeezed) cheese, thermal property, DSC, TGA

***Traditional Dairy Products***

***Abstract Reference : 370***

**PRODUCING POWDERED BEVERAGES CONTAINING KEFIR BACTERIA**

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Functional foods are foods that are developed to make more beneficial for health using traditional daily consumed and healthy foods. In this study, it is aimed to functionalize kefir, a traditional food, using different inputs. It is targeted to obtain a product with a higher nutritional value in areas where there is no milk. Without the need for additional starter bacteria or yeast from the outside, vitamin complexes have been added to prepare kefir powder drink mixes to meet the daily nutritional needs. At the first stage, combinations of kefir bacteria were established and the appropriate temperature range for these bacteria has been determined. The most suitable carrier and prebiotic choice has been made considering organoleptic and bacterial growth promoting. In selection of kefir bacteria, the bacteria recommended for kefir in the Turkish Food Codex Communique on Fermented Milk Products have been taken into consideration. It was tested at 25, 30, 35 °C to determine the optimal fermentation conditions and 25 °C was determined as the optimal incubation temperature. In support of the growth of these bacteria and considering the organoleptic pleasure of the final product; milk powder, whey protein, whey permeate (modified whey) and mixtures of different percentages have been studied and milk powder has been selected as the most suitable. Inulin and oligofructose (FOS), which are indigestible fermentable fructans, are the most studied and well-known prebiotics in dairy products. In the study, these two prebiotics were emphasized and beverages made by adding different percentages to the powder mixes were subjected to chemical, microbiological and organoleptic analyzes. As a result of the analyzes, inulin has been determined as prebiotic. A key factor in determining vitamin mixes is to meet daily vitamin needs in a glass of kefir-containing powder mix (200 g) of fermented final product with high nutritional value. In behalf of these goals, vitamin mineral premixes have been prepared and added. When the powder mixtures are evaluated in organoleptic manner by panelists, it is generally stated that taste and flavor are similar to those made with standard milk.

**Keywords :** Kefir, prebiotic, powdered beverage, functional food

***Acknowledgments :*** *This study was supported by TUBİTAK (Project Number: 1150516)*



***Traditional Dairy Products***

***Abstract Reference : 217***

**Traditional Production of “İncir uyutması” (Fig pudding)**

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Traditional foods are the reflection of cultural inheritance and affect the lifestyle habits. In addition, these foods can be related with special events such as weddings, religious days and specific for each country, they are also often concerned with local foods and artisan foods referring to specific ingredients, location of the production and know-how.

İncir Uyutması is a dairy dessert manufactured by the Turks in Anatolia and Middle Asia. In traditional production of İncir Uyutması, figs are broken into pieces and milk is boiled in a separate vessel. Broken figs are mashed together with some boiled milk and sugar is added according to taste in the middle of mashing. Mixing continues until a homogeneous body is obtained. The rest of the milk is added at the end of the mixing operation. The mixture is put aside for 30 min at approximately 40°C and then kept in a refrigerator. After approximately 4–5 h of refrigeration, İncir Uyutması is ready to serve. It also looks like pudding and it is called as fig pudding.

Dairy desserts are usually consumed due to their nutritive and sensorial characteristics. Fig fruit is naturally rich in many health benefiting phyto-nutrients, antioxidants and vitamins. Dried fig is a source of minerals and vitamins. In terms of healthy nutrition, natural foods are important.

The manufacture of this dessert is very simple and it is delicious. Sweets and desserts have always been distinctive elements of Turkish cuisine. Even an old Turkish saying advises one to “eat sweet, speak in a sweet way”. The main characteristic of desserts is the high energy and pleasure they give regarding to the ingredients.

The aim of this review to give information about incir uyutması, especially its traditional production and take more attention to this product.

**Keywords :** fig, incir uyutması, milk-based, dessert

***Traditional Dairy Products***

***Abstract Reference : 273***

**The ice- cream production from lactose-free UHT milk**

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Lactose is a disaccharide found in dairy products. Some people can not use the lactose as energy source. It is broken down in the small intestine in a reaction catalyzed by the lactase enzyme. Lactose intolerance can be treated by a strict lactose-free diet and a low-lactose diet. In this research, the samples of ice cream made from commercial and lactose free UHT milk were analysed as physical, chemical and organoleptic. The pH of samples varied between 6.28 and 6.36. The pH of samples of cocoa were higher than that of plain samples. The overrun ratio of samples varied between 21.06% and 32.68%. The overrun ratio of lactose free samples were lower than that of control samples. The melting ratio of samples varied from 0.45g/min to 0.61g/min. The fat destabilization value of samples were around 41.06% and 58.01%. The fat destabilization of plain samples were higher than that of cocoa adding samples. The viscosity at 20 and 50 rpm of ice cream samples were between 7.86 Pa.s- 24.76 Pa.s and 5.51 Pa.s – 14.67 Pa.s, respectively. The viscosity of lactose free ice- cream samples were higher than that of control ice cream samples. However the viscosity of cocoa ice-cream samples were higher than that of plain samples. Panelists preferred the cocoa ice- cream to samples of plain ice cream. The texture values of all samples were parallel. Generally, the samples of lactose free plain ice- cream were preferred to samples of control plain ice cream by panelists.

**Keywords :** Keywords:ice-cream,lactose free, fat destabilization, overrun

***Traditional Dairy Products***

***Abstract Reference : 276***

**Traditional production of Koumiss**

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Fermented foods and beverages, whether of plant or animal origin, play an important role in the nutrition of people in many parts of the world. Fermented foods have important potential in maintaining health and preventing diseases. Lactic acid bacteria and yeasts are the major group of microorganisms associated with traditional fermented foods. Many different types of traditional fermented foods and beverages are produced at household level in Anatolia. Koumiss (Mongolian: airag) is an example of a slightly alcoholic fermented milk beverage which is made from mare's milk, and consumed in Central Asia. It is manufactured under a variety of names including kımız, airag, kumys, kumis in Turkey, Mongolia, Kazakhstan, Kyrgyzstan, and in some regions of Russia, Mares' milk has been recognized as an important nutritional resource.

Koumiss is milky-grey in color, lightly and naturally carbonated, and has a sharp alcoholic and acidic taste. In industry, koumiss can be prepared as follows: the first step of koumiss production is heating mare's milk at 90°C during 2 minutes. Then it is cooled at 25°C and starter culture (200 g L<sup>-1</sup>) is added in it. At the end of the fermentation at 25°C, it is agitated at 600 rpm for 15 minutes. It is kept without agitation for 2 hours and the second agitation at 600 rpm for 15 minutes is applied. Finally, it is agitated at 50 rpm until 4.6 pH and then the product is sent for packaging. It has some beneficial or curative influence in chronic diseases, such as phthisis, chronic bronchitis, chronic gastrointestinal and also the circulatory, nervous systems, blood-forming organs, kidney function, endocrine glands and the immune system.

Nowadays, koumiss is a beverage that belongs to the group of functional foods. So, there is increasing interest in the manufacture of koumiss at an industrial level. Generally, production of koumiss is performed from cow's milk and supplemented with the addition of sugar to make it approximate with the composition of mare's milk. Because the cost of mare's milk is high, so Cow's milk is preferred by manufacturers.

**Keywords :** koumiss, fermented beverage, functional foods

***Traditional Dairy Products***

***Abstract Reference : 379***

**USE OF TRANSGLUTAMINASE ENZYME IN DAIRY PRODUCTS**

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Transglutaminase a transaminase, catalyzes the formation of covalent bonds between amines and glutamine residues. The transglutaminase enzyme is a natural enzyme found in animal tissues and body fluids. In addition, it has been determined that many microorganisms such as *Streptovorticillium mobarense* and *Streptovorticillium ladakanum* produce extracellular enzymes, whereas *Bacillus subtilis* and *Physarum polycephalum* produce intracellular transglutaminase enzymes. The transglutaminase enzyme is widely used in meat products, in aquaculture products, in grain products, dairy products, and functional foods because of the wide range of pH and temperature scales that can be employed and the functional properties of proteins, emulsion capacity, gel properties, water retention capacity and viscosity properties. Casein from milk proteins is an important substrate for transglutaminase, which finds wide use in the dairy industry and can easily form polymers. Even when milk was heated, gel capacity was increased in products using the enzyme transglutaminase even though it was a gel-free protein. When the transglutaminase enzyme is used in cheese production, the ripening period is shortened, the product yield is decreased, the serum separation is decreased and the desired structure in hard cheese production is obtained at the maximum level. In addition, improvement in nutritional composition and textural properties was observed. Improvement of gel stability in yoghurt production has increased shelf life due to increase of clot tightness, decrease of serum separation, slowness of acidity development and improvement in many rheological properties of yoghurt. The use of transglutaminase in the production of ice cream resulted in a more unfavorable structure, improvement in volume and air bubble stabilization, and a reduction in the formation of ice crystals. When used in the production of kefir, improved aroma components and sensory properties were observed. It has been observed that when used in the production of fat-reduced dairy products, it makes significant contributions to rheological and sensory properties. In this review, it was concluded that the use of transglutaminase enzyme in the dairy industry would be beneficial in the light of the literature reviewed, in the production of reduced fat products, to increase the shelf life and to improve the sensory properties.

**Keywords :**Protein, Fermented product, Enzyme

***Traditional Dairy Products***

***Abstract Reference : 383***

**A TRADITIONAL DAIRY PRODUCT: PAJDO**

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Pajdo is a traditional dairy product produced in Pülümür district of Tunceli province. Pajdo, which is a sour ayran-flavored and creamy food, is made as a winter food in the autumn. In the production, goat, sheep and cow milk can be used alone or as a mixture. In the production of pajdo, firstly, yayık ayran is made from the yogurt produced by the traditional method. The oil formed during churning is separated. Ayran in yayık is put into the cheesecloth and pressed to remove the water. The next day, some sour yogurt and salt are added into the cheesecloth and mixed. In the following days, until the cheesecloth is full, nonfat ayran after each churning proses and salt are added and mixed then pressed for remove the water. Pajdo produced in 1-1.5 months, is tightly packed in plastic drums or copper containers. The melted butter is poured into the top of the containers and stored in a cool place. Pajdo, made by very few people today, is among our traditional products that are forgotten. This study aims to make known of Pajdo.

**Keywords :** Pajdo, traditional dairy product, ayran

***Traditional Dairy Products***

***Abstract Reference : 384***

**A TRADITIONAL DAIRY PRODUCT: TERNE**

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Terne is a dried traditional dairy product peculiar to the Eastern Anatolia Region. Terne, is made from milk that abundant in summer periods and is consumed in winter. Terne, prepared from çökelek cheese and sour ayran, is in the form of hard balls after being dried. In the production of Terne, firstly, çökelek cheese is put into the pre-prepared sheepskin and waited for a day. The following day, the salty sour ayran is added to the çökelek cheese and mixed thoroughly. This process is repeated several times in the following days. The water in the sheepskin is waited for a few days to completely get away. After the water is completely removed, the viscous product in the sheepskin is given a round shape by hand and dried in the sun. Since Terne is a dried product, it can be stored during the winter. It can be used as a drink or soup by melting it in hot water for a while and it can also be used in making of various pastries when dry. This study aims to give information about traditional production method of Terne.

**Keywords :** Terne, dried dairy product, traditional food

***Traditional Dairy Products***

***Abstract Reference : 288***

**SOME PROPERTIES OF ÇÖMLEK CHEESE PRODUCED IN NEVŞEHİR**

Gökçe EMİNOĞLU<sup>1</sup>, Ceren AKAL<sup>1</sup>

<sup>1</sup>Ankara University

Çömlek cheese has been traditionally produced in Central Anatolia since ancient times. Çömlek cheese is also called as “küp cheese” in Yozgat, Niğde, Nevşehir ve Aksaray where commonly consumed that cheese. In production of çömlek cheese, raw milk is heated to approximately 40°C and then rennet is added to milk within the around 3-4 h. Coagulum is cut into little cubes and allowed to rest for whey separation. Then it is filled into cloth bags for whey drainage and pressed for 10-15 h. When the pressing is finished, the coagulum removed from the bag and are taken into another clean cloth bag. After approximately a week fresh cheese crumbled by hand with adding salt and pressed into earthenware pots. These earthenware pots closed with a clean cloth with aim to airtight condition and placed into sandy soil upside down. Ripening process lasts 3 months. In this study the physical (colour and hardness); physicochemical (pH-value, titrable acidity, total nitrogen, total dry matter, fat and salt contents) and microbiological (total aerobic mesophilic bacteria, coliform bacteria and yeast and mold counts) properties of 10 Çömlek cheese samples which obtained from Hacı Bektaş, Nevşehir were determined.

**Keywords :**Traditional cheese, Çömlek cheese, Küp cheese

***Traditional Dairy Products***

***Abstract Reference : 385***

**Traditional taste; Yoghurt Bean Soup**

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<sup>1</sup>Mustafa Kemal University<sup>2</sup>Osmaniye Korkut Ata University

The broad bean of the Fabaceae family (*Vicia faba* L.) is a single-year-old pile rooted in agriculture as a food and feed plant. Broad bean are a kind of legumes that is rich in organic matter, lightly sandy, low in alluvium and cultivated in clayey soils. Although our country can be grown in the whole coastal area from the Mediterranean to the Black Sea, the production is made in 80% of the Aegean and South Marmara regions. Broad bean (*Vicia faba* L.) is consumed in various forms in our country and many countries since ancient times because of its rich content of nutrients (protein, carbohydrate and mineral matter etc.). It is widely used in food and feed industry, but also consumed in canned foods, mixed with artichokes, olive oil, yoghurt dishes and regional yoghurt bean soup. Yoghurt bean soup is a healthy, natural food that regulates blood sugar by means of cholesterol regulator and insulin that reduces cancer risk. Yogurt bean soup is a local soup which is consumed with appetizing, nutritious and loving thanks to the vitamins (A, B1, B2 and C) content as well as the consistency and necessary materials (yoghurt, egg, meat juice, dill etc).

**Keywords :** Regional, legumes, bean, soup

***Acknowledgments :*** Hello there , I want to join the Congress Thank you from now.



***Traditional Dairy Products***

***Abstract Reference : 390***

**A Traditional Natural Fermented Probiotic Milk Beverage: Kefir**

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<sup>1</sup>Hitit University

<sup>2</sup>Namik Kemal University

Kefir is a traditional natural fermented probiotic milk beverage thought to be originated from Caucasus and Anatolia regions. Kefir is derived from "kef " which means pleasant taste in Turkish. Typically, kefir is produced by the inoculation of kefir grains which are small irregularly shaped, yellowish-white, hard granules which resemble miniature cauliflower blossoms. Kefir grains contain more than 50 species of lactic acid bacteria, yeast, and acetic acid bacteria, to the milk followed by the incubation at room temperature for approximately 24 h. After incubation, the kefir grains are removed via sieving and are reused in subsequent starter culture preparation.

Kefir has a unique self-carbonated beverage with exotic sour and yogurt-like taste properties. Kefir owes its distinctive flavor to a mixture of lactic acid, ethanol, carbon dioxide and other flavor products, such as acetaldehyde and acetoin. The formation of this unique flavour as well as other characteristics mainly depends on the symbiotic metabolic activity of a number of bacterial and yeast species and the type of kefir milk can also be important.

Kefir has also shown many health benefits, including anti-obesity, anti-inflammatory, cholesterol-lowering, and antioxidant effects, as well as alleviation of fatty liver and enhancement of intestinal bacterial flora.

**Keywords :** kefir, probiotic milk beverage, a traditional fermented product

***Traditional Dairy Products***

***Abstract Reference : 297***

**Production of artisanal brine white cheese in Bolu province**

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<sup>1</sup>Karabuk University

Hundreds of cheese varieties are produced in the world based on the differences both in the type of milk used and in the method of production. However, only a small number of these varieties have commercial importance, and most of them are produced and consumed locally. In Turkey, there are many traditional cheese varieties and their production practices rely largely on small-scale dairies and family farms. Artisanal white-brined cheese made from raw cow milk in western black sea region. Milk is coagulated with animal rennet. This rennet includes two unit lamb stomach and a half unit cow stomach. These stomachs salted in bags and then dried in the sun. Dried stomachs put in a container that includes whey with salt, lemon, honey, thyme and pine cone. This mixture is used as rennet after keep twenty days. Afterwards, the cheese blocks are dry-salted ( 3 days) and kept in brine ( made by whey) for 3months.

**Keywords :** artisanal, cheese, animal rennet

***Traditional Dairy Products***

***Abstract Reference : 300***

**Functional Components in Traditional Dairy Products**

Mutlu Buket AKIN<sup>1</sup>, Büşra GÖNCÜ<sup>1</sup>, Feride DAŞNİK-ŞEKER<sup>1</sup>, Aslı ÇELİKEL<sup>1</sup>, Musa Serdar AKIN<sup>1</sup>

<sup>1</sup>Harran University

<sup>2</sup>Mardin Artuklu University

A food, either natural or formulated, which will enhance physiological performance or prevent or treat diseases and disorders is defined as functional food. Dairy-based functional foods are very important among functional foods. Functional dairy foods demonstrate health benefits beyond their basic nutritional value.

Dairy products contain many functional ingredients such as whey proteins, conjugated linoleic acid (CLA), minerals, vitamins and probiotic or lactic acid bacteria (LAB). In this review functional components and their health benefits in traditional dairy products were investigated.

*Whey proteins:* Fermented dairy products such as yoghurt, fermented beverages or kefir, and acid curd cheeses have whey proteins. Whey proteins contain  $\beta$ -Lactoglobulin,  $\alpha$ -Lactalbumin, immunoglobulins, whey albumin, lactoferrin, lactoperoxidase, lysozyme and glycomacropeptides. Their mechanism of action are antioxidant, anticancer, antibacterial and immunomodulator.

*Conjugated linoleic acid (CLA):* CLA produced by bacteria in the rumen of grazing animals such as cattle. Fermented dairy products such as yoghurt, ayran or kefir, butter and cheeses have CLA. Its mechanism of action is antioxidant and anticancer.

*Minerals:* Cheeses, yoghurt, kefir and fermented beverages contain calcium. Its mechanism of action is osteogenetic or bone protective.

*Vitamins:* Cheeses, yoghurt, fermented beverages, kefir and butter contain carotene and tocopherols. Their mechanism of action are antioxidant and anticancer.

*Probiotic bacteria or lactic acid bacteria (LAB):* Fermented dairy products such as yoghurt, kefir, fermented beverages, butter and cheeses contain probiotic or LAB. Their mechanism of action are anticancer, anticholesterol and prevention of intestinal tract infections.

**Keywords :** Functional Components, Traditional Dairy Products

***Traditional Dairy Products***

***Abstract Reference : 302***

**Regional Cheeses Produced from Goat's Milk in Turkey**

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<sup>1</sup>Harran University, Engineering Faculty, Department Of Food Engineering, Sanlıurfa, Turkey

Total milk production in Turkey is 18.4 million tons in 2014. It is formed which produced of this milk 91.2% cow milk, 6% sheep milk, 2.5% goat milk and 0.3% buffalo milk. Goat milk included in casein milk group. Due to it is easy digestion and closest milk to the mother which in terms of nutritional value, it is a resource that can be easily preferred by infants and individuals who allergies to cow's milk. Also, the most important advantages of goat's milk are almost homogenized fat globules and easier coagulation with rennet compare to other milks (cow, sheep etc.).

Cheese, which has different aroma, taste, structure and shape depending on the specific process of each region, is a group of fermented dairy product. Although, cow's milk preferred for industrial cheese production, sheep and goat's milk still used in traditional cheese production. This proportion constitutes 10% of the produced cheese in Turkey.

In this review, determination of the current status of regional cheeses produced from goat's milk and the researches on the subject in Turkey has been informed.

**Keywords :** Cheese, goat milk, regional products

***Traditional Dairy Products***

***Abstract Reference : 395***

**Usage Possibilities of Microalgae as a Natural Colorant in Ice Cream Formulation**

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Color of the food products is one of the most important quality character be considered for preference. Therefore, colorants and other pigment sources, artificial and natural, are widely used in the food industry to improve visual properties of the food products. Consumers have prejudgements against artificial food additives due to their health concerns, which motivate researchers to investigate natural substances be used in the food formulations. Dried microalgae is one of the such promising compounds have attracted attention due to their nutritional and functional characteristics. In the present study, various microalgae, as dried *Nannochloropsis oculata* and *Porphyridium cruentum*, were used in the formulation of the ice cream to improve color. Concentrations of microalgae used in the ice cream formulation were determined by sensory analysis and depending on it, 0.1, 0.2 and 0.3 % (w:w) of microalgae were added. Color properties of ice creams were significantly affected by microalgae addition. *L*, *a* and *b* values of control ice cream prepared without microalgae were found to be 84.38, -1.02 and 8.09, respectively. They changed to 13.02, 12.98 and 0.55 when *Porphyridium cruentum* was added at 0.3% and to 15.10, 15.35 and 1.22 for the sample including 0.3% *Nannochloropsis oculata* in the formulation. Rheological properties of the ice cream mixes were also investigated. Ostwald de Waele model successfully described flow behaviour of the samples. Addition of microalgae caused to increase in consistency coefficient and apparent viscosity values of the ice cream mixes. Findings of the present study showed that dried microalgae have a potential to use them in ice cream formulations as a coloring agent.

**Keywords :** Ice cream, Natural colorant, Microalgae

***Traditional Dairy Products***

***Abstract Reference : 144***

**Determination of Volatile Aromatic Compounds of Kefir Produced by Using Mixture Cow and Soymilk**

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<sup>1</sup>Ondokuz Mayıs University, Faculty Of Engineering, Food Engineering Department, Samsun

The aim of this study is to investigate volatile aromatic compounds of kefir produced with mixed cow and soymilk. Kefirs were prepared with 75% cow milk - 25% soymilk and 0.5, 1, 1.5 U microbial transglutaminase (m-TGs) per g milk protein (SS1, SS2 and SS3 respectively). *Lactococcus lactis* subsp., *Leuconostoc* sp., *Streptococcus thermophilus*, *Lactobacillus* sp., kefir yeast and kefir grains microflora (Kefir Culture type DC1 500 I Danisco Biolacta sp.z o.o. ul. Tuwima I A: 10-747 Olsztyn-Poland) were used as kefir cultures and samples were stored at 4 ° C for 30 days. In the study, volatile aromatic compounds and the effect of addition of m-TGs on volatile aroma were investigated on the 1st and 30th days. Volatile aroma compounds were analyzed with GC-MS with SPME (Mode GC-2010; Shimadzu Corporation, Japan). 56 volatile aromatic compounds were detected in kefir samples and those are 11 organic acids, 18 alcohols, 23 carbonyl compounds. Total volatile alcohol compounds increased during storage in all samples, while decreased in carbonyl compounds. On the other hand, the compounds of the organic acid group increased at the end of storage except for the control group. The differences in the percentage of alcohol, carbonyl compounds and organic acid in the total volatile compounds on days 1 and 30 of storage were 8.47-23.52%, 6.94-25.46% and 59.64-63.69%, respectively. In kefir, the most abundant volatile components were tetradecanoic acid (CAS) myristic acid, dodecanoic acid (CAS) lauric acid, benzoic acid (CAS), capric acid, octanoic acid (CAS) caprylic acid, hexanoic acid (CAS) n-hexanoic acid, acetic acid, 1-octen-3-ol (CAS), Hexanol, 2-butanone, 3-hydroxy- (CAS) acetoin, hexanal (CAS) n-hexanal and 2,3-butanedione (diacetyl). Results of the statistical analysis revealed that both enzyme treatments and storage time significantly affected the content of all volatile compounds except for 2-penten-1-ol, (Z) and propanoic acid ( $p < 0.05$ ).

**Keywords :** kefir, aromatic compounds, soymilk

**Acknowledgments :** This work was supported by the Ondokuz Mayıs University of Samsun, Turkey with Project Number; PYO.MUH. 1904.13.017.

***Traditional Dairy Products***

***Abstract Reference : 145***

**Probiotic Microorganisms in Traditional Fermented Dairy Products**

Hasan Temiz<sup>1</sup>, Mustafa Evren <sup>1</sup>, Elif Büşra Ersöz<sup>1</sup>

<sup>1</sup>Ondokuz Mayıs University, Engineering Faculty, Department Of Food Engineering

Apart from its nutritional properties, it is also known as functional foods that provide physiological benefits to the body and / or reduce the risk of chronic illnesses. Functional foods; are foods that contain certain ingredients useful to human health, defined as therapeutic foods, medicinal foods, bio-foods, regulatory foods, pharmaceutical foods and super foods. Organisms that are taken orally, placed in the intestines and positively contributing to human health are called "probiotics". The term "probiotic", which means "for life" in Greek, was first used by Lilley and Stilwell, and emerged from Metchnikoff's work. Probiotics are specific microorganisms that reduce the risk of disease or control the disease upon consumed. The consumption of these foods has increased greatly due to their beneficial health effects such as antimutagenic, anticancerogenic properties, regulation of lactose metabolism, regulation of serum cholesterol level and effects on the immune system. Probiotic bacteria have been shown to benefit the infants by many factors such as altering the intestinal flora, reducing antigens, preventing adhesion of mucosal pathogens, and showing compliance with the immune system. Traditional dairy products with probiotic effect are human milk, cheese, yogurt, kefir, kımız, ayran, ice cream and so on. The probiotic microorganisms found in these products are *Bifidobacteria longum*, *B. bifidum*, *B. lactis*, *B. animalis subsp. lactis*, *B. infantis*, *Enterococcus faecium*, *E. faecalis*, *Lactobacillus fermentum*, *L. paracasei*, *L. reuteri*, *L. acidophilus*, *L. helveticus*, *L. casei*, *L. plantarum*, *L. rhamnosus*, *L. delbrueckii*, *Lactococcus lactis*, *Lactococcus lactis subsp. lactis*, *Leuconostoc mesenteroides*, *Leu. dextranicum*, *Propionibacterium shermani*, *Streptococcus cremoris*, *S. thermophilus*, *Saccharomyces cerevisiae*, *Candida kefir*. Probiotics are traditionally added in yoghurt. Recently they are successfully applied into cheese, cheese sauces and milk-based food so on. Probiotic cultures are used commercially in products such as milk, cheese, ice cream. In dairy products, probiotics produce lactic acid and other antimicrobial compounds for production of the product, produce aroma compounds and other metabolites that provide desirable organoleptic properties for consumers, vitamin synthesis and release of free amino acids to improve the nutritional value of the product and therapeutic benefits are available.

**Keywords :** traditional food, fermented milk, probiotic, functional

***Traditional Dairy Products***

***Abstract Reference : 307***

**Some Properties of Labneh Anbaris Produced in Şanlıurfa**

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Yoghurt is a fermented dairy product which produced with lactic acid fermentation by *Lactobacillus delbrueckii subsp. bulgaricus* and *Streptococcus thermophilus*. Depending on the standards of hygiene observed during the manufacture of yoghurt, and the microbiological quality of the ingredienets and packaging materials, the shelf life of yoghurt is around 3 weeks under refrigerated conditions. Various techniques have been used in order to improve the keeping quality of yoghurt, such as freezing and drying, gas flushing, addition of preservatives, use of aseptic equipment, application of multiple frequency “microwaves” or sterilization by heat.

Traditionally yoghurt concentrated in the animal skin in Middle East since ancient times. This condensed product is called “Torba, Kurut or Tulum” in Turkey “Tan or Than” in Armenia, “Leben Zeer” in Egypt, “Labneh” in Lebanon.

Labneh Anbaris is a kind of concentrated yoghurt. Labneh is used as raw materials and end-product is shaped balls and partially sun dried. The dried material is then placed in glass jars and futher present with a layer of olive oil. Shelf life of this product is up to 1 year.

In this study, some physicochemical and microbiological properties of 15 labneh from taken different places in Şanlıurfa province, which are produced by Syrian people, has been examined.

**Keywords :** Labne, composition, quality



### ***Traditional Dairy Products***

#### ***Abstract Reference : 152***

#### **Erzincan Tulum cheese: General aspects and developments in the researches of the cheese**

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<sup>2</sup>Department Of Food Engineering, Inonu University, Malatya, Türkiye

More than 100 varieties of cheese are produced in Turkey; the most popular ones are Beyaz, Kaşar and Tulum cheeses. When people say "Tulum cheese" in Turkey, they first imply Erzincan Tulum cheese. The name “tulum” means “goat’s or sheep’s skin bag” in Turkish, in which the curds are packaged and ripened in it. Goat’s skin bags are preferred by producers; so, it is stronger than sheep’s skin bags. Recently, plastic barrels are also used as container due to its cheap and easy to find. However, the flavor of the cheese is ripened in the Tulum is better. The cheese has a white or cream colour, a high fat content, a crumbly- semi-hard texture, a buttery and pungent flavour. It was the first cheese to receive a geographical designation by the Turkish Patent and Trademark Office in 2000. The cheese is produced in plateaus around Erzincan, Erzurum, Tunceli, Bingöl and Elazığ and in the East Anatolian regions by the Şavak tribe using Akkaraman sheep milk between May and September. Traditionally, the cheese is made from fresh raw ewe’s milk without a starter culture. Home-made rennet is usually used. Especially Kemah salt (Kemah: a county of Erzincan city) is used. The cheese was originally ripened in caves for 3 months or the period could extend upto one year. However, it is now ripened in cold deposits. The manufacturing and ripening processes have been extensively reviewed and discussed by Kurt et al. (1991), Çakmakçı (1998), Şengül ve Çakmakçı (2003), Hayaloglu et al. (2007a,b), Çakmakçı et al. (2008), Çakmakçı (2011), Çakır et al. (2016).

Studies on Tulum cheese was very limited until last 10 years. In a detail study (Hayaloglu et al., 2007); Tulum cheeses were manufactured from raw ewe’s milk and ripened in tulum or plastic containers to understand the effect of ripening container on the chemical composition, biochemistry, microbiology, and volatile composition of Tulum cheeses during 150 d of ripening. A total of a hundred volatile components were identified and also extensive proteolysis occurs during ripening. Free fatty acids make significant contributions to the typical flavour of Tulum cheese.

In this presentation, the recent studies were quoted here and a perspective was given to encourage new studies.

**Keywords :** Cheeses of Turkey, Erzincan Tulum cheese, Traditional cheeses, cheese analysis, recent advances

***Traditional Dairy Products***

***Abstract Reference : 408***

**Yandım Çavuş Ayranı: Manufacturing Procedure and Some Nutritional Characteristics**

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Ayran is a fermented drinkable milk product and its popularity increased in recent years. It has been consumed with meals for centuries in Turkey and neighboring countries. Ayran has been also consumed as a drink with kebabs and it began to consume in EU countries. The amount of ayran production is about 700.000 tonnes per year (2016) and the change is 9% according to previous year (2015). In Turkey, ayran production can be realized by two methods: i.e., dilute the milk (method A, industrial) or yogurt (method B, traditional) into 6-7% total solid contents by drinkable water. These are plain ayran; however, it can be flavoured by addition of mint, garlic, chili pepper, purslane etc in Turkey. Yandım çavuş ayranı is produced in Malatya by flavouring of Ayran with chili pepper, purslane and salt. After addition of these ingredient, the mixture is fermented a week in refrigerated conditions and then served cool in summer. The production methods were explained here and also chemical composition, volatiles and sensory properties of Ayran has been studied. Yandım çavuş ayranı is a unique product of Malatya and its production and consumption should be widespread.

**Keywords :** Ayran, Fermented milk product, chili pepper

***Traditional Dairy Products***

***Abstract Reference : 414***

**ULUDERE BURIED HERBAL CHEESE PRODUCTION AND DETERMINATION OF CRITICAL CONTROL POINTS**

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Cheese constitutes 13% of the registered consumption of milk and dairy products worldwide. According to the data of the International Dairy Federation, the consumption rate of locally produced milk and dairy products, which are not registered in the world, is approximately 46%. In our country, Uludere buried herbal cheese which is widely consumed in Şırnak is an unregistered local cheese. This cheese is produced from raw goat milk by covering with the sauce produced from the various plants growing in the region (fresh onion, onion, fresh garlic, *Anthriscus nemorosa* sprengel, *Allium schoenoprasum* L., *Gundelia tournefortii* etc.) between March and April and is ripened under the ground. The lor produced by precipitating whey formed during the production process is used to produce the herbal sauces for covering the cheese. The shaped cheese is dry salted and stored at 4 ° C for 5 days. Following the salting process, the cheeses are covered with sauce and placed in a plastic container. The container is covered with lid and turned upside down and buried in a wetted pit approximately 30-35 cm depth in the ground to ripen for 7-8 months. During ripening, the pit is wetted by pouring water once a week (twice a week in hot seasons) to provide the moisture. Determination of critical control points of this cheese, which is widely produced in the region, is important in terms of food safety. The most important of these critical control points is that no sterilization process is applied to the raw materials used in the production process. Microbiological risks from a wide variety of bacterial strains such as *S. aureus*, *Salmonella spp.*, *E. coli*, *Brucella spp.* and *Mycobacterium tuberculosis*, possibly present, in raw milk that is used for this traditional cheese production can be prevented by pasteurization of the raw milk. Furthermore, application of the sterilization process to the plants used in cheese-covering sauce production will prevent the cheese from contamination at this stage of production. Other critical control points in the production process are hygiene of personnel and equipment. Precautions at these points will prevent contamination that may occur.

**Keywords :** Traditional cheese, critical control points, production.

***Traditional Dairy Products***

***Abstract Reference : 426***

**Determination and Characterization of Bacteriocin Producing Ability of some *S.thermophilus*,  
*L.delbrueckii* spp. *bulgaricus* and *Enterococcus* spp. Isolated from Naturally Produced Cheese and  
Yoghurts**

Zeynep Nalvuran<sup>1</sup>, Nilgün Zengin<sup>1</sup>,Talha Demirci<sup>1</sup>, Nihat Akın<sup>1</sup>

<sup>1</sup>Selcuk University

In this study bacteriocinogenic activity of 60 *S.thermophilus*, 10 *L. delbrueckii subsp. bulgaricus* and 40 *Enterococcus* spp. isolated from naturally produced cheese and yoghurt in Turkey were determined on various indicator bacteria as *Bacillus cereus*, *S. Typhimurium* etc. Convenience of Disc diffusion, Agar-well diffusion, Spot-on-lawn and Modified agar-sandwich methods were tested before this study. Agar-sandwich method chosen as a suitable method for bacteriocinogenic activity. The optimum conditions for bacteriocin-like substance production by these bacteria were 30°C-37°C and 6.5-7.5 pH. The most sensitive test bacteria to bacteriocin-like substance produced by *S. thermophilus* was *S.Typhimurium* while the most resistant was *B.cereus*. The most sensitive indicator bacteria to bacteriocin-like substance produced by *L.bulgaricus* was evaluated as *E.faecalis* and while *B.cereus* was the most resistant. *S.aureus* was the most resistant test bacteria to bacteriocin-like substance produced by *Enterococcus* spp.

**Keywords :** bacteriocin, Lactobacillus, Streptococcus, Enterococcus

***Traditional Dairy Products***

***Abstract Reference : 168***

**Qurut and Qara Qurut traditional fermented Caucasus dairy products**

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<sup>1</sup>Istanbul Technical University

<sup>2</sup>Urmia University

Qurut is made from fermented yoghurt, water or ayran and salt. Qara qurut is a by-product of qurut making. The main compositions are calcium, phosphor and proteins. Because of salty taste of round shaped dried qurut, children like to eat it as a snack. In this study we prepared qurut and qara qurut in laboratory to determine some properties of these traditional dairy products. Qurut was prepared by fermented yoghurt mixed with water and salt then boiled for 2 h. It was passed through cheese-cloth and permeate was boiled for near 1 h then corn starch was added to obtain qara qurut. The composition analysis (total protein, ash and dry matter) was done. pH, viscosity, Di-electric, conductivity and zeta potential of these samples were determined. According to results total protein content, ash and dry matter of qurut was  $15.1 \pm 0.01$ ,  $5.7 \pm 0.03$ ,  $91.3 \pm 0.07$  and for qara qurut was  $7.7 \pm 0.02$ ,  $6.5 \pm 0.01$  and  $95.3 \pm 0.04$  respectively. These traditional products consumption is limited by local markets so, to produce commercial product we try to determine some of their chemical and physical properties.

**Keywords :** Qurut, Qara qurut, traditional dairy products, Caucasus

***Traditional Dairy Products***

***Abstract Reference : 329***

**Keş is a traditional fermented dairy product that produced west part of black sea**

Zuhal Kırmacı<sup>1</sup>, Hüseyin Avni Kırmacı<sup>1</sup>

<sup>1</sup>Karabuk University

Keş is a traditional fermented dairy product that produced west part of black sea. It is also called as 'kurut' in different part of Turkey. Keş is produced from condensed yoghurt that make from cows milk. Firstly butter is separated from yoghurt and than yoghurt is filtered 24-48 hours at room temperature in filter cloth. Condensed yoghurt is kneaded with salt and than with the help of olive oil it was divided into walnut-sized pieces and transformed into the shape of finger. The finger shape pieces dried in the sun and finally dried product called as 'Keş'. It was cooked on the stove and consumed as fried or in scrambled eggs .

**Keywords :** Yogurt, Fermented

***Traditional Dairy Products***

***Abstract Reference : 442***

**EFFECT OF INULIN AND MALTODEXTRIN ADDITION ON CONJUGATED LINOLEIC ACID  
CONTENT OF KEFIRS**

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Kefir is an acidic, mildly alcoholic fermented milk product that has its origin in the Caucasian mountains. Many health benefits have been attributed to kefir. The metabolic substances produced during fermentation have proven nutraceutical activities. Kefir has important affirmative effects on health when consumed regularly. Some of the bacteria may produce different fatty acid profiles and functional fatty acids during the fermentation in dairy products by virtue of their metabolism. In this study productions of kefir were performed after 1-3% addition of maltodextrin and inulin. Kefir was produced from milk which has not additional maltodextrin and inulin as control. General chemical compound (dry matter analysis, determination of fatty acid, protein and ash) and conjugated linoleic acid (CLA) analysis were performed in raw milk before kefir production. CLA analyses of kefirs were performed on 0, 2, 7, 14 and 21 days of the storage. CLA contents were determined by a high-performance liquid chromatography (HPLC) method. This study showed that CLA increased by fermentation but maltodextrin and inulin addition didn't affect CLA amount during the storage.

Acknowledgement: The authors thank to the Scientific Research Projects Unit of Niğde Ömer Halisdemir University for financial support (Project no: FEB2015/39)

**Keywords :** Kefir, conjugated linoleic acid, inulin, maltodextrin, storage

***Acknowledgments :*** *The authors thank to the Scientific Research Projects Unit of Niğde Ömer Halisdemir University for financial support (Project no: FEB2015/39)*

***Traditional Dairy Products***

***Abstract Reference : 454***

**DETERMINATION OF THE CHARACTERISTICS OF YOGHURT LIKE PRODUCT FROM  
BUFFALO MILK WITH PROBIOTIC STRAINS**

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Yoghurt is fermented dairy product which has a high nutritional value that obtained from lactic acid fermentation and containing live lactic acid bacteria. The chemical composition of the yoghurt which has an important place in the human diet, varies depending on the composition of raw milk that is used in the production and on the developments in the milk components during lactic acid fermentation. Especially today, as natural and healthy life becomes a trend, it is important that the one of the most important food in the dairy diet such as yoghurt are richened with using different types of milk and contributions, and with this way, consumer taste and nutritive value can be increased.

In this study, functional and nutritive properties of yoghurt were increased by using 3 different lactic acid bacteria such as *Lb. fermentum F-6*, *Lactobacillus paracasei* subsp. *paracasei* JCM8130, *Lb. casei* W56 which has probiotic features and buffalo milk instead of cow's milk which is generally used in yoghurt production.

Control yoghurt's pH value was between 3,91 - 4,10, brix value between 10 - 11% and dry matter content was between 19 and 22%. Also, there was no significant difference between the color of the control yoghurt and yoghurt with *Lb. fermentum F-6*, *Lactobacillus paracasei* subsp. *paracasei* JCM8130 and *Lb. casei* W56. According to microbiological analysis, the number of lactic acid bacteria in the control yoghurt was log 6.81, and other results were *Lactobacillus paracasei* subsp. *paracasei* JCM8130 (log 8.81) and *Lb. fermentum F-6* (log 8.60), *Lb. casei* W56 (log 8.48), respectively. The maximum value of water holding capacity was determined in the yoghurt made with *Lb. fermentum F-6* and the lowest value was found in control yoghurt. When a general evaluation is made according to sensory analysis, the most popular yoghurt was *Lb. fermentum F-6* and the least favored was *Lb. casei* W56 yoghurt.

**Keywords :** yoghurt, buffalo milk, probiotic features



***Traditional Dairy Products***

***Abstract Reference : 5***

**Problem with the Traditional Cheese: High Salt Content**

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There are many varieties of cheese that have been important for many years in the nutrition of societies. The most widely produced varieties in our country are kashar, tulum mihalic and otlu cheese, especially white cheese. This study compared the salt rates of Tulum cheese, kashar cheese and ezine cheese produced by different methods and in different regions. The importance of the amount of salt ratio is to taste cheese, to adjust the rate of cheese water, to correct the structure, to adjust the cheese microflora, to increase the durability of cheese.

**Keywords :** kashar, tulum, mihaliç, salt content

***Traditional Dairy Products***

***Abstract Reference : 30***

**METHODS USED IN IDENTIFYING SULFONAMIDE RESIDUES IN TRADITIONAL MILK AND DAIRY PRODUCTS**

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Sulfonamides are antibiotics containing sulfone and amine groups bonded to benzene. They are widely used in medicine and veterinary because of their broad impact and cheapness. In veterinary practice they are used in the treatment of infectious diseases also stimulating the growth and yield of farm animals. These applications may lead to residues in food of animal origin. These residues cause allergic reactions, increase in antibiotic resistance in pathogenic bacteria and various hematological, gastrointestinal and neurological disorders. Therefore the national residue monitoring plan prepared by the Turkish Ministry of Food, Agriculture and Livestock limited the sulfonamides presence in milk and dairy products to certain concentration. According to National Residue Monitoring Plan, the maximum residue limit for sulfonamides is 100 µg/kg and 100 µg/L for milk. In this context, accurate and precise analysis of sulfonamides is very important. Various methods for the determination of sulfonamide compounds in foodstuffs have been developed. The methods used for residue analysis should be accurate, practical, time and price economical and should be able to detect below the residue (MRL) levels. The methods of residual analysis of day-to-day sulfonamides can be listed as follows: ELISA, thin layer chromatography (TLC), Charm II, biosensor, electrophoretic methods, HPLC, gas chromatography, GS/MS, LC/MS and LC-MS/MS. LC-MS/MS is the most suitable residue analysis method with high selectivity, sensitivity and precision in residue analysis. Isotope Dilution Mass Spectroscopy (IDMS) is used for more accurate and precise results in the analysis of residual sulfonamide by LC-MS/MS. An isotopically enriched derivative of the analyte is needed for the IDMS method. The isotope dilution mass spectrometry (IDMS) technique is based on the principle that the amount of known isotope analyte, together with the analyte, is passed through all the steps in a measurement method to minimize the effect of the process and to minimize losses. The IDMS technique minimizes any errors, calibration problems and matrix effects that may occur during the sample preparation and analysis process.

**Keywords :** Sulfonamide compounds, isotope dilution method, Tandem liquid chromatography mass spectrometry (Tandem LC-MS/MS)

***Acknowledgments :*** *We would like to thank TUBITAK UME for the financial support for this research.*

***Traditional Dairy Products***

***Abstract Reference : 473***

**ALTERATION OF ORIGINAL MICROFLORA OF YOGHURT IN HISTORICAL PERIOD**

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Yogurt is described as a fermented dairy product produced by *Lactobacillus bulgaricus* and *Streptococcus thermophilus* in many reference books. Definition of yogurt emphasizes only the lactic acid fermentation driven by two bacteria species used as starter culture but as a fermented milk product, functionality and superior taste of yogurt are overlooked. The products manufactured to improve the functional and sensorial characteristics of the yogurt are not defined as "yogurt" and evaluated in the category of "yogurt-like" products. Considering the historical period, in many studies conducted in different regions of the world especially Turkey which has a great share in spreading yogurt as a fermented milk product across the world, it was revealed that some of the lactic acid bacteria and non-pathogenic Enterococci are also present in the yogurt besides *Lb. bulgaricus* and *Str. thermophilus* starter cultures. With the use of different cultures such as *Lactococcus diacetylactis*, *Lactobacillus bifidus* and *Lactobacillus acidophilus* in addition to these two starter cultures, aromatic profile of yogurt can be enriched. Consumers' expectations for high quality products should be met with production of functional and more aromatic products and aroma rich products with functional properties should hit the shelves.

**Keywords :** Yogurt, *Str. thermophilus*, lactic acid bacteria

***Traditional Dairy Products***

***Abstract Reference : 474***

**Village Cheese Production in Kızılcabölük Village of Aydın**

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Depending on the production methods, the type of milk, the ripening characteristics, water, fat and dry matter ratios, there is a large amount of cheese. Turkey is a very rich country in terms of traditional cheeses. In this study, production stages and some microbiological and physicochemical properties of village cheese produced in Kızılcabölük village of Aydın were investigated . For this purpose, the village cheese making was examined in place, Kızılcabölük. The cheese samples were taken from the laboratory and analyzed. Total microbial counts of bacteria, coliform bacteria, yeast-mold and lactic acid bacteria were analyzed in cheeses. From physicochemical analyzes, pH, titration acidity, dry matter, ash, protein and oil analyzes were done. According to the results, the number of total bacteria, dry matter, fat, protein yeast-mould and lactic acid bacteria in cheese samples were high while pH, coliform and total bacteria contents were low than aspected.

**Keywords :** Village cheese, microbiological and physicochemical properties, traditional food

***Traditional Dairy Products***

***Abstract Reference : 596***

**ASSESSMENT OF DIETARY CALCIUM INTAKES OF WOMEN LIVING IN NICOSIA:  
CONTRIBUTION OF YOGHURT TO CALCIUM INTAKE**

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**Abstract:** Calcium is required for a number of specific roles in the body. It plays a role in the activation of enzymes, development of bones and teeth, control of nerve conduction, blood clotting and in the protection of health. The role of calcium in osteoporosis, hypertension, obesity and other diseases is being investigated. Dietary calcium sources and intake of calcium should be assessed correctly. Calcium calculator by International Osteoporosis Foundation Food Frequency Questionnaire (IOF FFQ) and 1 day food consumption records (24-*h*) were used to assessed dietary calcium intakes in this study. In addition to that food consumption frequency form was used quantity and frequency of yogurt consumption. The aim of this study, determination of daily calcium intake and contribution of yoghurt to calcium intake.

**Method:** The study was conducted with 400 women living in the Nicosia. In this study questionnaire including general information, nutrition habits, antropomethric measurments and IOF FFQ was applied by the researcher. In addition, 1-day food consumption records of the individuals were obtained with one-on-one interview method.

**Results:** The average daily calcium intake according to IOF FFQ and 24-*h* are 808,1 ±333,0 mg and 657,0 ±302,6 mg respectively. When the daily average calcium intake was compared with IOF FFQ, it was found to be statistically significantly higher ( $p=0,000$ ). In this study, individuals were assessed for daily calcium intake according to DRI and it has been found 72,0% inadequate, 27,3% adequate and 0,8% excess. The daily consupstion of yoghurt is 170 grams and this contributes 34% to the daily intake of calcium. Most women who participated in the study (29,3%) consumed yoghurt 3 – 4 times in a week. The proportion of those who consume yogurt per day and those who never consume yoghurt (20.8%) is significant.

**Conclusion:** Dailly calcium requirement should be met in order to protect and improve health. Therefore, practical tools for assessing calcium intake should be developed like IOF FFQ and suggestions should be made to meet the requirement. In addition, each country should define its own nutrient sources and the nutrient content of these sources and discuss the positive impacts on health.

**Keywords :** CALCIUM, YOGHURT, IOF FFQ

***Traditional Dairy Products***

***Abstract Reference : 498***

**TULUK**

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Livestock have an important place in the nomadic life of Turkish people in Central Asia. Nomadic people have provided most of their nourishment requirements from animal origin foods. These people have developed different methods, especially for the preservation of dairy products, due to the challenging climatic conditions of nomadic life. Some of these methods have been come to today, despite the changing condition over time with transition to settled life. One of these methods is to pressing coagulated milk which is blended with different spices and condiments into a natural packing material produced from goat's leather for preserving milk. The product produced by this method and also natural packaging material produced from the goat's leather both named as tuluk in Denizli region. In this study, the steps followed in the transformation of the goat skin into packaging material, the spices and condiments used in blending after clotting of milk, the properties of the final product and how these product is consumed today is examined in the light of the observation made in Acıpayam district of Denizli.

**Keywords :** Tuluk, milk, goat's leather, preservation

***Acknowledgments :*** *The authors gratefully acknowledge Pamukkale University Scientific Researches Project Unit (PAU ADEP) for financial support.*

***Traditional Dairy Products***

***Abstract Reference : 509***

**Microflora of kefir grains from different origins**

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Kefir is acidic, slightly alcoholic and a viscous fermented dairy beverage that has a long history in human nutrition due to its health benefits. Although kefir was originated in the Caucasus, it has now produced and consumed in many countries such as Brazil, Tibet, Spain, Japan, and Ireland. Kefir can be produced by fermenting milk with commercial kefir starter cultures or traditionally kefir grains. The shape of the kefir grains is similar to small cauliflower or popcorn, with a diameter 0.3-2.0 cm. The colour of kefir grains is white to yellowish-white. Kefir grains include coagulated milk protein, fat, and polysaccharides called kefiran. Kefir grains have a complex symbiotic microbial communities, lactic acid bacteria, yeasts, acetic acid bacteria and moulds. However, kefir grains microbiological composition may vary depending on their origins. Besides, the diversity in microflora and ratio of species to each other in kefir grains may be responsible for changes in the physicochemical and sensorial properties of kefir. This paper summarizes microflora of kefir grains from different origins.

**Keywords :** Kefir, kefir grains, microflora

***Traditional Dairy Products***

***Abstract Reference : 58***

**Molecular determination of the filamentous fungal flora of the Yayla cheese of Rize-Ardeşen region of Turkey**

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Yayla cheese of the Rize-Ardeşen region highlands is one local type of more than 100 reported cheeses of Turkey. It is produced by traditional methods in houses or in small enterprises, to be consumed especially in muhlama production. In this study, it was aimed to determine the basic microbiological properties as well as the yet unknown filamentous fungal flora of the Yayla cheese by molecular methods. Starter cultures are not usually used in the production of these cheeses. After fat separation, the milk is kept at room temperature for 12-24 hours according to environmental temperature to let acidification by its own microflora. The curd is then cooked drained, shaped and salted. The resulting cheese is either consumed fresh or ripened in a cool environment. On the surface of the ripened cheeses, mold growth is visible and the cheese is generally consumed without discarding the fungal layer. As the research material, 7 cheese samples were obtained from local markets in Ardeşen district of Rize. Microbiological analyses of the samples showed that total mesophilic aerobic bacteria, lactic acid bacteria (LAB), and yeasts and molds were between 8.3-9.3, 5.6-7.9, and 8.1-8.9 log cfu/g, respectively. Coliforms were also detected in three samples with levels ranging from 3.8 to 6.0 log cfu/g. A total of 23 filamentous fungi grown on Potato Dextrose Agar (PDA) were selected and purified by subculturing twice on PDA plates. The morphology of the fungi were examined on Malt Extract Agar (MEA), Czapek Dox Agar (CDA) and under microscope. For molecular analysis, DNA extraction was performed and universal fungal primers ITS1 and ITS4 were used in PCR to amplify the ITS region. Purification and sequencing of the ITS PCR products resulted in identification of three *Geotrichum candidum* and one *Penicillium roqueforti* species conclusively. The rest of the fungi were found to belong to the *Penicillium* genus, but ITS sequencing was not sufficient for identification at the species level. Inconclusive samples will be subjected to further sequence analysis of loci other than ITS for species differentiation. The results obtained are important for determining the basic microbiological characteristics and revealing the previously unknown filamentous fungal flora of the Yayla cheese of Rize-Ardeşen highlands.

**Keywords :** Yayla cheese, Rize-Ardeşen highlands, filamentous fungal flora, molecular analysis



***Traditional Dairy Products***

***Abstract Reference : 583***

**The Determination of Homogenization Efficiency (HE), Color Properties and Micrographs of UHT Milk Samples Producing in Turkey**

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In this study, UHT milk samples produced by 4 different companies in Turkey were stored at room (20±2°C) and refrigerator (4±1°C) for 1, 15, 30, 45 and 60 days. As the UHT milk samples of D company had the sufficient homogenization efficiency (under 8.0%), UHT milk produced by other companies (A, B and C) were out of standard point. During 30 days storage periods, as HE of 4 UHT milk samples were in standard level, during 45 and 60 days storage, HE of samples were out of standard value. The HE of UHT milk samples storage in refrigerator (8.57%) was very good than samples that of room temperature (9.63%). As the UHT milk samples of D company had the highest L\* color value (88.62), the L\* color value of UHT milk samples of other companies (A, B and C) were lower. Generally, as storage times of UHT milk samples increased, the L\* color value decreased. The b\* color value pointing the yellow color was lower at UHT samples of D company than UHT milk samples of other companies. From the microscopic examination of UHT milk, as the UHT milk samples of D company had bigger fat globule at lower numbers than C Company had bigger globules at higher numbers.

**Keywords :** UHT milk, color, homogenization efficiency, micrographs

***Acknowledgments :*** This work was financially supported by Atatürk University Research Fund. BAP Project No: 2013/400

***Traditional Dairy Products***

***Abstract Reference : 512***

**Robotic milking helps to increase traditional milk products quality**

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Robotic milking has gained widespread acceptance both in developed and developing countries, as a way to reduce labor requirements on dairy farms and as a way to improve the lifestyle of dairy farm families operating dairies with 40 to 400 milking cows. Capitalizing on the opportunities for labor saving hinges on the ability of robotic milking farms to achieve frequent voluntary milking and on minimizing the work of cattle handling. The health and comfort of the cow is a major factor in visiting behaviour, making it critical to the success of robotic milking. Numerous studies were carried out on milk quality in robotic milking herds.

In this presentation, the relations among labour efficiency, cow comfort and milk quality in robotic milking will be discussed to produce high quality traditional milk products.

**Keywords :** robotic milking, quality milk, traditional milk products

***Traditional Dairy Products***

***Abstract Reference : 514***

**Physicochemical and microbiological properties of Kuru Kaymak (A traditional Turkish Dry Clotted Cream)**

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Kaymak is defined as a cream containing at least 60% milk fat, according to the Turkish Food Codex Regulation. Kaymak is commercially produced by milk fat from cow's milk in dairy plants, however, it is produced by traditional methods in many regions of Turkey. Kuru kaymak is one of the varieties of kaymak that widely manufactured by the people lived in Nevşehir (Kaymaklı), Erzurum (İspir), Sivas and Erzincan provinces in Turkey. In the traditional way of production of Kuru Kaymak, raw milk is heated to the boiling temperature. In order to obtain foam layer on the milk surface, a boiled milk is slowly poured from a height of 1 meter to the large tray and continued heating for few hours without boiling. A thick kaymak layer formed on the surface of milk is removed with a thin wooden stick. Kuru Kaymak is consumed after drying for two or three days in a cool room. There is limited research on Kuru Kaymak in the literature. The aim of this study is to determine some physicochemical and microbiological properties of Kuru Kaymak.

**Keywords :** Cream, kuru kaymak, traditional product

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 522***

**Polyphenol Profile and Antioxidant Activity of Some Wild Fruit in Turkey**

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Fruits are known for their beneficial impact on human health and are good sources of phenolic compound and antioxidant which have a therapeutic effects on many diseases caused by reactive oxygen species and oxidative stress (e.g. cardiovascular or degenerative diseases, atherosclerosis, diabetes, osteoporosis, cancer, dermatitis, phototoxicity). Wild fruits in delivering a balanced and healthy diet have significant a role. The aim of our study determined *in vitro* characterization of water and methanol extracts in order to examine their potential use as the antioxidant source of wild fruit originated from Turkey (on provinces of Adana, Bayburt, Nevşehir, Trabzon).

Extracts were made by ultrasonic extraction using polar solvents: 80% acidified methanol (1 M HCl in 80% methanol), and distilled water. the total phenolic content (TPC) of extracts were determined by Folin–Ciocalteu assay and expressed as gallic acid equivalents (GAE). Besides, the antioxidant activity of the investigated extracts was estimated by three assays: DPPH (1,1-diphenyl-2-picrylhydrazyl) test, ABTS (2,2-azinobis (3-ethylbenzothiazoline-6-sulphonic acid) test and  $\beta$ -carotene bleaching (BCB) test. A strong correlation was observed between antioxidant activity and TPC of extracts in this research. As a result, it was determined that TPC and antioxidant activity variation may be caused by the solvent used for the extraction.

In this study, the polyphenolic compound compositions of the wild fruits will also be characterized.

**Keywords :** wild fruit, antioxidant activity, polyphenol profile, total phenolic content

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 190***

**A Short Review of Üvez (Rowanberry)**

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Üvez genus belongs to the *Pomoideae* subfamily of the *Rosaceae* family. This species has almost 5-10 m tall and shed leaves in winter. In the fertile lands of Anatolia there are 11 kinds of üvez. *Sarbus aucuparia* species are grown in the center of the Anatolian region whereas *Sorbus domestica* species are grown in the Black Sea region. Recently, üvez species have attracted much attention due to the use of üvez extracts in the medical treatment of diseases. It has been reported that, ingredients such as malic acid, citric acid and succinic acid have supported to intestinal health. Besides, owing to the tannin content of the üvez, both body resistances can be increased and the risk of heart attack can be avoided. Furthermore, it has been observed that after digesting the fresh üvez fruit or its leaves, the sugar in the body can be kept under control. Thereby it is suggested that both blood pressure patients and diabetics should consume üvez and its leaves freshly. In this review, üvez plant and the recent developments in the medical application of this plant were compiled.

**Keywords :** Üvez, *Sorbus domestica*, *Sarbus aucuparia*, diabetes, blood pressure, intestinal health.

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 603***

**Identification of Composition of *Corchorus olitorius* L. Leaf Extract**

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**Introduction:** *Corchorus olitorius* L. is a dark green leafy vegetable which belongs to Tiliaceae family in botany. It is a highly consumed traditional food in Cyprus. *Corchorus olitorius* L. is known as a medicinal food in folk culture and believed to have therapeutic effects such as being sedative, diuretic and laxative. Rich nutrient content may be one of the reasons that *Corchorus olitorius* L. has therapeutic effects.

**Methods:** Dry, powdered *Corchorus olitorius* L. leaves (100 g) that were collected in Kyrenia, Cyprus were extracted with ethanol then filtered and concentrated to 200 ml. H<sub>2</sub>O phase was evaporated and lyophilized to yield 14.8 g of crude extract. *Corchorus olitorius* L. polyphenol analysis was done by LC/MS-MS. The equipment was run in negative ion mode.

**Results:** In total 7 components were identified in the extract, main groups being hydrocinnamic acids, flavonols and flavones. The LC/MS-MS results showed that H<sub>2</sub>O phase extract of *Corchorus olitorius* L. is predominantly rich in caffeoylquinic acid, quercetin glycosides and luteolin.

**Conclusion:** Our results showed that Cypriot *Corchorus olitorius* L. extract is rich in polyphenols. The identified components of the extracts are known to show anti-oxidant, anti-cancer and pro-apoptotic properties. This shows that the plant exerts medicinal properties and its consumption might increase positive effects in the body.

**Keywords :** *Corchorus olitorius* L., Polyphenols, LC-MS

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 96***

**COMPARISON OF TRADITIONAL AND ULTRASOUND-ASSISTED EXTRACTION OF  
PHENOLIC COMPOUNDS FROM CORNELIAN CHERRY**

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Cornelian cherry (*Cornus mas*) belongs to *Cornaceae* family. Cornelian cherry is native to southern Europe and south western Asia including Armenia, Azerbaijan, Georgia, Iran, Turkey, Israel, Lebanon and Syria. Due to its impressive tonic, hepatoprotective and restorative properties, its production in Turkey has been increased. According to data of Turkish Statistical Institute, the production is approximately 11 ton/year in Turkey. This berry is traditionally consumed as marmalade or in cold drinks in Turkey. However, the extraction of the valuable bioactive compounds from cornelian cherry may further increase the consumption. The phenolic compounds of this berry can be used in different commercial sectors such as pharmaceutical, food and chemical industries. Various new methods have been established for extracting bioactive compounds from plants; however no single method is regarded as standard up until now. In this study, it was aimed to compare the traditional (maceration) and ultrasound-assisted extraction of phenolic compounds from cornelian cherry. UAE was performed using an ultrasonic bath at 50 °C. The extraction variables were set as follows: solid to solvent (water) ratios 1/5, 1/10 and 1/15 (g/ml), time of sonication 1, 20, 40, 60, and 80 min. Maceration experiments were performed at 25 °C for 24 h using the same solid to solvent ratios. Total phenolic content values of ultrasonic-assisted extraction were found higher than the values of maceration ( $p < 0.05$ ). The maximum value was obtained as 6.5 mg GA/g dry matter from the samples that were extracted for 60 minute at a solid to solvent ratio of 1/15 g/ml. On the other hand, the corresponding value was found as 5.04 mg GA/g dry matter for maceration at same solid to solvent ratio. The results indicated that UAE is an effective alternative method for extracting bioactive constituents from cornelian cherry.

This study was financially supported by Scientific Research Projects Unit of Ankara University (Project No: 17L0443005).

**Keywords :** Cornelian cherry, extraction, phenolic compounds, ultrasonic-assisted extraction, maceration.

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 560***

**Fruit composition and firmness of local apple and pear cultivars for traditional Italian preserves**

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The production of different traditional fruit-based preserves has been maintained in many areas of Italy until today. In Reggio Emilia province (North East of Italy) “savurett”, “savor” and mustards are obtained processing the fruits of old local varieties that combine a good adaptation to the environment and suitable qualitative characteristics. In the mountain areas the main cultivars used to make “savurett”, a preserve without added sugar, are pear Spalèr whose juice is cooked for a long time, and pear Nobile (Barabàn) whose slices are added at the end of thermal process to give consistency. Sometimes, apples of Rosa Romana, Ruggine and other varieties are also used. The apple cultivars Campanino and Ferro and the pear Nobile are used to produce mustard. The characterization of this raw material gives information on technological and sensory properties that contribute to the product quality. A survey and sampling was therefore carried out to study these different pear and apple varieties in comparison with current commercial cultivars for fresh consumption: Abate Fetel and Decana d’inverno pears and Golden Delicious, Granny Smith and Stayman apples. Pomological traits, fruit firmness, refractometric index, titratable acidity were analyzed. Low juiciness characterizes the apples Campanino and Ferro and the pear Nobile. Among apples, the highest soluble solids content was measured in apples Ruggine and Rosa Romana, which differed in acidity, with the highest values in Rosa Romana and the lowest in Ruggine. All the old apple varieties had a higher firmness than the commercial cultivars, with the highest values in Campanino and Ferro. The soluble solids content was similar in Spalèr and Nobile but the acidity was the highest in Spalèr and the lowest in Nobile. The low acidity and the high ratio between soluble solids content and acidity is likely the reason of the strong sweetness perceived in the consumption of Nobile fruits and derived products. This cultivar is characterized by the highest fruit firmness, which is outside the range of values generally found in commercial varieties for fresh consumption. The current exploitation of these products and varieties actively contributes to their safeguard and to the enhancement of the local economy.

**Keywords :** *Malus domestica* Borkh, *Pyrus communis* L., old varieties, savurett, savor, mustard



***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 105***

**Antioxidant Actions and Phenolic Contents of Some Wild Edible Fruits**

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Wild edible foods are getting increase interest due to their nutritional value, high antioxidant actions and phenolic contents. Turkey has rich fruit genetic resources. Jujube (*Zizyphus jujuba* Mill.), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) are one of the wild fruit species grown in Turkey. This study was carried out to determine the total phenolic compounds and antioxidant activity in wild and traditionally grown plants. In this study Jujube (*Zizyphus jujuba* Mill.), common hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) were used by freezing according to maturity period. Methanol extraction were used for determining total phenolic contents (TPC) and antioxidant activity of fruits. Total phenol contents of wild fruits were analyzed by Folin–Ciocalteu’s procedure and Antioxidant activities were evaluated by the effect of extracts on DPPH (2-2-diphenyl-1-picrylhydrazyl) radical scavenging assays. The TPC of fruit sample was reported as mg of Gallic acid equivalents (mg GAE/kg) of fruit samples. The total phenolic content was found in common hawthorn (*Crataegus monogyna*) (3238,29 mgGAE/kg) > blackthorn (*Prunus spinosa*) (2561,14 mgGAE/kg) > jujube (*Zizyphus jujuba mill*) (1986,86 mgGAE/kg), respectively. Antioxidant activity was expressed as EC<sub>50</sub> value. The EC<sub>50</sub> values ranged from 16,05 to 38,77µl ; hawthorn (*Crataegus monogyna*) (16,05µl) > blackthorn (*Prunus spinosa*) (23,68µl) > jujube (*Zizyphus jujuba mill*) (38,77µl) , respectively.

**Keywords :** Wild Edible Fruits, Antioxidant Actions , Phenolic Content

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 215***

**Our Traditional Export Product; HAZELNUT**

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Turkey is exporting agricultural products to many countries, especially EU Countries. The main exported products are; hazelnut, dried fig, seedless grape, pistachio, apricot, tobacco, fresh fruits and vegetables. In Turkey, hazelnut production is made in 705 thousand hectares of area and it covers about 67% of world hazelnut production. Hazelnut is grown in both the eastern and western regions of Turkey along the Black Sea. About 60 percent of the crop is produced in the Eastern Black Sea Region, 15 percent is produced in the Central Region and the remaining 25 percent is produced in the Western Black Sea Region. Moreover, hazelnut is also important from the sociological point of view as being one of the basic livelihood sources of the Black Sea region and it is the basic foundation of rural development. The world hazelnut production shows fluctuations depending on the climatic conditions from year to year. Overall, world production has increased in parallel with Turkey's production. The product variety in hazelnut exports is composed of natural hazelnut kernels with 63.69%, in-shell hazelnuts with 0.30% and processed hazelnuts with 35.99. 91% of the world's hazelnut consumption is carried out by the EU and other European countries. 80% is used as raw material in chocolate and candy industry. The biggest hazelnut importer countries in the world are; Germany, Italy, France, Canada and Switzerland. Germany is the first with 22.95%, Italy the second with 20.20% and France the third with 9.29% countries that export hazelnut products from Turkey. Turkey aims to have 2 billion dollars in export income of hazelnuts in 2023 and to have 80% of the market share in the world. In order to achieve this target, capacity utilization rate in production should be increased and Ar-Ge studies should be done. Adherence to the health standards of the recipient countries, quality improvement technological solutions should be investigated and education should be given to the producers. In addition, export procedures should facilitate and encourage trade.

**Keywords :** hazelnut, traditional, export, production

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 216***

**Some Local Vegetables Specific to the Eastern Black Sea: Chard, Hoskiran, Baldiran, Sakarca, Melocan**

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In this review, it has been tried to give information about the growing conditions, chemical compositions, consumption patterns and some functional properties of these local vegetables. Chard: It is a grassy leafy vegetable with a common growing area due to its availability throughout the year, low cost and use in many traditional dishes. Chard leaves contain A, B and C vitamins, calcium, iron and phosphorus at significant concentrations. Chard has been indicated to have hypoglycemic properties. Hoskiran: It has urine boosting and laxative effect. It is very rich in iron and it is also a good source of vitamins A and C and calcium. It is used in stomach pain and angina treatment. Baldiran: The leaves of the plant are large, the flowers are flat and small. Toxicity limits its use. It can be used in the treatment of breathlessness, whooping cough and as a sedative. This plant is also used in the form of ointment to relieve rheumatic diseases and aches. Sakarca: It is used to mature the acne that occurs in the body. The onion part of the plant is used by wrapping on abscess and acne. Also when it is defeated; it has emetic, urine booster effect and strengthens the contraction of the heart. Excessive consumption can lead to poisoning. Melocan: It is a climber, thorny, perennial plant. Melocan plant grows on the roadsides, bushes and forest edges in the spring. It is used in the treatment of breast cancer, abdominal pain and bloating. It is beneficial for skin diseases. It is used in the treatment of syphilis. These plants are mineral sources. The amount of phenolic substances and antioxidant capacities of them are high. Depending on these, it has been understood that these plants have many beneficial effects in terms of health. More research should be done on these plants which form the natural flora and they should be introduced and passed on to future generations.

**Keywords :** chard, hoskiran, baldiran, sakarca, melocan

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 123***

**A traditional healing drink: Gilaburu**

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Gilaburu (*Viburnum opulus* L.) is a member of the family *Adoxaceae* and is a plant with red round fruits in bunch shape. Gilaburu, which is growing in various regions of Turkey, is commonly grown in Kayseri province of Anatolia. Gilaburu usually blooms in March and April and gives the first fruits in September and October. The gilaburu fruit, which is hard at first, turns into a soft and juicy fruit towards the autumn. In the composition of the fresh Gilaburu fruit there are 7.81% water soluble dry matter, 5.83% reducing sugar, 6.71% crude protein, 19.86% crude cellulose and 560 mg / kg ascorbic acid, 2473.8 mg / kg potassium, 402.62 mg / kg sodium. It has a bitter and acrid flavour because of the phenolic compounds in the gilaburu. The main phenolic compounds contained in Gilaburu are myristene, chlorogenic acid, p-hydroxybenzoic acid, caffeic acid, pumaric acid, catechin, procyanidin, epicatechin and quercetin. Antioxidant and anticarcinogenic properties of gilaburu determined by studies; It is known that it has the ability to regulate blood pressure, has aging-retardant effect, is good for cardiovascular health and prevents the formation of kidney stones and facilitates the reduction of existing stones.

The only consumption form of Gilaburu is the fruit juice form obtained by mixing Gilaburu water with sugar. At the end of October, the fruits are collected, washed with water and kept in a water-filled container for about 3 months. At the end of this period, the fruit is mature and has a taste that can be consumed. In order to obtain gilaburu juice, the fruits are pressed and diluted with water and ready to drink by adding some sugar.

**Keywords :** Gilaburu, *Viburnum opulus* L., Traditional fruit juice

***Traditional Fruit and Vegetable Foods***

***Abstract Referance : 46***

**A TRADITIONAL TASTE FROM THE CRETAN CUISINE REACHING TODAY: ŞEVKETİ BOSTAN**

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The Turkish cuisine, which is among the three great cuisines of the world, also includes a group of olive oil dishes that can serve as a vegetarian cuisine. When considered from the point of view of the weed and olive oil group, it is seen that it has a very rich cuisine among the world cuisines. Because of the nutrients and antioxidant molecules they contain, interested by many people in nowadays. In this study, it is aimed to introduce the production, consumption style and cultural characteristics of the traditional Şevketi Bostan weed made in the Aegean region known as Şevket-i Bostan, to be transferred to future generations. The data of the study which is used the qualitative research method was obtained from the source persons living in the province of Aydın Province of Didim using semi-structured interview form. Şevketi Bostan meal is consumed in various forms. Cooked with lamb meat and pepper paste or with lamb meat and seasoned, meatless with only pepper paste or meatless with seasoned, with chickpea or as boiled and serving with garlic-lemon sauce. The most original cooking style (Cretan style) so cooking with lamb meat was investigated In this research. Şevket-i Bostan is also one of the traditional, original flavors of the olive oil cooking group in Turkish Cuisine. The origin is coming from on the Cretan cuisine. Didyma is located in a region which one is the most consumed herb in Turkey. Therefore Didyma is selected to host Turkey's first and only Vegan Festival. At the same time Şevket-i Bostan meal is consumed often. In this study how to consumed Şevket-i Bostan plant at the region. There will be how is cleaned, cooked, and served Şevket-i Bostan plant with photographs. At the same time will be emphasized importance of the consumption Şevketi Bostan because of health and Nutrition. Introducing our traditional delicacies in national and international arena, passing them to written sources, registering them with geographical signs, protecting them, keeping them alive and spreading them are important for the continuous of Turkish cuisine.

**Keywords :** Şevket-i Bostan, wild herb dishes, Didim Cuisine

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 135***

**A FUNCTIONAL DRINK FROM OLD TIMES : SUBYE SHERBET**

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Since old times there were various types of sherbets which were consumed in almost all four seasons. One of them was called Subye which was made in Aegean Region around İzmir, Tire, Bergama and Milas. The beverage had come to the Ottoman Empire from Spain with İzmir Sephardic Jews at 15th century. Subye is mainly made in melon seeds which are valuable waste products. They include high amount of protein, fat, carbohydrates and other metabolites such as minerals. In the recipe of Subye melon seeds are collected at summer season, dried conventionally and waited for one year. Dried melon seeds are mixed with water and sugar at room temperature (25°C). This traditional beverage which includes high amount of vitamin C and antioxidants cures digestion problems and common cold. Unfortunately, Subye has limited shelf-life (approximately 2 days) even in refrigerated conditions. The taste, consistency and appearance of this sherbet are similar to banana milk or Boza. Despite Subye is a functional drink with its nutritious components and health benefits, nowadays it has almost lost. Subye is a valuable, natural, healthy and traditional beverage. That's why, production and consumption of forgotten traditional drinks should be widened by the food industry alternative to fruit juices. For this purpose improving shelf life of Subye could be an interesting topic for researchers.

**Keywords :** Subye, sherbet, melon seed, traditional beverages

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 227***

**PRODUCTION OF SHALGAM BEVERAGE WITH STARTER CULTURE**

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Shalgam beverage; native Turkey, a beverage that produced via lactic acid fermentation, red coloured, turbid and very strong sour taste. In production of shalgam beverage black carrot, shalgam root, bulgur flour, sourdough, water and salt are used. In this study, the predominant lactic acid bacteria isolated from hand-made shalgam beverage and inoculated into the pasteurized shalgam. Pasteurized black carrot juice was inoculated individually with these selected lactic acid bacteria and fermented for 10-12 days at 37 °C. Shalgam beverages were produced using lactic acid bacteria direct without dough fermentation method. Among the fermentation the changing of different amounts of lactic acid bacteria ( $10^3$ ,  $10^5$ ,  $10^7$  CFU/mL ) at 20 and 25 °C that are used as starter culter, was determined. Shalgam beverage were analyzed in terms of acidity, pH and lactic acid bacteria (CFU/mL) for each 0, 2, 4, 6, 8, 10 and 12 days. Lactobacilli play an important role in the fermentations of several foods, such as vegetables, meats, and dairy products. LAB number, total acid amount and pH during fermentation of shalgam beverage with initial LAB numbers of  $10^3$ ,  $10^5$  and  $10^7$  CFU/mL at 20 and 25 °C were found to vary. The fermantation of shalgam beverage lactic acid bacteria counts ranged from  $10^3$  ve  $10^5$  CFU/mL at 20 and 25 °C that were fermented for 12 days. In fermentation broth containing  $10^7$  CFU/mL of lactic acid bacteria, fermentation at 20°C was complete in 12 days, but completed in 10 days at 25° C.

In line with this information; As the temperature and the number of starting lactic acid bacteria increased, the number of lactic acid bacteria increased during the fermentation and the fermentation period shortened.

**Keywords** :Shalgam beverage, fermentation, lactic acid bacteria

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 615***

**DETERMINATION OF CITRUS CONSUMPTION OF NEAR EAST UNIVERSITY STUDENTS**

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Cyprus has a Mediterranean climate. Therefore, the production and consumption of citrus fruits (orange, lemon and mandarin, etc.) in Cyprus is quite high. The aim of this study therefore is to determine the citrus consumption of students who study at Near East University.

960 individuals who were randomly selected from the students of Near East University were participated in this study. The socio - demographic characteristics and nutritional habits of the participating individuals were determined by using questionnaire form and inflexible tape and portable weight measure were used to determine anthropometric measurements. Citrus consumption was determined by taking ‘3 Days food intake report’. The Body Mass Index (BMI) values were grouped according to the classification of WHO.

45.2% of the students who participated in the study were female and 54.8% were male. According to the BMI classification values, 6.7% of the students were found to be underweight, 57.7% normal, 26.3% overweight, and 9.4% obese. The average citrus consumption of students was  $49.3 \pm 33.5$  g. Male students' and female students' citrus consumption were  $47.5 \pm 27.0$  g and  $51.2 \pm 40.0$  g, respectively. There was no significant difference in citrus consumption among the genders ( $p > 0.05$ ). The average vitamin C intake of students was  $59.0 \pm 36.3$  mg. Male students' and female students' vitamin C intake were  $54.9 \pm 48.2$  mg and  $65.1 \pm 9.9$  mg, respectively. 47.5% of the students have insufficient vitamin C intake. There was no significant difference between the genders in terms of vitamin C intake ( $p > 0.05$ ), but the difference between citrus consumption and vitamin C intake was found to be significant ( $p < 0.05$ ).

Citrus fruits contain vitamins, minerals and bioactive components. So it is useful for health. At least 5 servings of vegetables and / or fruit should be consumed per day. According to the result of the study, the consumption of fruits and vegetables, especially citrus, should be increased.

**Keywords :** Citrus, Nutrition, Vitamin C



***Traditional Fruit and Vegetable Foods***

***Abstract Referance : 405***

**One of the most important tastes of the Eastern Anatolia Region: çadır mushroom (*Pleurotus eryngii* var. *ferulae*)**

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Mushrooms have an important place in human nutrition for many years because they contain nutrients, minerals and vitamins. Also, mushrooms have long been used as traditional medicines since ancient times, especially in Asian countries. There are many kinds of mushroom, which have used in the world as food and medicine. One of them is *Pleurotus eryngii* var. *ferulae*. This mushroom which lives together with ferula plants (“çadır” known as regional name) in the higher parts of Turkey and the people of the region have consume with fondly. It is named as çadır mushroom by the people of the region. The people of the region who consume the ferula plants gather and consume this mushroom living with this plant. Mushrooms have collect from the higher area by the people of the region in the spring season. Both this plant and mushroom have different using forms in meals in the region. It is a wild strain of mushroom with a delicious taste and several nutrients. This mushroom recognized as a nutritious food as well as an important source of biologically active compounds and enzyme. In this review study, we have given information about the properties and importance of this mushroom.

**Keywords :** *P. ferulae*, ferula, mineral content, mushroom

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 406***

**The wild edible plants consumed as vegetable in Erzurum Province**

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Wild herbs consumed as vegetable play an important role in the diet of inhabitants in different parts of the world. Wild plants growing in Erzurum province are important for human nutrition as well as economically important. These plants are gathered by people living in the countryside especially in spring and brought to the market. In recent years, the increasing demand of consumers toward to natural and organic food has increased their interest in these plants. Some of these plants are consumed fresh or cooked, some of which can be consumed by freezing, drying, processing. The medicinal uses and nutritional properties of wild plants are often mentioned in previous studies. Many wild edible vegetable has been use for food and in folk medicine in Erzurum province. There are many choices of vegetable sources, but today many of them are neglected because of the preference towards uniform characteristics in modern agricultural technology and marketing. Therefore, it is of utmost importance to determine the wild plants locally consumed as vegetables. In this review, information will be presented about some of wild plants grow in Erzurum province.

**Keywords :** wild plants, vegetable, nutritional value

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 238***

**Sugar content and profile of Zucchella and Ramassin, local Italian plums used for no-added sugar traditional jams**

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Plums are produced from a wide range of *Prunus* species, cultivars and landraces, characterised by highly variable pomological, sensory and compositional traits. Sweetness is an important attribute of plums and derived products. A high sugar content characterises *Prunus domestica* fruits, which are processed into jams, dried prunes, juices, beyond being eaten fresh. The functional properties related to fibre content are preserved in processed jams, whose potential dietary and health benefits can however be decreased due to the generally high level of added sugars. The fruits of some local plum varieties are often traditionally processed by no- or low-sugar addition, because of their natural sweetness. Among them, Zucchella (*Prunus domestica* L.), grown on small areas of Emilia region (North East of Italy) and Ramassin [*Prunus domestica* subsp. *insititia* (L.) Bonnier & Layens], traditionally cultivated in Piedmont region (North West of Italy) are ancient genotypes locally exploited for their interesting characteristics.

Pomological traits, soluble solids, sugar, and organic acid content and profile of Zucchella and Ramassin plums collected at full ripening were analysed. The two cultivars showed different sugar and organic acid profiles. Zucchella plums were characterised by a high sorbitol content, amounting at 16% of total sugars, compared to 4% in Ramassin plums. Sorbitol is a sugar alcohol with properties of natural laxative and not subject to non-enzymatic browning that causes sugars (and amino acids) degradation. Glucose was, on average, the most abundant sugar (38% of total sugars), whereas sucrose accounted for 40% and 20% of total sugars in Ramassin and Zucchella, respectively. The most abundant organic acids were malic and quinic in Zucchella plums, whereas succinic and quinic acid characterised Ramassin plums.

The traditional flux diagram for the production of Zucchella and Ramassin jams and the possibility to improve the critical points using the currently available technologies in local systems are discussed.

**Keywords :** *Prunus domestica*, *Prunus domestica* subsp. *insititia*, sorbitol, organic acids

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 623***

**A Traditional Value-Added Product: Watermelon Molasses**

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Molasses (Pekmez) is a good source of carbohydrates and energy due to the high sugar content and among the important traditional foods of Turkey. It is obtained by concentrating (generally 70-80% soluble dry matter content) the high-sugar fruit juices directly or after removing the acidity in the open pans (traditional) or vacuum boilers (industrial). The production process of molasses varies depending on the raw material and local area. Molasses samples are generally named of the fruit on which it is produced, and therefore it is obvious that watermelon syrup is used in making watermelon molasses. Turkey is one of the world's most important watermelon producing countries. For this reason, apart from fresh consumption, watermelon can be converted into molasses which is a long shelf life and high value-added product, and thus off-season consumption is also provided. Although grape molasses can be produced on industrial scale, watermelon molasses is usually produced by traditional methods, especially in rural areas. Since the production is limited, studies carried out in this respect are few. According to the results of these studies, the pH of the watermelon molasses is found 4.80-5.89, the viscosity is 8450-9550 Pa.s, the amount of soluble dry matter is 68-75% and the total sugar content is around 60-74%. Nowadays, molasses, one of the basic foodstuffs of humans in the past, has become less consumed in the changing world conditions. Therefore, in this study, it is aimed to review the production process and some physical, chemical and microbiological properties of the watermelon molasses which is a completely natural product.

**Keywords :** Watermelon, molasses, traditional

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 57***

**The Effects of Cysteine on the Antioxidant Activity of Eşme Quince**

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Quince (*Cydonia oblonga* Mill.) is one of the most ancient fruits known to man and it has been cultivated for a long time. Turkey is the significant supplier of quince and the production was 107.243 tons in 2014. There are different quince cultivars like Eşme, Şeker and İstanbul in different parts of Turkey. Turning brown color and decay are the limiting factors to store the fresh-cut quince for a long time. The reason of color change is mainly the polyphenol oxidase (PPO) enzyme playing important role in the formation of brown pigments. When the integrity of the cell wall and cell membrane is lost with processes such as peeling, cutting, slicing, the reaction takes place much faster. Enzymatic browning affects not only the color but also physicochemical properties of fruits and vegetables. The aim of this study was to compare the effect of L-cysteine and sodium metabisulphite solutions on the antioxidant activity of fresh-cut Eşme Quince during storage. The fresh cut quinces were immersed the 0.8% of L-cysteine and 1% of sodium metabisulphite solutions for 1 minute and stored in polyethylene bags for 9 days. Quinces without any treatment were detected as control samples. DPPH (1,1-diphenyl-2-picryl-hydrazyl) scavenging activity and FRAP (ferric ion reducing antioxidant power) values of quinces were determined at 0., 3., 6., and 9. days of storage. According to results, there were 77.28% of DPPH inhibition and 1887.46 mg FeSO<sub>4</sub>/ 100 g of FRAP values which were the highest in cysteine immersed quinces in the 3. day of storage. Cysteine protected the antioxidant activity as much as sodium metabisulphite solution at the end of the storage. It is concluded that cysteine can be used as alternative to sodium metabisulphite which has adverse effects on human health.

**Keywords :** Eşme Quince, cysteine, antioxidant activity, FRAP, DPPH

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 332***

**Çiriş (Eremurus spectabilis): one of the wild vegetable species of the Eastern Anatolia Region**

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Many wild edible vegetables have been use for food and in folk medicine in Turkey. People living in the Eastern Anatolia often have use wild plants in their usual diets in the region. One of them is *Eremurus spectabilis*, which is locally, named as çiriş. Generally, the leaves of *E. spectabilis* are used as a vegetable for meal and its roots are used to make gum. Also, *E. spectabilis* has been traditionally used in folk medicine to treat some diseases. It was determined that plant has included many nutritional, phytochemical compounds, antioxidant and antimicrobial compounds in different researches. The plant collected by the people of the region in the spring months can be sold at high price. In this study, we have given information about the properties and importance of the *E. spectabilis*.

**Keywords :** *E. spectabilis*, food, nutritional compound

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 448***

**An Important Traditional Condiment Used in Every Cuisine: Vinegar**

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Vinegar is a sour liquid product that has been used since ancient times by humans and can be defined as a traditional condiment obtained by applying different treatments to various sugary and starchy agricultural materials. It has been used as a medicine, food additive, preservative, and also some chemical purposes, such as corrosive agent and herbicide for killing weeds. There are mainly three different methods using in vinegar production; surface or traditional (slow) method, generator (trickling) and submerged (acetator) method. In all methods, two distinct biochemical processes take place in the production of vinegar. In the first stage, yeasts turn fermentable sugars into ethyl alcohol ( $C_2H_5OH$ ) under anaerobic conditions. In the second phase, vinegar bacterias, also known as Acetic Acid Bacteria (AAB) and belonging to the genus *Acetobacter*, convert ethyl alcohol into acetic acid ( $CH_3CO_2H$ ) by oxidation. Among the vinegar production methods, the generator and the submerged method are faster and more economical than the traditional method. However, it is stated that the traditional method gives better results in terms of quality because the production time allows the formation of different trace elements. In addition to the production method, the quality can be affected considerably by the raw material, metabolism of the acetic acid bacteria and aging process. The acetic acid concentration typically ranges from 4% to 8% by volume for quality table vinegar. Other aroma compounds, such as carbonyl compounds, ethers, acetals, lactones, acids, phenols, and volatile esters may vary depending on the raw material. The purpose of this study is to explain the common types of vinegar and processing methods used for traditional and commercial production.

**Keywords :** Vinegar, Condiment, Submerged method, Acetic acid

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 471***

**DETERMINATION OF SOME PROPERTIES OF TRADITIONALLY PRODUCED CUCUMBER  
(ACUR) PICKLES**

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Pickle is a lactic acid fermentation product which is prepared using fruits and vegetables in diluted acetic acid, vinegar and / or brine (saltwater). Cucumber (acur) (*Cucumis melo* var. *flexuosus*) that generally has thin, long and curved structure and harvested in immature state is a very popular and widely consumed vegetable in the Middle East. In this research, it was aimed to determine some physical and chemical properties of 10 cucumber (acur) pickles traditionally produced in Kahramanmaraş province.

For this purpose, different vinegar-brine concentrations were used in the production of cucumber (acur) pickles. Chemical and physical analysis such as pH (3,27-4,09), titratable acidity (%0,51-%0,97), salt (%2,85-%8,15), dry matter (%4,65-%8,35), amount of sugar (%0,31-%0,36), organic acids (Lactic Acid 0,214 mg/ml-0,45 mg/ml, Acetic Acid 0,118 mg/ml-0,476 mg/ml, Propionic Acid 0,274 mg/ml-0,862 mg/ml), Vitamin C (3,55 ml/mg-6,71 ml/mg) were carried out on the pickle samples. Compared to TS 11112 Cucumber Pickle Standard, the 3rd, 7th and 10th pickle samples were found in compliance with the standard and gained appreciation of the panelists in the sensorial assessment.

**Keywords :** Traditional Cucumber (Acur) Pickle, Cucumber Pickle, Lactic Acid Fermentation



***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 488***

**Fermented Product of Rheum Ribes**

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*Rheum ribes* is locally known as “uçgun, ışkın or uşgun” and grown mostly in Eastern Turkey, Lebanon, and Iran. It is from Polygonaceae family a perennial mountain plant, 100-150 cm long. Stem leaf and stem form of flowers of this plant are edible raw and cooked; it used for lactic starter preparing for some traditional Mongolian fermented milk products. The content of this plant is Chrysophanol, Physcion, Rhein, Aloe-emodin, Physcion- 8-Oglucoside, Aloe-emodin-8-O-glucoside, Sennoside A and Rhaponticin, Flavonoids. Traditional herbal medicine stem and root dry plant for the treatment of anemia, anorexia, weakness, anxiety, depression, and diabetes. These plant vitamins A, B, C are seen in abundance. *Rheum ribes* is blooming in May and June so it can be consumed fresh for a limited time. Lactic acid fermentation becomes an important role in preserving fresh vegetables because it increases shelf life of fruits and vegetables also enhances several beneficial properties, including nutritive value and flavours, and reduces toxicity. In this study, it is aimed to ferment *Rheum ribes* and to preserve it throughout the year and present it to the consumer.

**Keywords :** rheum ribes, fermented vegetable, medicine plant

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 492***

**Improvement of Malatya Apricot's Quality As a Traditional and Functional Food Source : Some  
Physical and Textural Properties of Three Minor Apricot Cultivars from Malatya**

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The earliest known scientific record of apricot (named *Praecocia* in Latin) is *Historia Naturalist* (History of Nature) written by Roman naturalist Pliny the Great in 79 AD. Malatya alone has a share of 12 % in world fresh apricot production and 65 % in world dried apricot production. The oldest written information on Malatya Apricot, having geographical indication (PGI and PDO) in the presence of Turkish Patent Institute and European Union regulation, is given in Evliya Çelebi's itinerary (about seven type (Red, Yellow, White, Müşmü, Bey, Juicy, Pulpy). In today's, although there are remarkable studies made on some physical and chemical properties of fresh or dried apricot of Malatya there is no information on textural properties of Malatya dried apricot in literature. In this work, three minor domestic apricot samples (No 8 Zerdali, Alkaya and 49 Alioğlu) in the national collection garden in Malatya Apricot Research Institute were examined in terms of some physical properties (moisture % , soluble dry matter in water [SDMW] and water activity  $a_w$ ) and Texture profile analysis (TPA). These fresh samples were applied to sun (natural drying [GK] for 2-3 days) and oven (artificial drying [F] at 64°C for 12 hours) methods for drying. The changes of some physical properties (moisture and  $a_w$ ) in dried fruits were 17–20 %, 0.625–0.641 (GK) and 15.50–18%, 0.578 – 0.664 (F), respectively. TA.XT plus texture analyzer was used to perform the texture profile analysis (TPA) (36 mm diameter cylindrical and 100 mm compression platen probes), puncture test (PT) (2 mm diameter punch probe) and knife test (extended craft knife) of the all dried (GK and F) apricot samples. The toughness results (kg) of knife test (GK and F) changed from 3.25–4.89 to 4.09–6.66, respectively whereas the work of shear data (kg.mm) were 12.86–22.64 and 12.50–32.53, respectively. Texture profile analysis (hardness, springiness, cohesiveness, gumminess, chewiness and resilience) data among samples based on drying methods (GK and F) differed whereas the highest hardness No 8 Zerdali (GK) and the lowest chewiness and resilience 49 Alioğlu (GK). There was no fracturability and adhesiveness data for all samples.

**Keywords :** Malatya, Apricot, Drying, TPA, Physical Properties

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 513***

**Pistacia terebinthus: A Review of Recent Applications and Health Effects**

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*Pistacia terebinthus*, a member of the family Anacardiaceae, is known as “menengic” or “citlenbik” in Turkish. It can grow up to 10 meter living on dry rock slopes and hillsides areas in Portugal, Greece, Morocco and Mediterranean region especially in southern part of Turkey. In Mediterranean countries, different parts of the tree such as leaves, fruits, flowers or resin are good source of food since ancient times. Leaves and fruits of the tree can be consumed either raw or dried. In Turkish culture, terebinth coffee is prepared from dried or roasted fruits and preferred due to its characteristic aroma and taste. The extract of fruits has been used because of its health benefits. It has high oil content (approximately 40%) where oleic acid is the dominated fatty acid with the range between 43 to 51.3% of total fatty acids. It also contains phenolic compounds, tocopherols, tannin, carotenoids and dietary fibers. Rich composition of the extract enables its use in treatment of diseases such as anti-inflammatory, antioxidant, antimicrobial and antiseptic properties. It has been used in alternative medicine as a remedy for various diseases including urinary inflammations, stomachache, stomach ulcers, prostate troubles and headaches. *Pistacia terebinthus* resin has been used in treatment of asthma and eczema. It is also good candidate for utilizing as matrix forming material in encapsulation of bioactive substances and probiotics. The present review provides an overview of comprehensive information about *Pistacia terebinthus* and its products as well as recent studies on alternative use of its products in foods or for medical purposes.

**Keywords :** *Pistacia terebinthus*, resin, terpenes, essential oils, plant extract

***Traditional Fruit and Vegetable Foods***

***Abstract Reference : 343***

**DETERMINATION OF RELATIONSHIP BETWEEN ACRYLAMIDE FORMATION AND COLOR CHANGES IN FRENCH FRIES**

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Some chemical reactions occur in foods, as a result of thermal processing. Maillard reaction is one of these reactions. Maillard reaction is defined as the non-enzymatic browning reaction between the free amino group of peptides or proteins and reducing sugar or lipid oxidation products found in foods. In consequence of this reaction, color of foods brown and numerous toxic compounds form such as acrylamide. It is considered that reaction of acrylamide formation occurs mainly between reducing sugars and asparagine. Therefore, maillard reaction is considered as responsible for this reaction.

In this study, relationship between acrylamide formation and color changes (L, a, b) during frying at variable temperature and time combinations (150, 170 and 190°C, 10, 20 and 30 min) of two potato varieties with different slice size (9, 6 and 3mm) was investigated. In all samples of Ranger Russet variety, acrylamide formation was significantly correlated with L value over  $R^2=0.97$ . Besides, the relationship between acrylamide formation and a and b values were found over  $R^2=0.86$  in all Ranger Russet variety samples. Likewise, acrylamide formation was significantly correlated with L value in all Van Gogh variety samples  $R^2=0.96$ . The relationship between values of a and b and acrylamide formation was found over  $R^2=0.88$ . On the other hand, correlation coefficient between acrylamide formation and L, a and b values increased with increment of temperature until 0.99 regardless of slice size.

**Keywords :** Acrylamide, color, potato, correlation, HPLC

***Acknowledgments :*** *This study was supported by research Grant 2017FBE044 from Research Project Fund (BAP) of Pamukkale University. The authors thank for Öztar tohumculuk ve Tarım Ürünleri Üretim ve Ticaret A.Ş providing the potato varieties.*

***Traditional Functional Foods***

***Abstract Reference : 189***

**FOLATE-PRODUCING LACTIC ACID BACTERIA ISOLATED FROM FOODS**

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Vitamins are micronutrients that are essential for the metabolism of all living organisms and precursors of intracellular coenzymes that are necessary to regulate vital biochemical reactions in the cell. Humans are incapable of synthesizing most vitamins, and they consequently have to be obtained exogenously. Recent studies show that certain lactic acid bacteria isolated from foods can be considered as a folate producer. Folates are involved in many metabolic functions such as replication, repair and methylation of DNA and synthesis of nucleotides, amino acids and vitamins. Therefore, many countries have adopted mandatory fortification of staple foods with vitamin.

Certain lactic acid bacteria (LAB), in particular, isolated from foods are capable to produce folates being a strain-dependent trait. These LAB strains mainly belong to *Weissella* spp., *Lactobacillus lactis*, *Lactobacillus plantarum*, *Lactobacillus bulgaricus*, *Lactobacillus acidophilus*, *Lactobacillus plantarum*, *Pediococcus pentosaceus*, *Pediococcus acidilactici*, *Streptococcus* spp. and *Enterococcus* spp. Folate-producing LAB were isolated from some foods such as fermented milk products (cheese, yogurts etc.), fermented fish (Thai; Plaasom Fug), raw cereal materials (sesame, wheat, rye, wholemeal flour, oat, rye etc.)

The use of vitamin-producing microorganisms is a more natural and economically viable alternative instead of fortification with chemically synthesized pseudo-vitamins. Therefore, the studies with the identification of folate-producing microorganisms and the areas where these microorganisms used should be increased. In particular, the microbiota of traditional fermented foods, which known to be rich in many functional compounds, should be examined in terms of the folate-producing LAB. Thus, it is paved the way for improving the functionality of different food systems.

**Keywords :** Folate, Lactic Acid Bacteria, Food

***Traditional Functional Foods***

***Abstract Reference : 634***

**TOWARDS FUNCTIONAL FOOD THROUGH TRADITIONAL FOOD**

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Today, changes in life conditions, prolonged working hours, time spent outside the home have changed the consumers' eating habits. Nevertheless, the fact that being technology at every moment of life, providing internet access almost everywhere enable the consumer to reach the right information quickly. Consumer awareness of nutrition, which keeps updating every period, is gradually increasing. Many scientific studies show that nutrition plays an important role in the formation of diseases. It is considered that nutrition contributes to 60 % of the diseases leading to death and even 70 % of cancer cases are due to nutrition. Today's consumers desire; gaining favor to body, having protective effect against increasing stress conditions, exposing free radicals causing cancer and diabetes, cardiac diseases, particularly cancer beside meeting basic nutrition needs of food those consume. This situation raised the importance of “functional food” in recent years and functional food has become one of the fastest-growing sector in food industry.

Fermentation technology is one of the traditional food processing and preservation methods. Depending on reactions occurring during fermentation both a new product is obtained and the storage time of the obtained product is extended. It is known that lactic acid bacterias act in fermentation technology are probiotics. Emerging as the natural result of fermentation technology, studies on many traditional food like yoghurt, kefir, boza, tarhana, turnip juice, soudjouk etc. show that these kind of food have functional properties. Researches on raising functional qualities of food those are the parts of the culture consumers know are gradually increasing. In this study, researches on raising functional properties of traditional food are reviewed.

**Keywords :** Traditional, Functional, Food, Fermentation

***Traditional Functional Foods***

***Abstract Reference : 196***

**A Comparison of Extraction Methods of Bioactive Compounds From a Local Garlic Population**

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Garlic is an important food and condiment plant, which health promoting properties have been extensively studied and documented. Garlic extracts and garlic-based food supplements are presently rather commonly available on the market of phyto-therapeutic products.

The production of garlic extracts is mainly dominated by Asian players, using widely available, low cost raw materials, and the ways of production are not easily retrievable. However, pharmacopoeias report the most common systems to obtain garlic extracts, based on either hydro-alcoholic, glycolic or oil extraction. Some small scale garlic growers are interested in developing garlic extracts based on locally available, well characterised raw materials, with added value connected to origin.

The Aglio rosso di Sulmona is a local garlic population from a restricted area of central Italy. It is characterised by its peculiar growing environment and good organoleptic traits, and also by the production of an abortive flowering stalk, that must be however removed for bulb production.

An experience was carried out comparing: a) two extraction methods: conventional static maceration for 21 days and high pressure extraction for 8 hours; b) four extracting solvents: water / ethyl alcohol 1:1, water / ethyl alcohol 1:4; water / ethyl alcohol / glycerol 1:1:1, sunflower oil. Both flower stalks and bulbs were considered and independently characterised. The main cysteine sulphoxide compounds and their volatile derivatives were quantified.

The 1:1 water / ethyl alcohol high pressure extraction was highly with a recovery even higher than the extraction procedure used in the lab for raw material characterisation. However, the ratio between intact allicin and its derivatives was different.

The possibility of obtaining commercial garlic extracts is examined, in the light of the results. Flowering stalks have lower active compound concentrations, but are available as by-products, so potentially interesting for extract production.

**Keywords :** Garlic, Garlic Extracts, Food Supplements, Landraces

***Traditional Functional Foods***

***Abstract Reference : 39***

**Dietary Fiber Rich Cookies Supplemented with Ahlat a Wild Pear**

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Ahlat (*Pirus eleagrifolia*) is a fruit of wild pear tree that grows naturally in almost every region in Anatolia. It is smaller and harder than pear. It is consumed as fresh fruit and also used to produce juice, molasses, vinegar and pickle in Turkey. Dietary fiber (DF) content of ahlat is high and therefore appears as an alternative fiber source. The supplementation of different DF sources (whole cereals, bran, hulls of legumes, fruit pulp) into various foods, especially cereal products, is carried out widely to increase the level of fiber intake in daily diet. Increasing the DF content in food products improve the health, however the physical and sensorial properties of the foods generally deteriorate causing not to consume. In this study, utilization of ahlat as powder in cookie formulations as DF source at the levels of 10-30% (in flour basis) was investigated. The cookies were prepared according to AACC Method (No.10-54) and evaluated in terms of spread ratio, color (L\*, a\*, b\*; Lovibond RT300, UK) and texture (hardness; TAPlus, Lloyd Instruments, UK) values and sensorial properties. Soluble (SDF), insoluble (IDF) and total dietary fiber (TDF) contents of ahlat powder (AP) sample and cookies were determined by AACC Method (No. 32-07). The TDF content of AP sample was determined as 46.6%, which was mostly IDF (39.2%). The TDF contents of cookies increased with increasing fiber addition and reached to 10.5% with 30% level. The AP addition did not cause significant deterioration on physical properties of cookies. An increase in spread ratio value was observed in 10% added cookie as compared to control one. The hardness of the products increased with 30% addition. Cookies added with AP had higher a\* while lower b\* and L\* values as compared to control sample. The AP supplemented products had dark but acceptable colors. The cookies had higher sensorial score with pleasant fruity flavor by adding of AP up to 20% level. The ahlat, kind of a wild pear has potential as fiber source and can be considered as functional food additive (Sakarya University Scientific Research Project Unit No.2012-50-01-040).

**Keywords :** Ahlat, wild pear, dietary fiber, cookie

***Acknowledgments : Sakarya University Scientific Research Project Unit (2012-50-01-040)***



***Traditional Functional Foods***

***Abstract Reference : 203***

**The effect of different extraction methods on total phenolic and antioxidant composition of hawthorn berries**

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Hawthorn (*Crataegus oxyacantha*), which is a member of Rosaceae family, is a wild fruit growing in Mediterranean Basin, Turkey and Iran. It is known that there are about 200 species of *Crataegus* on the earth, but there are only 20 species of hawthorn in Turkey. Hawthorn has been traditionally used as a remedy for medical purposes for many years. In this study, the effect of different extraction methods and extraction conditions on total phenolic content and antiradical activities of hawthorn were investigated. For this purpose, two different solvents (ethanol or methanol) and two different extraction conditions (mechanical stirring at 25°C for 2 h or ultrasonic treatment at room temperature for 30 min) were used. Total phenolic content and DPPH radical scavenging activities of the extracts were analyzed. In the results, it was determined that combination of ethanol as solvent and ultrasonication treatment, in general, enabled better higher bioactive properties in the hawthorn extract. The total phenolic content of the ethanolic extract was 2.23 mg gallic acid equivalent (GAE)/g which was higher than that of the methanolic extract (1.44 mg GAE/g) while DPPH scavenging activity levels of the extracts ranged from 10.52 % to 28.43 %. The ethanolic extract of the hawthorn obtained by mechanical stirring exhibited the lowest antiradical activity (10.52%). In conclusion, this study demonstrated that bioactive properties of hawthorn berries were significantly affected by the extraction method and the solvent used.

**Keywords :** Hawthorn, phenolic content, antioxidant capacity, extraction methods

***Traditional Functional Foods***

***Abstract Reference : 354***

**BIOACTIVE COMPOUNDS OF SEAFOOD**

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Epidemiological studies revealed that the people in Asian countries with high consumption of fish and seafood have low prevalence of diseases and some types of cancer. This observation has led to extensive investigations of the health benefits of compounds present in marine organisms. Most of marine resources have bioactive compounds, and nutraceutical and medicinal properties which serve as health-promoting components. Bioactive compounds are also referred to as nutraceuticals that play an important role in maintaining health of individual, modulating immunity and thereby preventing and treating specific diseases. These compounds include fish muscle proteins, peptides, amino acids, collagen, gelatine, fish bone, polyunsaturated fatty acids, sterols, polysaccharides, protein hydrolysates, chitin, chitosan, enzymes, antioxidants, carotenoids, vitamins and minerals, which are presently used in various sectors such as food, cosmetics, pharmaceutical, tissue engineering and biomedical. Bioactive compounds show great potential as anti-inflammatory, antimicrobial, antiviral and antitumor, antioxidants and antiallergic drugs. This review is an update to the information on bioactive seafood compounds and also their health benefits.

**Keywords :** seafood, bioactive compound, nutraceutical, health benefit

***Traditional Functional Foods***

***Abstract Reference : 101***

**Functional Vinegar Production From Güvem (*Prunus spinosa*) Fruit**

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Nowadays the importance of biodiversity and the importance of local products has increased and Turkey has a significant potential with its unique biodiversity and rich cuisine culture which is as old as hundred years. But it is also true that this potential hasn't been used enough. In this project güvem vinegar was produced with using honey syrup and grape syrup from güvem fruit consumed as a local product and known as restricted in use. This produced vinegar is valuable in terms of economy and also has bioactive function in terms of consumer health. For this purpose, güvem fruits were gathered and natural fermentation was carried out with using two different fruit proportions (% 20 and % 40) and two different type of sugar resources (grape and honey syrup). Alcohol and acetic acid fermentations were monitored weekly. At the end of the fermentation process vinegars' physicochemical property and also anthocyanin, flavonoids, antiradical activity property are determined. Taste profile features evaluated by expert panelists. In this research it's seen that during the fermentation process samples with grape syrup fermented more rapidly than the other samples. Depending on the increased fruit ratio, the formation of sediment increased during production, and the color and flavor profile characteristics of the vineyards were differentiated. Except one, all of the produced vinegars are in accordance with the regulation (depending on their acid grades, residue and alcohol proportions). In the production process using grape syrup as a sugar resource way more suitable for obtaining a vinegar with nice color, bitter taste and antioxidant activity.

**Keywords :** Güvem (*Prunus spinosa*), güvem vinegar, honey, grape, traditional

***Traditional Functional Foods***

***Abstract Reference : 125***

**INVESTIGATION OF ANTIMICROBIAL EFFECTS OF SOME AROMAS ON BACTERIA AND YEAST**

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Today, carnations, thyme and cinnamon oils are natural oils with antimicrobial properties. It is known that these activities changed according to the plant. Antimicrobial effects are also increasing according to the amount of active substances in fats. Vegetable oils have been used for many years in the medical and pharmaceutical sectors and are known to be beneficial in terms of health. Essential oils obtained in pure form are very important both in scientific and economic aspects. The purpose of this study is to investigate the antimicrobial effects of some vegetable oils on the market, such as foodborne pathogenic bacteria and yeast such as *Candida albicans*, *Saccharomyces cerevisiae*.

In this study, the effects of cinnamon oil, two different carnation oil and thyme oil on eight different microorganisms (*Salmonella enteritidis*, *Salmonella typhi*, *Listeria monocytogenes*, *Escherichia coli*, *Staphylococcus aureus*, *Enterobacter sakazakii*, *C. albicans*, *S. cerevisiae*) effects were examined by Disk Diffusion Method. As a result, it was observed that the oils showed antimicrobial effect at different rates on some bacteria and yeast. Cinnamon oil and carnation oil were observed antimicrobial activity on *S. enteredis* with 29.5 mm and 27 mm zone diameters. Thyme oil and clove oil showed antimicrobial activity on *S. typhi* with 27.5 mm and 25 mm zone diameters, respectively. As a result; it has been determined that oils with good antimicrobial activity may be beneficial in terms of reducing or preventing pathogens in these foods as well as imparting flavor and aroma to appropriate foods. It has been determined that they can be used as an alternative to the use of a synthetic additive.

**Keywords :** Carnations oil, thyme oil, cinnamon oils, antimicrobial properties

***Traditional Functional Foods***

***Abstract Reference : 24***

**Antioxidant Capacities of Traditional Ottoman Sherbets**

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Turkish cuisine is one of the few cuisines in terms of wealth in the world. One of the varieties that contribute to this richness is the traditional Ottoman sherbet. Ottoman sherbets had a very common consumption before the 20th century. However, in the 20th century, the consumption of sherbet decreased due to the effect of cola and soft drinks. In our research, we aimed to increase the interest of these drinks by putting out the functional properties of the Ottoman sorbets. In this study, antioxidative capacities of Hibiscus, Tamarind, Gülhatmi, Liquorice, Orange, Sirkencübin, Harnup, Cinnamon and Cardamom from traditional Ottoman sherbet were investigated. The pH, titratable acidity, dry matter, brix values, color parameters and sensory properties of the sherbet samples were also determined. The results of the antioxidant capacity analyzes made on the sherbets are as follows: The phenolic content of sorbets ranged from 123.8 mg catechin equivalent/l to 1258.7 mg catechin equivalent/l, flavonoid content ranged from 9.37 mg catechin equivalent/l to 681.25 mg catechin equivalent/l, DPPH TEAC from 57.54 mg/l to 585.75 mg/l, ABTS 1 min 300.1 mg/l to 4484.15 mg/l, ABTS 30 min 384.3 mg/l to 6229.42 mg/l, FRAP ferric sulfate equivalent antioxidant capacity from 184.37 mg/l to 9271.47 mg/l and FRAP TEAC from 68,32 mg/l to 4398.72 mg/l. According to the results of sensory analysis, the most appreciated sherbet was orange sherbet in all impression parameters, while the least appreciated was Liquorice sherbet. There are very few studies on traditional Ottoman Sherbets. Our work will make a significant contribution to the literature. Traditional Ottoman Sherbets for with antioxidant capacities high and produced naturel rout will be an important alternative to the beverage industry.

**Keywords :** Traditional Ottoman Sherbets, Functional Food, Antioxidant, ABTS, DPPH, FRAP

***Traditional Functional Foods***

***Abstract Reference : 303***

**A Traditional Food For Evaluation of Whey: Kulunce (Feast Pie)**

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There are various traditional foods in Turkey, which are produced and consumed according to the cultural traditions of the region. They have unique taste, aroma, fragrance and composition. Kulunce is one of such products, which is very durable, and known as proximate or donut and produced to be used to serve at feasts in Şanlıurfa. Nowadays, the households in the region are preparing all seasons and have also been produced commercially and offered for sale.

Thanks to the ingredients (flour, oil, spices, milk, yoghurt, yeast) of Kulunce, it has not only keep up with satiety, but also facilitates digestion. To increase the taste and nutritional value of the product, some materials such as whey (PAS) obtained from cheese or cokelek production or yoghurt juice is being added to the dough in traditional production.

Whey is an important byproduct in cheese production. Its composition varies depending on the characteristics of the milk and the cheese produced and is generally; 6.7% dry matter, 4.4% lactose, 0.9% protein, 0.9% fat, 0.5% mineral. It has produced many products such as soup, bread, pasta, cake, infant food from whey in developed countries. The addition of whey has benefits like preserving the freshness of the product for a long time, being more voluminous, being more aromatic, improving the structure of the poultry pore.

In this study, the nutritional and functional properties of Kulunce produced with whey addition will be discussed.

**Keywords :** Whey, Kulunce, functional food

***Traditional Functional Foods***

***Abstract Reference : 616***

**RELATIONSHIP BETWEEN MILK AND DAIRY PRODUCTS CONSUMPTION, CALCIUM INTAKE AND BMI'S OF FACULTY HEALTH SCIENCES**

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The assessment of the relationship between milk and dairy products consumption, calcium intake and body mass index (BMI) of the students at the Near East University School of Health Sciences. 351 students from 11 departments within the Faculty of Health Sciences of Near East University were selected by systematic sampling method. Individual questionnaires were used. Anthropometric measurements of students using rigid scales and portable weighing; assessment of food consumption patterns was determined by taking "24-hour Retrospective Food Consumption Record". The BMI classification was grouped according to WHO criteria. Qualification levels of calcium intake of students were evaluated according to DRI. The average nutrient values of the consumed foods were calculated using the Nutrition Information System 7.2. SPSS 18.0 was used for statistical analysis of the data. The significance level (p) was accepted as 0.05.

39.3% of the students who participated in the study were male and 60.7% were female. When the BMI classification of the students is examined, 5.7% is weak, 68.9% is normal, 21.7% is slightly obese and 3.7% is obese. The mean consumption of dairy products of students was  $198.1 \pm 165.5$  g and the mean calcium intake was  $603.7 \pm 293.1$  g. There was no significant relationship between consumption of milk and dairy products, calcium intake and BMI of students ( $p>0.05$ ). When the calcium sufficiency levels of the students were examined, 63.2% were inadequate, 35.3% were adequate and 1.4% were found to be much. There was no difference between the calcium sufficiency levels and the BMI classifications of the students ( $p>0.05$ ). When we look at this difference by sex, found a meaningful relationship between women ( $p:0.001$ ) and there was no significant relationship between men ( $p>0.05$ ).

In some studies, there was a significant relationship between milk and dairy products and calcium intake and BMI but there was no significant relationship in this study. There is a need for new and similar studies to be carried out by taking longer food consumption.

**Keywords :** KEYWORDS: Nutrition, Milk and dairy products consumption, Calcium intake, BMI

***Traditional Functional Foods***

***Abstract Reference : 153***

**Traditional Turkish Dessert Food: Gobdin**

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Gobdin is a traditional Turkish dessert food. It is a food which it has high nutritional value, calorie and functional properties, obtained by crushing dried white mulberry and walnut. Already, the nutritional values and benefits of walnuts and mulberry are known. Gobdin is produced in Erzurum city; Ispir and Tortum around in Turkey. It is a food consumed at breakfast. Gobdin is important to use nutritional foods, such as walnuts and dry mulberries, especially in children. Few studies have been conducted on Gobdin. Erdogan et al. (2010) and Ertem and Çakmakçı (2018) studied. Ertem and Çakmakçı examined the possibility of manufacturing a new functional probiotic yogurt, to increase the nutritive value and functionality of yogurt using Gobdin as a health ingredient. It also evaluated the effect of adding Gobdin on the survival of *Lactobacillus acidophilus* and other lactic acid bacteria, and on the physical, chemical and sensory properties of yogurts. In this study, 89.37% dry matter, 10.90% protein, 27.16% fat and 3.94% ash were found in the Gobdin. The values found in the manufactured Gobdin for this study were higher than those given by Erdogan et al. (2010). In traditional production, the mulberry rate is higher, and this may result in raw material differences.

It is necessary to carry out researches and studies in order to be able to be used in many food industry fields in order to introduce Gobdin, which is formed by the combination of these two miraculous dry fruits. In this study, the subject will be explained in detail.

**Keywords :** Gobdin, traditional Turkish food, walnut, mulberry



***Traditional Functional Foods***

***Abstract Reference : 409***

**Emulsion-based traditional foods: A new approach**

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Emulsions are formed when a liquid phase is dispersed in another liquid matrix in tiny droplets. Most of the time the dispersed phase is oil and the dispersion medium is water in food emulsions. Emulsions enables food producers to encapsulate bioactive compounds, increase their water-solubility and bioavailability, and protect them against degradation. Moreover, undesirable off-flavors can be masked, aroma components can be carried to specific target regions, and the expected aroma can be delivered by structuring the emulsion systems. Emulsions can be engineered to improve the nutritional values of food products as well. For instance, emulsion science has been used in order to produce low-fat food products by replacing the fat content.

According to a recent FAO report, undernutrition and micronutrient deficiencies (especially vitamin A and zinc deficiencies) are still existing problems in several Eastern European and Mediterranean countries such as, Georgia, Bulgaria, Croatia, Israel, and Turkey. Traditional emulsion-based foods such as sauces (e.g. hummus), butter, soups (e.g. tarhana), yogurt-based foods and beverages (e.g. buttermilk), ice-creams or other dairy-based products (e.g. kajmak), cheese, kefir, meat emulsions (e.g. soudjouk) can be considered staple foods for certain societies in the region. Therefore, emulsion-based traditional foods may be an opportunity to deliver specific advantages and overcome several disadvantages. In this review, we will discuss the possibility of structuring several traditional emulsion-based foods in order to enhance their nutritional outcomes and fight malnutrition in Balkans and Caucasus.

**Keywords :** emulsions, encapsulation, malnutrition, functional foods

***Traditional Functional Foods***

***Abstract Reference : 412***

**Changes on Sensory Attributes of Reduced Salt Pastirmas Incorporated with Calcium Chloride or Potassium Chloride**

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Health organizations all over the world have urged the food industry to develop food products with lower levels of sodium chloride (NaCl) due to the adverse health effects of excessive sodium consumption. Processed meats constitute an important part of dietary sodium intake. Pastırma, a traditional Turkish dry-cured meat product contains considerable amount of NaCl with a 7% maximum allowable limit. Strategies to reduce NaCl content in foods should guarantee acceptable sensory characteristics because there would be a decrease in the perception of saltiness and also possible detrimental changes due to salt reduction and incorporation of other replacers. The aim of this study was to evaluate changes in sensory characteristics of pastırma when calcium chloride (CC) or potassium chloride (PC) was added as partial replacers. Four different salt combinations were used to process the pastirmas with the standard curing salt mixture containing 6%: 1) NaCl-standard formulation (SC), 2) 50% NaCl-salt reduced formulation with 3% NaCl addition (RS), 3) 50% NaCl+50% KCl (PC), and 4) 50% NaCl+50% CaCl<sub>2</sub> (CC). A nine-member trained sensory panel evaluated pastirmas on flavor perception in terms of saltiness, bitterness, spiciness, sweetness, acidity, beefiness, metallic taste and rancidity. A consumer acceptability test was also conducted to evaluate appearance, color, odor, flavor, texture and overall acceptability of pastırma samples using a 9-point hedonic scale. Intensity of the bitter, spicy, sweet, metallic and rancid flavor attributes did not exhibit differences between the four groups ( $p>0.05$ ). RS group had the lowest intensity of saltiness ( $p<0.05$ ) while PC and SC showed similar saltiness intensity ( $p>0.05$ ). CC group had the highest acidic intensity ( $p<0.05$ ) due to the lower pH value of this group of pastirmas. In consumer acceptability test, RS group had the lowest scores ( $p<0.05$ ) for each attribute with similar flavor and texture scores to CC group. Overall acceptability scores for SC, RS, PC and CC were 7.7, 6.4, 7.5 and 7.0, respectively. PC did not differ ( $p>0.05$ ) from SC in terms of each attribute evaluated in consumer acceptability test indicating that partial replacement of NaCl with KCl would be possible with no negative impact on the sensory characteristics of pastırma.

**Keywords :** Key words: Pastırma, reduced salt, potassium chloride, calcium chloride, sensory characteristics

***Traditional Functional Foods***

***Abstract Reference : 163***

**Lactic Acid Bacteria Isolation from Traditional Fermented Boza and Antimicrobial Properties of Lactic Acid Bacteria**

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Boza is a Turkish traditional drink based on cereals widely consumed by people of all ages in Turkey. It is also consumed in some areas in Bulgaria, Albania, and Romania. Boza is obtained by crushing cereals such as rice, millet, maize, barley, rye, oat, wheat, buckwheat and gernik which have been cleaned from foreign materials and baking them by adding water and adding sucrose. It is a traditional drink with dull yellow color and dark consistency, obtained by fermentation of alcohol and lactic acid under suitable conditions. Boza has a mixed microflora of lactic acid bacteria and yeasts. The lactic acid bacteria found in boza can produce antimicrobial compounds such as bacteriocin. At the same time, organic acids formed by lactic acid fermentation can reduce the pH and prevent the development of pathogenic microorganisms. In this study, lactic acid bacteria were isolated and identified from 10 different boza. A total of 100 LAB were isolated from boza and investigated for their antimicrobial properties. These isolates were tested for inhibitory activity against food-borne bacterial pathogens. Antimicrobial effects of these lactic acid bacteria were determined against six different pathogens (*Salmonella enteritidis*, *Salmonella typhi*, *Listeria monocytogenes*, *Escherichia coli*, *Staphylococcus aureus*, *Enterobacter sakazakii*) by Disk Diffusion Method. Approximately 10% antimicrobial effect of isolates was observed. In addition,  $4,6 \times 10^8$  cfu / mL lactic acid bacteria and  $30 \times 10^8$  cfu / mL enterococci were detected in boza. Only Gram positive and catalase-negative isolates were considered as lactic acid bacteria.

**Keywords :** Boza, lactic acid bacteria, isolation

***Traditional Functional Foods***

***Abstract Reference : 622***

**Can Traditional fermented foods be called as probiotic products?**

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Fermentation is one of the oldest and most economical of methods used in food preservation. The importance of fermentation in modern-day life is underlined by the wide spectrum of foods marketed both in developing and industrialized countries, not only for the benefit of preservation and safety, but also for their highly appreciated sensory attributes. All around the world, fermented foods and beverages are part of the human diet.

In recent years, there has been an increased interest in the consumption of traditional fermented products both nationally and internationally, with the fermented foods and beverages, using a wide variety of different microorganisms, raw materials and processing techniques.

Fermented foods and beverages show diversity among tradition and geographical location. It is estimated that today, more than 3,500 different fermented foods and drink products are being produced all over the world. Lactic acid bacteria and yeasts are the major group of microorganisms associated with traditional fermented foods.

In traditional fermented products, the process of fermentation is spontaneous and uncontrolled. Consumption of such foods containing live microorganisms might be a beneficial dietary recommendation because of health development of gastrointestinal system. However, the International Scientific Association for Probiotics and Prebiotics (ISAPP) stated that potentially beneficial microbes might often represent a diverse community that is not well-defined in terms of strain composition and stability. As a result, the live microorganisms in fermented foods might not be considered “probiotics”. It was recommended that such foods are best described as “containing live and active cultures”, but should not be called probiotic. However, standard yogurt cultures *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus salivarius* subsp. *thermophilus* are recognized probiotic status by EFSA owing to aid lactose digestion.

**Keywords :** Fermentation, Traditional fermented foods, probiotic

***Traditional Functional Foods***

***Abstract Reference : 429***

**THE DOCTOR OF ANDIRIN: TIRSIK (SNAKE BEET) SOUP**

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Tirsik (*Arum maculatum*) is large leafed plant species and grows where the Mediterranean climate dominates. And it is mostly consumed in Adana, Mersin, especially in the Andirin region. Tirsik is named differently in the local accents such as trisik, nivic, kabargan, ayikulagi, snake beet etc. The most prominent feature of the plant, is a liquid which is rich in antioxidant compounds. This liquid is in the leaves and stems that give a feeling of burning and itching when consumed raw. For many years, the biologically active flavonoids and terpenoids in *Arum maculatum* have been used as therapeutics in gastrointestinal diseases, rheumatism, inflammatory diseases, bacteria, fungi and viruses in traditional treatment methods. For this reason, tirsik soup is named ‘The Doctor of Andirin’ in time. Tirsik soup is preparing with tirsik plant, red pepper paste, lemon juice, pomegranate syrup, garlic, wheat, wheat flour, olive oil and salt. It is mostly consuming as a soup in a diet. Tirsik leaves are chopped fine cut and then roasted with peppercorn, lemon juice, pomegranate syrup, olive oil and salt. This sauce add into the soup and cook for another 5 minutes. In a serving of approximately 147 calories, 10 grams of carbohydrates, 2 grams of protein, 11 grams of fat. A portion contains also vitamin A 517 µg and vitamin C 76 mg. Although the amount of fat in the soup seems to be high, the total amount of cholesterol is as low as 1,5 mg. It is a healthy option that can be included as a soup at meals when the amount of fat is reduced depending on demand.

**Keywords :** *Arum maculatum*, Antioxidant, Soup

***Acknowledgments :*** *Thank you for the opportunity to express ourselves internationally in this educational congress.*

***Traditional Functional Foods***

***Abstract Reference : 441***

**ÇİRİŞ HERB (ASPHODELUS AESTIVUS): HEALTH EFFECTS AND USAGE AREAS**

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Çiriş herb (*Asphodelus aestivus*) belongs to the family of Liliaceae. It is a plant that spreads Africa, Arab countries, Turkey and in parts of Europe where Mediterranean climate is seen. It is a plant with green fruits, has 50-150 cm length and grows in April-May. It contains a high amount of starch, inulin, fatty acids and sugar because of the plant consumed as a nutrient. It has high antioxidant and antimicrobial activities. Çiriş Herb (*Asphodelus aestivus*) is used as a complementary medicine for eczema, stomach disease, and hemorrhoids. It is mostly grown in the mountains of Eastern and Southeastern Anatolia in our country. The most common dishes are egg-roasting and the food made with bulgur. For cooking the dish made with bulgur; *A. Aestivus*, olive oil, onion, garlic, tomato paste, pepper paste, bulgur, salt, black pepper, red pepper are used. Firstly, the pot is placed olive oil and onion and garlic are added. Then added pepper and tomato paste and roast a little. After that, Chopped *Asphodelus aestivus*, the hot water, bulgur, salt, black pepper and red pepper are added respectively. It can also be served after bulgur has been thoroughly cooked. Bulgur contains some minerals, fibers, some phenols, phytates and group B vitamins. *Asphodelus aestivus*, when used in with bulgur, nutritional value can be increased. It contains approximately 253 calories, 30 grams of carbohydrates, 7.7 grams of protein, and 10 grams of fat in a portion of this meal. It also contains 2.5 mg of B1 (Tiamin), 0.16 mg of B2 (Riboflavin), 0.7 mg of B6 (Pyridoxine) and 52.6 mg of C vitamins. With yoghurt and a slice of whole wheat bread, it can be consumed as a healthy main meal.

**Keywords :** *Asphodelus aestivus*, plant, Antioxidant Activity

***Acknowledgments :*** *Thank you for this educational congress*

***Traditional Functional Foods***

***Abstract Reference : 494***

**EFFECT OF INFUSION TIME AND TEMPERATURE ON THE ANTIOXIDANT ACTIVITY,  
TOTAL PHENOLIC CONTENT AND COLOR PROPERTIES OF ROSELLE (HIBISCUS  
SABDARIFFA L.) TEA**

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*Hibiscus sabdariffa* L. (roselle) is an annual dicotyledonous herbaceous shrub belonging to the family Malvaceae. Although it is cultivated in tropics, roselle is used for the production of some foods and beverages such as jams, jellies and tea all around the World. Roselle tea is a popular herbal tea. Previous studies have shown that roselle possesses antimicrobial, antifungal, diuretic, antihypertensive and antioxidant properties.

In this study, experiments were carried out in order to evaluate the effect of infusion time and temperature on the antioxidant activities, total phenolic contents and color properties of the herbal teas. The roselle tea samples (1g roselle: 100 ml distilled water) were brewed at 70, 80, 90 °C for 3, 6, 9 minutes. At the end of specified infusion time, samples were filtered and roselle teas were obtained. The contents of total phenolic in the teas were determined according to the Folin–Ciocalteu procedure and results were expressed as gallic acid equivalent. Antioxidant activities of the teas were determined according to DPPH method and calculated as Trolox equivalent. Color changes of roselle tea samples were measured using Hunter Miniscan XE.

It was found that antioxidant activity and total phenolic content of the samples were increased by increasing the infusing time and water temperature. Highest antioxidant activity and total phenolic content values were determined in the tea samples brewed at 90 °C for 9 minutes. And also, it was found that L\*, a\*, b\* values of the tea samples were decreased by increasing the infusing time and water temperature.

**Keywords :** Roselle tea, antioxidant activity, total phenolic content, color properties

***Traditional Functional Foods***

***Abstract Reference : 507***

**DETERMINATION OF SOME PHYSICAL AND CHEMICAL PROPERTIES OF PEPPER SALT**

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Pepper salt is a mixture consist of hempseed, sesame, chickpea, wheat, melon and watermelon seeds, walnut, dried thyme, dried mint, dried tomatoes, cumin and salt. These mixture is produced by roasting, drying and milling of all ingredients. It is consumed usually in breakfast. In this study, it was aimed to determined antioxidant capacity, total phenolic components, color properties and pH values of pepper salt samples obtained from Denizli. Four type of sample were analyzed such as, thyme dominated and dried tomato dominated mixture and one year stored samples of each type. Samples were analyzed for antioxidant activity and total phenolic content using 1,1-diphenyl-2-picrylhydrazyl (DPPH) and Folin-Coicalteu methods. Antioxidant activity of samples ranged between 80.189 to 70.143  $\mu\text{mole TE}/100\text{ ml}$  and showed a small decrease by one year storage. On the other hand phenolic content of samples decreased significantly by on year storage from 83,882 to 66,407 mg GAE/100 ml for thyme dominated sample and 46.020 to 31.636 mg GAE/100 ml for dried tomato dominated sample. pH values of dried tomatoes dominated mixture (5.08-5.03) was higher than thyme dominated mixture (4.88-4.35). The L, a and b values of stored and fresh dried tomato dominated mixtures were higher than thyme dominated mixtures. L, a and b values of the mixtures decreased except L value of fresh dried tomato dominated mixture during storage, and Its value increased from  $50.42 \pm 0.03$  to  $56.62 \pm 0.00$  during one year storage.

**Keywords :** Pepper salt, dried product, antioxidant activity, total phenolic content

***Acknowledgments :*** The authors gratefully acknowledge the Pamukkale University Scientific Researches Project Unit for the support of PAU-ADEP.



***Traditional Functional Foods***

***Abstract Reference : 59***

**Traditional fermented foods and gut microbiota**

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Fermented foods either inoculated with starter culture or produced by spontaneous fermentation or backslopping techniques contain significant amount of microorganisms. In addition, they are often consumed without cooking providing live microbes to the gastrointestinal system. There is a very thin line if any to differentiate the microorganisms present in fermented foods and probiotics. Because, species defined as probiotics are also present in the microflora of fermented foods. In fact, there is a recent consensus attributing the core probiotic properties to the species rather than the strain level. Thanks to the recent widespread use of molecular analysis tools, we learn more and more each day how the ingested microorganisms affect gut microbiota. Food microbes contribute to our gastrointestinal system as transient members, which might sometimes affect the composition or the metabolic activities of the permanent commensals. Although there are numerous studies on the effect of probiotics on gut microbiota, research available on fermented foods is very limited. This is of special importance because the matrix carrying the probiotic microorganism influences its health benefits. This study aims to review and summarize the data available on the effect of fermented foods such as kefir, kimchi, fermented milk, etc. on the activities or the composition of the gut microbiota.

**Keywords :** Fermented foods, probiotics, gut microbiota

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 629***

**Production of gluten-free Tekirdağ meatball enriched with quinoa flour**

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Quinoa (*Chenopodium quinoa*) is an endemic crop of the Andean region. It has been recognized as a very nutritious grain, due to the good quality and quantity of its protein and essential fatty acids. In addition to good nutritional composition, quinoa does not contain any gluten, which has brought a new perspective to gluten-free products. Patients suffering from coeliac disease have to avoid traditional cereals-based products and depend on the availability of gluten-free alternatives. Traditionally, Tekirdağ meatball is one of the most famous ground meat products of the Turkish culinary customs. It is produced from ground meat, toasted bread crumbs, salt, onion, garlic and various spices. Bread in production is used about 9-10% due to the improvement of cooking efficiency and texturing properties. However, it is a risk for celiac disease because it is gluten in the bread composition. The objective of this study was to evaluate the influence of replacing bread with quinoa flour and xanthan gum in gluten-free Tekirdağ meatball formulations. Gluten-free meatballs without bread were produced with four different formulations; the addition of 4, 6, 7 and 9% quinoa flour. To evaluate the quality of meatballs; technological and physical (weight loss, texture, color), chemical (protein, fat, moisture, ash) and sensory properties were determined. Analysis were carried out on raw and cooked samples separately. In Tekirdağ meatball samples, weight loss changed between 8,75%-16,40%. Meatball samples containing quinoa presented higher amounts of proteins, lipids and ash, improving their nutritional profile. While the quinoa percentages in the meatball samples increased protein and ash contents of raw and cooked samples increased. According to sensory analysis results, control sample was much preferred by the panellists. However, the samples containing quinoa (1 and 2%) presented similar points to those of the control formulation. Firmness and toughness values of raw control sample were much higher than those of the quinoa added samples

These results showed that it is possible to develop gluten-free meatballs with quinoa flour and xanthan gum with similar sensory and better nutritional properties to those produced with control (bread-based) formulation.

**Keywords :** Quinoa, Celiac, Tekirdağ Meatball

***Acknowledgments :*** We thank The Scientific and Technological Research Council of Turkey (TUBITAK) for financial support (Project Code 2209- B)

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 630***

**DETERMINATION OF EFFECTS OF DIFFERENT SALT (NaCl, KCl) AND CARRAGEENAN (IOTA, KAPPA) VARIETIES ON SOME EMULSION PROPERTIES OF CHICKEN BREAST MEAT**

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In this study, the effect of different levels of two salts (NaCl + K<sub>2</sub>HPO<sub>4</sub> and KCl + K<sub>2</sub>HPO<sub>4</sub>) and two types of carrageenan (iota and kappa) on the functional properties of the emulsions were studied by using a model system. Oil/water (O/W) emulsion systems were prepared by adding salt solutions and four different levels of iota and kappa carrageenan (0.0%, 0.3%, 0.6% and 0.9%) on to the chicken breast meat. pH of the emulsion, the emulsion capacity, emulsion stability, the emulsion viscosity and color of the cooked emulsion gel were analyzed on the emulsions which were prepared. Also, the cooking loss and water holding capacity chicken breast meat was determined. The type of varieties of carrageenan and level of carrageenan had statistically important effects on to the pH of emulsion, emulsion capacity (EC) and emulsion viscosity ( $P < 0.01$ ). The highest level of emulsion stability (ES) was determined on control emulsion and lowest ES was determined the emulsions which were added 0.3% carrageenan. Cooking loss (CL) decreased due to the increase carrageenan level. Water holding capacity (WHC) of chicken breast meat has increased by the addition of kappa carrageenan more than iota carrageenan. It is determined statistically significant on to the  $L^*$ ,  $a^*$ , and  $b^*$  color values of cooked emulsion gels type of salt was found statistically important ( $P < 0.01$ ).

As a result, it can be said that type of salt, carrageenan and levels of carrageenan have different effects on the functional properties of the emulsions which were prepared.

**Keywords :** Carrageenan, Chicken breast meat, Emulsion, Phosphate, Potassium chloride, Sodium chloride

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 631***

**THE EFFECTS OF DIFFERENT LEVELS OF CARRAGEENAN AND FAT AND SALT ON SOME QUALITY PROPERTIES OF BEEF PATTIES COOKED BY MICROWAVE ENERGY**

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In this research, the purpose was to determine the influences of using microwave energy on the cooking properties of beef patties, which have been formulated using different levels of salt, fat and carrageenan.

The lean beef has been divided into pieces and has been passed through the blade (3 mm in diameter) of the meat mincer and transformed into minced meat. To the prepared minced meat, salt (0%, 1% and 2%), fat (10% and 20%) and carrageenan (0%, 0.5% and 1%) have been added, and 18 different formulations have been developed. Each group of patty paste has been individually kneaded and formed in the standard shapes. The formed patties have been maintained at -18 °C temperature in closed polyethylene boxes, throughout the analyses. The patties that have been defrosted at refrigerator temperature (+4 °C) have been cooked in the microwave oven for 2 minutes, at 900 Watts and 77 °C temperature.

Physical and chemical analyses have been made individually on the uncooked (raw) and cooked samples. On each patty group, moisture, color, fat, pH, measurement of cooking properties, water holding capacity (WHC), cooking loss (CL), water activity and color analyses have been made.

While the moisture, fat and  $L^*$  analysis results of the uncooked (raw) patty samples have been found to be higher than the values of the cooked samples, the protein and pH values have been determined to be low. When examined with respect to the cooking properties; while the addition of salt and carrageenan increased the cooking efficiency and moisture amount, addition of fat decreased these. While addition of salt (2%) increased the WHC, it reduced the CL. As the amount of fat increased, the WHC and CL values increased. The increase in the carrageenan ratio reduced the CL values. The increase in the salt ratio reduced the water activity values.

As a result, it may be advised that the addition of carrageenan and salt enhances the technological properties of patties

**Keywords :** Carrageenan, Colour, Cooking properties, Microwave, Patty, Salt

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 260***

**Novel Formulation Perspectives for Fermented Meat Products**

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Fermented meat products have been widely consumed for centuries in many different parts of the world. Therefore, they are traditional processed meat products of great historical, regional and cultural importance. Fermented meat products are good sources of valuable nutrients, but they also contain fat, saturated fatty acids, cholesterol, salt and residues of some additives. As today consumers have become more health-conscious, the demand for healthier meat product formulations has been continuously rising. There are diverse possible strategies for designing functional meat and meat products which could be categorized as modification of carcass composition, manipulation of meat raw materials and reformulation of meat products. Developing functional fermented meat products could be a good strategy in the meat industry. Within the reformulation goals of fermented meat products, the first strategy is the modification of lipids by reduction of total fat content and calories, modification of the fatty acid composition and reduction of cholesterol content. Replacement of animal fat by vegetable and/or marine oils is a useful practice for improvement of fatty acid profile of the products, which includes reduction of saturated fatty acids (SFA), increase in mono- and polyunsaturated fatty acids (PUFA) and improvement of PUFA/SFA and n-6/n-3 PUFA ratios. These kind of oils could be carried to fermented meat matrix in form of simple, multiple or gelled emulsions, meanwhile some healthy ingredients such as dietary fibers and natural antioxidants could be incorporated in the formulation. The second strategy is the reduction of ingredients considered unhealthy (such as salt and nitrite) by smarter use of pigment-forming starter cultures. Finally, application of novel processing and development strategies for functional fermented meats, e.g. fermented meat products with probiotics and conjugated linoleic acid would promote the health benefits and contribute to the increase in the consumption of such products.

**Keywords :** fermented meat products, healthier meat products, functional foods

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 262***

**EFFECTS OF O/W GELLED EMULSION SYSTEMS ON SOME QUALITY CHARACTERISTICS OF HEAT-TREATED SUCUK**

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Sucuk is a traditional fermented meat product widely consumed in Turkey. Due to the fact that most of the meat products contain high amounts of fat, modification of fatty acid profile is of great importance to develop healthier meat product formulations. The objective of this study was to investigate the effects of beef fat replacement with gelled emulsion systems on some quality characteristics of heat-treated sucuk. Gelled emulsion was prepared with flaxseed and peanut oil (10:1), which was dispersed in water phase by utilization of inulin, egg white powder and gelatin as gelling agents. The emulsion showed good initial centrifugation and thermal stability. Two sucuk batches were produced as a control treatment with beef fat (C) and a gelled emulsion treatment by totally replacing beef fat (GE). During the process, pH values of sucuk samples decreased from 5.78 to 5.66 and 5.74 to 5.62 for C and GE samples, respectively. Significant differences in pH values were observed in the sucuk dough and after heat treatment ( $p < 0.05$ ), but no difference was monitored after resting, fermentation and ripening. Replacing beef fat did not affect moisture content between two samples during fermentation, heat treatment and ripening. Moisture content of final products were less than 50% for both samples. Lightness ( $L^*$ ) values were decreased by the addition of the gelled emulsion, conversely an increment in redness ( $a^*$ ) and yellowness ( $b^*$ ) was observed ( $p < 0.05$ ). The effect of replacing beef fat with gelled emulsion on the cook yield was not significant. n-6/n-3 ratio of GE samples was recorded as 5.28, which was in the range of the limits declared by WHO. It was concluded that replacement of beef fat with gelled emulsion systems had a positive effect on modification of lipids and improving the health profile without negatively affecting quality.

**Keywords :** Heat-treated sucuk, gelled emulsion, flaxseed oil, peanut oil

***Acknowledgments :*** The authors would like to thank to the Scientific and Technological Research Council of Turkey (TÜBİTAK) for financial support under the project number 116-O-506.

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 191***

**‘Sarambula’ with Anchovy**

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There are many traditional meals in Turkish cuisine and one of them is called sarambula which is prepared by using anchovy (*Engraulis encrasicolus*), corn, chard, leek and onion. This meal is very famous in the Black Sea region and especially in the Trabzon region. The sarambula has different regional flavors than the usual tastes. Thus, the sarambula is one of the most important examples for excellent flavor. Furthermore, each component of sarambula has various benefits for the human health. Sarambula is attractive for human health because of the anchovy ratio. As known, anchovy is rich in protein, lipid and minerals and contains calcium, iron, magnesium, phosphorus, potassium, sodium, and zinc. Moreover, it comprises high levels of lysine, leucine, and a number of essential amino acids and is rich sources of polyunsaturated fatty acids, n-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Sarambula plays an important role in human nutrition with all these beneficial amino acids, fatty acids, and minerals. Traditional flavor ‘Sarambula’ and its benefits are presented in this review.

**Keywords :** Sarambula, traditional meal, anchovy, nutrition, health

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 192***

**A Traditional Taste: 'Tirit'**

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Tirit is a meal bearing Central Asian culture and brought to Anatolia by nomadic Turks. Today, this delicious meal is also produced in many regions of Turkey. Although production of this meal shows some differences between regions, some broth is put on the breads and then meat is added on them. Meat kind is an important point for this meal and goose meat is generally preferred for Tirit in Samsun. Goose is the common name for the species in the waterfowl family Anatidae. Therefore, it is also called as ‘Tirit with Goose Meat’. Tirit meal is traditionally organized for symbolizing the unity and togetherness in community in Samsun. For this goal, tables are sometimes set at village rooms or rooms of notables of village and gathering rings are established by attending all villagers. At these rooms, on the one hand people lay have talks and tells stories to each other on the other hand Tirit is eaten. It is reported that 100 g of goose meat contains 238 kcal, 29 g of protein, and 12.74 g of total lipid. It also contains essential amino acids, proteins, various kinds of minerals and vitamins. Goose fat has polyunsaturated fats which are heart healthy fats. Besides, it is rich in oleic acid and is generally higher in comparison to other animal fats. The place, production and importance of Tirit in Turkish culinary culture are presented in this review.

**Keywords :** Tirit, Turkish culinary culture, goose meat, heart healthy fat



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***Abstract Reference : 33***

**BOTTARGA**

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Fish and fish-derived products are among the important sources of animal proteins with high biological values. It contain proteins, minerals, vitamins, and n-3 polyunsaturated fatty acids (n-3 PUFA). Many studies have suggested that long chain n-3 PUFA, namely eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA), have an important role on human health, in the treatment of various diseases. Fish roe products contain significant amount of lipids having high levels of long chain n-3 PUFA (30–50% of total fatty acids), mainly EPA and DHA. Amongst them, the salted and semidried mullet (*Mugil cephalus*) ovary product, known as “bottarga” in Italian, “avgotaracho” in Greece and “karasumi” in Japanese, is produced in several countries in the world and in Italy. Bottarga or botargo is made chiefly from the roe pouch of grey mullet. Sometimes it is prepared from Atlantic Bluefin tuna or swordfish. The roe is carefully extracted from the fish it is massaged to eliminate the air bubbles inside, then it is washed, dried and afterwards covered with a tick layer of the purest sea salt for a few weeks. It is coated in beeswax for preservation purposes. Alternatively, the double sack of the Bottarga caviar can be vacuum packed in plastic. Bottarga contain zinc, omega-3, protein, calcium, vitamins A and D. It is considered a highly nutritive food having well-balanced proteins with essential amino acids and significant amounts of n-3 PUFA in particular EPA and DHA. Bottarga has recently been as a true cancer fighter. Bottarga has DHA (docosahexaenoic acid) which is good to prevent lifestyle disease and for anti-aging, also it warms up the body and helps to recover from exhaustion.

**Keywords :** Bottarga, fish roe products, mullet

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 355***

**TRADITIONAL SEAFOOD- SUSHI**

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The traditional seafood, sushi, mostly consisting of raw seafood in combination with rice, has become very popular in many countries outside Japan. The consumption of sushi products has been growing rapidly since consumers tend to spend less time on food preparation and prefer more convenient products such as ready-to-eat products instead. Sushi can now be found in many restaurants, and supermarket, where it is sold in the form of chilled ready-to-eat product or frozen. Nowadays, sushi is a type of “convenient food”, which constitutes of many high quality ingredients exhibiting various health promoting properties. There are different types of sushi; maki, temaki, uramaki, sashimi, and nigiri. However, consumption of such raw seafood products is a food safety issue. Public health concern for sushi consumers has focused on the microbiologic and parasitic risk associated with raw fish, rather than on chemical contaminants. The main method for sushi preservation is the temperature reduction in which the industry uses both chilled storage (0-4°C) and freezing (<-18°C). Although freezing of sushi significantly increases the shelf life, this method of preservation is often related to negative consumer perception of the product. Processing conditions, cooling and hygiene conditions during storage and preparation of sushi are also important factors affecting the quality of sushi and should be eaten no later than the “best before” date. Therefore, the time and temperature profile of industrially prepared sushi is of major importance in order to minimize the food safety risk. This work will provide information on definition of sushi, a variety of sushi products and safety issue of sushi.

**Keywords :** sushi, safety, quality, convenient food

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 650***

**The Enzymatic and Genetic Background of Postmortem Aging of Meat**

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Understanding the principles of postmortem aging of meat is one of the most important concern of meat industry. However, postmortem aging of meat is a complex process in which many biological activities are involved. Proteolysis which is the main biochemical reaction playing a pivotal role in this process. It is well known that the proteolytic enzymes such as proteases are in charge of the proteolysis. Therefore, the enzymatic background of postmortem aging of meat have been widely studied by the scientist. Furthermore, substantial developments have been occurred in molecular genetics in the last past decades. These developments have also make significant contributions to identify the biological activities in postmortem aging of meat. The recent studies have reported that the proteases of calpains (CAP 1,2,3) and calpastatin have significant associations with postmortem proteolysis and meat aging. However, these proteases are encoded by CAPN1, CAPN2, CAPN3 and CAST gene. Therefore, the identification the functions of CAPN1, CAPN2, CAPN3 and CAST gene in proteolytic activities is also very important to understand the postmortem aging of meat. Taken together, this study not only would like to summarize the enzymatic and genetic background of postmortem aging of meat but also to discuss the recent studies about this issue.

**Keywords :** Meat, Proteolysis, Postmortem Aging, Calpain, Calpastatin

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***Abstract Reference : 213***

**Some Physicochemical Properties of Lamb and Beef Kokorec**

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Kokorec is one of traditional Turkish offal products. It is widely consumed in Turkey and also in Adriatic countries and can be an alternative fast food all over the world. Kokorec is produced from fresh lamb/beef small intestines, chitterlings and animal fats. Production of kokorec is that: animal fats are skewered to spits; chitterlings and small intestines are wrapped around, respectively; precooking (charcoal grilling) is applied and cooled to room temperature; spits are removed from the kokorec; it is frozen at -18°C and then cut into slices; finally charcoal grilling (final cooking) is applied. Following the final cooking and seasoning, it is consumed as kokorec sandwich. In this study, total six different kokorec groups were produced. The aim was to determine some physicochemical properties of kokorec samples produced from beef and lamb small intestines by adding various animal fats (lamb tallow fat, lamb subcutaneous fat, lamb tail fat). Color parameters, dry matter, protein and total ash contents of kokorec groups were determined. Dry matter, protein and total ash contents of the samples ranged from 48.85 to 63.14%, 19.08 to 23.82% and 0.97 to 1.48%, respectively. Small intestines (lamb or beef) and various animal fats treatments did not affect the  $L^*$ ,  $a^*$  and  $b^*$  values of samples ( $p > 0.05$ ).

**Keywords :** animal fats, beef kokorec, lamb kokorec

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 113***

**The Benefits of Nitrate and Nitrite in Sucuk and Pastırma**

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Sucuk is one of the traditional Turkish meat products and is a dry, cured, fermented or semi-fermented sausage and produced from beef meat. Pastırma is dry-cured meat product which produced from certain parts of beef carcasses. Sucuk and pastırma are the most popular traditional cured meat products and produced widely in Turkey. Curing of these meat products has been used essentially for thousands of years. Nitrite is considered an essential curing material that can function as an oxidizing, reducing, and can be reduced to nitrous acid, nitric oxide, Nitrate, also considered a curing material, is converted to nitrite by nitrate-reducing bacteria. Nitrite is responsible for the production of typical cured meat flavor. In addition to the characteristic cured flavor, nitrates and nitrites are widely used for cured meat color, microbial inhibition, antioxidant effect in the meat industry. The aim of this review is to present the advantages of usage nitrate and nitrite in sucuk and pastırma.

**Keywords :** Sucuk, Pastırma, Nitrate, Nitrite

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 372***

**Nisin as a natural antimicrobial and food additive in seafood industry**

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Nisin is a bacteriocin produced by some strains of *Lactococcus lactis* and is used as an antimicrobial agent in foods. Firstly it was used as a preservative in cheeses, but in recent years it has not only been limited to cheeses and has begun to be used as a preservative in various food products, such as meat, poultry and seafood as well as in wine and beer industry.

Due to its high biological value and easy digestibility, fish meat is an extremely important nutrient source for humans and is recommended to be consumed for healthy nutrition. For this reason, minimizing the risk of pathogenicity in seafood products is extremely important when considering human health. Many studies have shown that nisin can be used against pathogenic microorganisms in seafoods. Nisin has a good effect against the majority of gram positive bacteria and is also effective against their spores. The most important advantage of nisin for human health is that it is easily inactivated by the digestive enzymes in the human body and overdose amount of nisin does not cause a toxic effect. It is also a non-toxic additive in all mammals. Nisin is also accepted as generally recognized as safe (GRAS) and being the only bacteriocin approved by the WHO as a food additive. This work will provide an update to the information on nisin as food additive and its use in seafood industry.

**Keywords :** Nisin, bacteriocin, lactic acid bacteria, seafood, preservation

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***Abstract Reference : 129***

**A Traditional Turkish Meat Product: Inegöl Meatball and Changes in Quality Characteristics During Cold Storage**

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Inegöl meatball which is originated from Bursa/Inegöl region is one of the popular Turkish meat products. In 1930's, a migratory man who came from Rumelia to Inegöl invented the Inegöl meatball and after that time it became a traditional meat product and called with this origin name. Inegöl meatball is produced from ground beef and mutton meat with the addition of onion, crumbs bread, salt, ice and sodium bicarbonate which gives its own characteristic taste. One of the most important properties of the Inegöl meatball is lack of spices in the recipe. The other one is its characteristic cylindrical shape which is given after the preparation of meatball dough. Inegöl meatball is usually consumed after grilling process.

In the current study, changes in microbiological and chemical quality parameters of Inegöl meatball were investigated during storage at 4°C in aerobic packaging. Analyses were carried out during 9 days of storage in 3 day intervals (0th, 3rd, 6th and 9th days). The moisture, fat, protein, ash and salt content of Inegöl meatballs were determined to be approximately 53.92%, 12.87%, 17.47%, 2.60% and 1.50%, respectively. The pH value of Inegöl meatballs decreased from 7.19 to 5.55 on 9 day of storage ( $p<0.05$ ). Free fatty acid (% oleic acid) and thiobarbituric acid (mg MA/kg) content of meatballs increased from 0.64 to 1.51 and from 0.74 to 1.73 during storage, respectively ( $p<0.05$ ).  $L^*$  values of samples did not differ during storage period ( $p>0.05$ ). However,  $a^*$  values decreased from 17.78 to 9.59 because of the possible accumulation of metmyoglobin ( $p<0.05$ ). In addition,  $b^*$  values also decreased from 15.12 to 11.73 ( $p<0.05$ ). Appearance, color, odor, taste, texture and overall acceptability parameters were scored above 3 (good) during storage in sensory panel performed with the participation of 24 experienced panelists by using 5-point hedonic scale. Regarding microbiological quality, total mesophilic aerobic bacteria numbers increased approximately by 1 log during 9 days of storage. Staphylococcus aureus, coliform and Escherichia coli counts were below 2 log CFU/g, 3 MPN/g and 3 MPN/g during storage, respectively.

**Keywords :** Turkish cuisine, meat product, traditional meat product

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 644***

**Traditional chicken pate in Balkan countries: Pileca pasteta**

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Chicken pate is traditional and very popular for Balkan countries (Bosnia and Herzegovina, Serbia, Croatia, Montenegro, Albania etc. ). During the First World War, there was a major problem for soldiers due to lack of food. As always, they used canned food, but they needed more nutritious food. At that time, in 1938, Serbian manufacturer “Gavrilović” company, produced the first pate, a pate from chicken liver. This was an incredible discovery at that time, but product is still very popular and loved by the people. Nowadays, we can find a hundreds of chicken pates made from: chicken breast, chicken liver, tuna, whole chicken, turkey etc. The production procedure of chicken pate is as follows: Chicken breasts (or some other piece of meat) are cooked, along with vegetables (carrots, onions, parsley, black olives etc.). Then it is left to cool. Chicken and vegetables are slipped through the meat grinder twice. The other ingredients are added to the creamy blend and mixed until obtaining homogenous mixture. Spices, mustard, salt, pepper or anything you like can be added to effect the final flavor. Chicken Pate is a great solution for a fast meal. In Balkan countries, it is used as a snack or a normal meal. Because of the white meat, protein percentage is very high, and because of the oils, margarine etc. the fat percentage is high too. In this paper, the history, consuming habits and technological properties of chicken pate was summarized in the scope of daily practices exist in Balkan countries.

**Keywords :** Chicken pate, pileca pasteta, Balkan countries



***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 573***

**The Impact of Age of *Nemipterus Randallii* (Russell, 1986) on Changes of the Fatty Acids and Elemental Composition**

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In this study, changes in total fat content, fatty acids and element composition were determined depending on the age and individual size of *Nemipterus randalli* caught from the Mersin Bay. The highest fat value was determined in the 3+ age group (2.85%) while the lowest value was found in the 2+ age group (2.75%). Higher fatty acids for each age group of *N. randalli* are palmitic acid (c16: 0), stearic acid (c18: 0), oleic acid (c18: 1), cetoleic acid (C22: 1 n11), eicosapentaenoic acid (EPA, C20: 5 n3), and docosahexaenoic acid (DHA, C22: 6 n3). The highest palmitic acid level was found in 3+ age group (20.45%) whereas the highest stearic acid level was found in the 2+ age group (15,00%). The highest oleic acid level was observed in the 3+ age group (6,47%) while the highest level of the cetoleic acid was observed in the 2+ age group (7,13%). The highest EPA and DHA were found to be 5.49% and 22.02% in the highest 1+ age group. Respectively Macro elements (Na, Mg, P, K), trace elements (Cu, Zn, Fe) and potentially toxic metals (Cd, Cr, Pb, As) were investigated in muscle tissue and the levels of Cr, Cu, Cd and Pb were not evaluated since their levels were below the detection limit of the device. Muscle tissue element level was changed according to different age groups as K> P> Na> Mg> Ca> Fe> As> Zn, respectively.

**Keywords :** Mersin Bay, *Nemipterus randalli*, Age, Lipid, Fatty acids, Metal

***Acknowledgments : This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-2-TP2-2561***

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 294***

**Volatile compounds of Inegöl meatball enriched with green tea extract during storage at 4°C**

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In recent years, consumer demand for prepared meat products has been increasing as a result of changes in consumption habits and lifestyles. Meatballs sold in markets as a frozen or refrigerated and prepared for consumption by applying grilling, pan frying or microwaving in a short time take an important place among prepared meat products. In this regard, minimizing the oxidative, microbiological and sensory changes during retail sale, offering high quality and safety products to consumer and extending the shelf life come into prominence. From this point of view, Inegöl meatball, a traditional Turkish meat product, was prepared by adding green tea extract (GTE) at three different concentrations (0%, 1%, 2%) and stored at 4°C during 9 days. Detection of volatile compounds by SPME-GC/MS in raw and cooked meatballs, TBARS analysis, total mesophilic aerobic bacteria (TMAB) analysis were performed in 3 days interval in accordance with the following purposes.

- 1) Estimation of biochemical changes and determination of volatile compounds formed as a conclusion of these reactions
- 2) Evaluation of the effects of GTE as a natural and powerful antioxidant on oxidative changes and volatile formation

Two main unpleasant volatile compounds, 3-hydroxy-2-butanone and 3-methyl-1-butanol, were detected in both raw and cooked Inegöl meatball. The concentrations of 3-hydroxy-2-butanone significantly increased throughout refrigerated storage. However, the formation of 3-methyl-1-butanol was observed for the first time on day 6 and its concentration was also increased at day 9 ( $P < 0.05$ ). Fermentation activity of microorganisms could be considered as a formation pathway for these compounds. In the current study, this result was also supported by one log unit increase in TMAB counts during storage. On the other hand, two additional compounds which were hexanal, an indicator of lipid oxidation, and 2,3-butanediol, a determinant for spoilage, were identified in cooked meatballs. Regarding the effect of GTE on volatile compounds, it is possible to note that the amount of 3-hydroxy-2-butanone increased with increasing level of GTE ( $P < 0.05$ ). The concentration of this compound at the end of storage was found to be  $159.53 \times 10^6$  AU (area unit) in raw meatball enriched with 2% GTE and  $90.83 \times 10^6$  AU in raw meatball without GTE. Contrary to 3-hydroxy-2-butanone, the usage of 1% GTE inhibited the formation of 3-methyl-1-butanol and hexanal. In parallel with the decrease in hexanal, TBARS results also demonstrated that GTE, especially 1%, retarded lipid oxidation. Moreover, 2% GTE prevented the formation of hexanal and 2,3-butanediol, which means these compounds were not detected in cooked samples during storage.

**Keywords :** Spoilage, lipid oxidation, fermentation, refrigerated storage, meat products

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 575***

**DETERMINATION OF SEASONAL CHANGES IN THE FAT AND FATTY ACID PROFILE OF  
SOME LESSEPSIAN FISH SPECIES FROM MERSIN BAY**

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In this study seasonal changes in fat and fatty acid profile of some lessepsian fish species (*Nemipterus randalli*, *Saurida lessepsianus*, *Upeneus moluccensis* and *Pelates quadrilineatus*) catching from Mersin bay have been determined. The highest lipid levels of *N. randalli* and *U. moluccensis* were detected in the autumn, while *S. lessepsianus* and *P. quadrilineatus* were found in the spring. The major fatty acids for these four species: palmitic acid (C16: 0) and stearic acid (C18: 0) in SFAs, palmitoleic acid (C16:1) and oleic acid (C18:1n9c) in MUFAs, 11-docosanoic acid (C22:1n11), eicosapentaenoic acid (EPA, C20:5n3) and decosahexaenoic acid (DHA, C22:6n3) in PUFAs. The highest palmitic acid value was 20.72% while the highest stearic acid value was 19.14% for *N. randalli*. The palmitoleic acid, oleic acid, and docosanoic acid levels were found to be 3.31%, 7.98% and 7.80%, respectively. The highest values of EPA and DHA levels were found to be 5.34% and 20.72%, respectively. The highest palmitic acid and stearic acid values of *S. lessepsianus* were 22.97% and 15.93%, respectively. Palmitoleic acid, oleic acid and docosanoic acid levels were 3.80%, 7.84% and 3.48%, respectively. The highest values of EPA and DHA levels were found to be 4.22% and 31.91%, respectively. The highest values of *U. moluccensis* were determined as 25.36%, 12.39%, 3.92%, 10.99%, 3.63%, 5.45% and 24.96% of palmitic acid, stearic acid, palmitoleic acid, oleic acid, docosanoic acid, EPA and DHA. The highest palmitic acid value of *P. quadrilineatus* was 22.74% while for the stearic acid was 13.86%. Palmitoleic acid, oleic acid and docosanoic acid levels were determined as 3.02%, 21.32% and 4.98%, respectively. The highest values of EPA and DHA levels were found as 5.45% and 13.42%, respectively.

**Keywords :** *Nemipterus randalli*, *Saurida lessepsianus*, *Upeneus moluccensis*, *Pelates quadrilineatus*, fatty acid

**Acknowledgments :** *This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-1-TP2-2185*

***Traditional Meat, Poultry and Fishery Products***

***Abstract Referance : 136***

**THE UNIQUE FLAVOR OF SERÇİN VILLAGE, USING YELLOW CARP FISH FROM LAKE BAFA:  
KILÇIK SEÇMESİ**

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Serçin Village is located in the south east of the Bafa Lake. It is understood from the tombstones dating back as far as 600 years in the village that the settlement of Serçin was one of the oldest nomadic villages in this region. The yellow carp fish has a significant importance in the culture of the region. There are many varieties of dishes that can be prepared using the yellow carp fish but "Kılçık seçmesi" is one that is unique only to the village of Serçin. This flavor, which does not have much significance in the Nomad Culture, has a history of approximately 600 years in Serçin and it predates the Ottoman Reign, making its way to the present.

In this study, it is aimed to introduce this regional dish at the national and international scale, the preparation and cooking of the dish, the way of consumption and cultural characteristics and thusly bequeathing it to the next generations. The data of this study, where qualitative research methods have been implemented, have been obtained from source individuals, using semi-structured interview forms. In this study, the way of consuming the Kılçık Seçmesi flavor, which is prepared using the yellow carp fish and cooked in a unique cooking method, is introduced and the deboning and cleaning of the fish as well as cooking steps and the service of the dish will be presented via pictures.

Due to its geographical location, our country falls within the Mediterranean Nutrition System, which is globally considered to be healthy. As it is a known fact, the consumption of vegetables-fruit, olive oil and fish is essential in the Mediterranean Nutrition System. Although our country is surrounded by seas on three sides, fish consumption is regrettably not at the desired level and the fish culture is not adequately advertised. Therefore, it is essential to advertise a product which has such a long history and a unique cooking method and at the same time a value of gastro-tourism must be placed into written sources.

**Keywords :** Bafa Lake, Serçin Village Cuisine, yellow carp fish , kılçık seçmesi

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 657***

**Colour and Rheological Differences between Chicken and Quail Pate**

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1 kg of chicken breast, 2 piece of onion, 1 piece of carrot were used at first. Chicken breasts are cooked, along with vegetables, then left to cool. Chicken and vegetables are slipped through the meat grinder twice. Then spices were added into the creamy blend: 3gr of salt, 3 gr of black pepper, 2 gr of red pepper flakes, 2gr of cumin, 1gr of mint. 5gr of mustard is added also, together with the 250 gr of melted margarine. Then all ingredients were mixed with hands. With the cooking water, the density is adjusted as desired. Colour measurement is done using Konica Minolta L\*a\*b\*, pH and temperature were determined using handheld pH/mV/Temperature Meter Model IQ150, and also viscosity analysis is done using AND Vibro Viscometer SV-10. For quail based sample, the procedure was repeated. Colour measurement results: Chicken; L\*(71,29±0,21), a\*(10,05±0,01), b\*(28,77±0,03) and Quail; L\*(51,01±0,12), a\*(14,07±0,30), b\*(31,50±0,49). pH/temperature measurement results (average): Chicken; 4,9/14 ° C and Quail; 4,6/16,8 ° C. Viscosity/temperature measurement results(average): Chicken; 1,49mpas/22,4 ° C and Quail; 1,09mpas/22,3 ° C. Following these results, the significant difference between chicken and quail pates is determined (p<0,05). The colour of chicken pate is whiter than quail pate because of the concentration of myoglobin in chicken meat.

**Keywords :** Pate, quail, chicken

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 658***

**EMULSION CAPACITY OF LYOPHILIZED QUAIL EGGS**

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Poultry eggs are primarily thought of as a seed that ensures the continuity of their existence. The emulsion capacity of the quail's egg is considered to be competitive to other products produced using emulsion. In this study, the emulsion capacity and protein analysis of the lyophilized quail egg was examined. For emulsion capacity analyze made with quail egg; egg white, egg yolk and whole eggs are used. The emulsion capacity of the quail egg was obtained as; egg white 103.7 ml oil / gr egg dust, egg yolk 350 ml oil / gr egg dust and whole egg 228 ml oil / gr egg dust. Apart from these results, the protein analysis results of lyophilized quail eggs were determined as; egg white 99.62 g of protein, egg yolk 38.31 g of protein, whole egg 41.87 g of protein. According to these results, the emulsion capacity of the quail's egg is considered as serious competition in the future.

**Keywords :** Quail, egg, emulsion capacity

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 151***

**KOKOREÇ OR LAMB MEAT? NUTRITIONAL VIEW**

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Kokoreç is one of the widely consumed traditional Turkish offal products. In Greece and some Adriatic countries it's also consumed. The name kokoreç etymologically comes from "kokorótsi", which means corn cob in Greek and Albanian dialects; and it must have been given that name due to its wrapping shape. Although it is an organ of feces, it has a place in almost every culinary culture in the world since ancient times. Turkish kokorec is made from small intestines, and chitterlings. Generally the intestines of suckling lambs are preferred. As in all intestine based food, it has a long and important process of washing and cleaning, it is cleaned many times thoroughly. The filling meats are threaded onto a long skewer and wrapped with the intestine to hold them together and it is usually roasted on this horizontal skewer over a coal, gas, or electrical burner. Since meat is an important protein source in order to establish a healthy diet human should consume 100-150 gr meat in a day. Therefore the difference between traditional Turkish kokorec which is an alternative meat product and red meat in terms of nutritional value was searched.

Offal is an excellent source of proteins, vitamins, and minerals. Internal organs of slaughter animals contain more water and less fat compared to red meat. On the other hand, while red meat contains very little carbohydrate, most of the internal organs provide higher carbohydrate value. As an offal 100 g Turkish kokoreç calorie is lower than that of lamb meat. According to calorie breakdown; 66% of Turkish kokoreç total calorie comes from protein whereas 66% of lamb meat total calorie comes from fat. Therefore it can be concluded that Turkish kokoreç can be a good alternative for a protein source with a low calorie value.

**Keywords :** Kokoreç, lamb meat, intestine, nutrition

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 240***

**ADDITIVES IN SURIMI PROCESSING**

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Surimi is recombined shape, color, and flavor into exciting new products. Ensuring the good gelation properties, desirable color, and oxidative stability could be possible by using some additives. The gel strength of surimi is a major component in measuring the functional characteristics of final surimi products. The breakdown of myofibrillar proteins which ensuring the three-dimensional gel network effect negatively on the gel strength of surimi. Muscle proteins, nonmuscle proteins, starch, hydrocolloids, food grade protease inhibitors (beef plasma proteins, egg white proteins, and whey proteins), enzymes (endogenous transglutaminase, microbial transglutaminase, calcium-independent enzymes), and ionic interactions (calcium, ammonium and sodium salts) could be used in order to improve the gel functionality. Whiteness is the other important quality parameter in surimi. Fatty and dark-fleshed fish containing considerable heme pigment has caused undesirable color. Nowadays, by using alone or mixed with such materials as carmine, paprika oleoresin, annatto, tomato lycopene extract, turmeric, caramel, monascus, canthaxanthin, and  $\beta$ -carotene are obtained the desired color in surimi products. Especially frozen storage causes deteriorated muscle proteins and induced protein denaturation. Therefore, for gel enhancers, color enhancers, and antioxidants of frozen surimi has ensured by cryoprotectants such as sucrose, sorbitol, sodium tripolyphosphate, tetrasodium pyrophosphate, monosodium glutamate, calcium carriers (calcium lactate, calcium sulfate, calcium citrate, calcium caseinate, and EDTA), sodium bicarbonate, mono- or diglyceride, and partially hydrogenated canola oil. These changes of proteins, lead to oxidation of lipids and/or proteins. In this case, antioxidants can be added to improve oxidative stability such a sodium pyrophosphate and a mixture of sodium tripolyphosphate and sodium pyrophosphate generally used in surimi. Synthetic antioxidants (butylated hydroxyanisole, butylated hydroxytoluene, propyl gallate, and tert-butylhydroquinone) and synthetic phenolics have been the most frequently used antioxidants to reduce oxidation in surimi. Studies have shown protein hydrolysate and seafood peptides could be used as both antioxidants and cryoprotectants. Tyrosine, histidine, tryptophan, phenylalanine, valine, leucine, alanine, methionine, and glycine have been reported to be critical for the antioxidant activities of seafood peptides. This review discusses the commonly additives that used for the higher-quality surimi products production.

**Keywords :** surimi, quality, additives



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***Abstract Reference : 241***

**ASSESSMENT OF MICROORGANISMS BEHAVIOUR ON THE PASTRAMI QUALITY**

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Pastrami is a traditional dried cured meat product in Turkey. Curing is a fundamental process that has an influence on microbiological and physicochemical properties of pastrami which is treated with salt, nitrite or nitrate. Nitrate reduction to nitrite in order to the formation of color is possible only in the presence of bacteria with nitrate reductase activity. *Micrococcus* sp. and *Staphylococcus* sp. have nitrate reductase activity in addition to catalase activity. According to these activities color formation and stability are positively affected and the oxidation is delayed. These microorganisms make a significant contribution to the flavor of pastrami by creating volatile and non-volatile compounds through their proteolytic and lipolytic activities. Proteolytic, lipolytic and oxidative changes are known to be due to endo-/exo-peptidases and lipases, respectively. The origin of these enzymes may be either from muscle or microorganisms.

Most of the lactic acid bacteria (LAB) have mono- and diglyceride lipases that can act on mono- and diglycerides, respectively, and contribute to the generation of free fatty acids. In addition to lipolytic activity, LAB also improve the sensory properties of the product, inhibits mold, yeast, and some bacteria, increase the firmness by lowering the pH and has low proteolytic activity and nitrate reductase activity at some circumstances. Both LAB and *Staphylococcus* sp. as starter cultures in pastrami processing lower the residual nitrite level depending on nitrite reductase enzyme.

Pastrami has moisture content 50%, salt content 6% at most and pH 4.5-5.8 and aw 0.88. Despite the low moisture content and water activity of the product, microorganisms such as *Lactobacillus plantarum*, *Lactobacillus sakei*, *Enterococcus faecium*, *Pediococcus acidilactic*, *Staphylococcus xylosus*, *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus saprophyticus*, *Candida zeylanoides*, *Candida deformans*, *Candida galli* can contaminate pastrami as a result of cross contaminations, hot climate, weak hygienic conditions, short ripening and unstandardized packaging/storing conditions time. In mentioned microorganisms, those having decarboxylase activity induce the generation of biogenic amines. Despite their positive effects, microorganisms with nitrate reductase activity are degrading nitrate to nitrite and toxic, teratogenic, mutagenic and carcinogenic N-nitroso compounds generated. In this review, the effects of microorganism on the pastrami quality are summarized.

**Keywords :** Pastrami, Quality, Microorganisms

***Traditional Meat, Poultry and Fishery Products***

***Abstract Reference : 322***

**Lipid Oxidation and Temperature Changes in Döner During Cooking**

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Döner, generally made of beef, lamb, veal or poultry meat, is a traditional hot meal in Turkey, which is also popular all around the world. In processing of döner, meat is seasoned with onion, pepper, tomatoes and some spices, a cone shape is then given to the mix, it is placed on a special döner spit and the mass is refrigerated to allow the meat and fat particles to cohere. Döner is cooked in front of a device similar to a vertical grill. Due to high fat content (20-40%) and cooking method, döner is susceptible to lipid oxidation. The objective of this study was to determine lipid oxidation and temperature changes of various points during cooking process of döner samples. Döner was produced with beef meat, beef fat and seasoning mixture. Thermocouples were placed in different points of döner during preparation of the mixture. A 25 kg of the dough was placed on a spit and stored at -20°C for 12 h. The temperature was recorded every 30 min during cooking and samples were taken every 60 min for TBARS analysis. TBARS value of the dough before freezing was 0.072 mg malonaldehyde (MA)/kg, while TBARS values were raised to 0.17-0.28 mg MA/kg during cooking. It was noted that the core temperature was below 0°C during the first 2 h of cooking time, whilst the surface temperature was above 0°C in 30 min. Results showed that cooking process of döner had significant effects on lipid oxidation and temperature changes in different points.

**Keywords :** Döner, traditional meat product, cooking, TBARS value

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***Abstract Reference : 439***

**Traditional Mardin Sucuk with Şirden Sheath**

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Mardin Sucuk, a fermented meat product produced by traditional methods, is widely and fondly consumed by the local people. Traditional Mardin Sucuk is usually made and sold by local butchers or is made by households in homes between November and December. Beef and / or sheep meat is used for sucuk dough. The carcass of the animal is ripened following the slaughtering and the meat from chest region of the ripened carcass is separated and minced. The minced meat is placed in a bag made of material that will allow the blood to drain. Thendry mint, black pepper, pimento, salt and optionally garlic are added into the minced meat. Compare to other spices, more coriander powder is added in order to increase resistance to the degradation, to give a delicious aroma and to suppress the undesirable odors. This mixture is mixed thoroughly to obtain sucuk dough. A standard measure is not used for the mixture it is prepared according to the demand by organoleptic testing. Prepared dough is filled into different sheaths according to consumer preference. Abomasum (Şirden) was mainly used as sucuk sheath until approximately 15-20 years ago, but nowadays natural fabric (mermerşahin fabric) and intestinal sheaths are also used. When the abomasum is used as sheath, the outer surface of the abomasum is covered by powdered coriander in order to protect the sucuk against antimicrobial deterioration and to increase its durability. When other types of sheath are used, there is no application of powdered coriander because of the negative appearance in terms of attractiveness. Prepared sausages are left for fermentation and drying in cool and airy places by avoiding from sun light for 10-12 days. After fermentation and drying, the sucuk are stored and consumed. The sucuk were stored by hiding in the bulgur before deep freezers are widely used, today this method is applied in the rural area and the preservation in deep freezers is preferred in cities. The traditional Mardin Sucuk is still consumed frequently by the people of Mardin and is preferred to industrial production.

**Keywords :** Mardin, Traditional sucuk, Şirden, Coriander,

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***Abstract Reference : 38***

**A TRADITIONAL FISH PRODUCT OF MANIPUR, INDIA: NGARI**

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<sup>1</sup>Ardahan University

Fermentation has an important place in many parts of the world for the production of traditional fish products. Fermentation is one of the oldest and most economical methods of food processing technology in human history. Some important advantages of traditional fermented fish products to the people in developing countries are high acceptability, low cost, ease of preparation, safety, digestibility and absorbability. In Manipur, the traditional fermented fish has been an important commodity and thus has important market value. Manipur valley is well known for the production of good quality ngari. “Ngari” is the most popular traditionally processed nonsalted fish product, prepared from sun-dried small cyprinid fish *Puntius sophore* Hamilton, which is locally known as *phabou* in Manipur state of Northeast India. In traditional ngari preparation, fish is washed properly, dried in the sun for 3-4 days, washed again and spread on bamboo mats and kept in earthen pots. Earthen pots are sealed airtight and then stored at room temperature for 4-6 months for fermentation. Because of its special flavour, Fish is widely consumed in the daily diet of Manipur people and ngari is widely used as an snack.

**Keywords :** Ngari, fermented fish, sun-dried, Manipur

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***Abstract Reference : 172***

**Flavor Compounds in Fermented Meat Products**

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<sup>1</sup>Ondokuz Mayıs University

The flavor substances present in foods are in very low concentrations and consist of a large number of volatile compounds. The important biochemical changes that affect the characteristic taste, aroma, color and texture of fermented meat products are glycolysis, lipolysis and proteolysis reactions. These reactions are the result of the activities of microorganisms that develop during the fermentation and maturation period or their endogenous enzymes. During the maturation period of fermented products, many chemical conversions including sugar, protein and lipid degradation occur and secondary reactions result in the formation of characteristic aroma components. In fermented meat products, non-volatile components such as inorganic salts, nucleotide metabolites, sugars, inorganic acids, amino acids and peptides and many volatile compounds such as alkane, alkene, aldehyde, ketone, alcohol, aromatic hydrocarbons, carboxylic acid, ester, terpene, sulfur compounds, chlorine compounds, contribute to the aroma. The spices used in production have effects on the taste, durability, color and digestion of the product with the antimicrobial substances, etheric oils and aromatic components they contain. The composition of fats also has an important contribution in aroma formation. The use of starter cultures has also been shown to have different effects on volatile compounds. In fermented meat products, the fragrance, aroma and taste are characterized by a balanced distribution among several hundred of components. In this review, the studies on the aroma substances in fermented meat products and the factors affecting the formation of these substances are summarized.

**Keywords :** Flavor, Fermented meat products, Traditional foods.

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***Abstract Reference : 505***

**Meat quality of Chios lamb under traditional feeding system.**

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The study was conducted to obtain textural attributes and fatty acid composition of the meat from Chios lambs fed under traditional system. Three mounts aged , 17 Chios breed lambs in group T were fed on ration prepared in local style and grazed in olive grove for 8 h/day, while 17 other Chios breed lambs in group I received 255 g alfalfa hay per animal and ad libitum mixed feed. The animals were slaughtered at 5 months of age. Significant differences were not found for textural attributes. However, fatty acids such as C17: 0, C18: 0, C18: 1 Cc11, C18: 1 c9, C18: 2 c9c12, C18: 2 c9t11 and the total conjugated linoleic fatty acids in muscle differed significantly between the two groups. As a results of the study, it was found that the contents of C18 fatty acid group and CLA were higher in lambs fed under traditional conditions.

**Keywords :** Tradional feeding, lamb meat, Chios lamb

***Acknowledgments :*** *This study was financed under a project supported by the Ege University Research Fund (project no: 2008-ZRF-036).*

***Traditional Sweet Products***

***Abstract Reference : 40***

**Utilization of Buckwheat Flour in Traditional Turkish Dessert Şekerpare**

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Buckwheat is a type of seed called a pseudocereal. It is a good source of dietary fiber, and also other nutrients, including minerals and phenolics. Buckwheat has a wide use area in food production such as in bread, cake, cookie, pasta, tortilla, cone, deserts, granola, pudding and pilaf as seed or flour. In addition, it can be used in the production of gluten-free foods. In this study, it was aimed to improve the functionality and diversity of şekerpare which is a traditional Turkish dessert. For this purpose, whole buckwheat flour was used in formulation at certain levels (40 and 50%) and also gluten-free şekerpare was produced by using buckwheat and gluten-free flour mix. Quality of the products was determined in terms of weight, dimensions (diameter and thickness), color (CIE L\*, a\*, b\*), texture (hardness), total dietary fiber (TDF) and sensorial properties (color, taste, appearance). The samples containing gluten-free flour absorbed less syrup therefore had lower weights. Use of buckwheat and wheat flour mix increased the diameter and reduced the thickness of the products. The TDF content of whole buckwheat flour was found as 11% (db). The sample produced with 40% wheat flour - 40% buckwheat flour - 20% semolina had the highest amount of TDF (8.0%). As compared to the control sample, which consisted of 80% wheat flour- 20% semolina, L\* and b\* values increased and a\* values decreased in the samples added with buckwheat flour due to the natural dark color of whole buckwheat flour. It was observed that the hardness of the control sample was the highest, and the hardness decreased in all samples containing buckwheat flour. According to the sensorial analysis, the sample formulated with 40% wheat flour - 40% buckwheat flour - 20% semolina has been the most accepted product. In addition to buckwheat flour added şekerpare, buckwheat and gluten-free flour mix have been successfully used to produce gluten-free şekerpare for celiac patients.

**Keywords :** Şekerpare, dessert, buckwheat flour, gluten-free, celiac

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***Abstract Reference : 360***

**HACCP IMPLEMENTATION IN THE PRODUCTION OF MARDIN WALNUT SAUSAGE**

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Approximately 30% of the grapes produced in our country are processed as boiled grape juice, dried fruit pulp and walnut sausage. Walnut sausage made from grape syrup in Marin is traditionally produced for many years. In general, syrup obtained from Mazrone genus grape grown in the region, flour, walnut and white soil are used in the production of walnut sausage. The most important feature of the soil used is its high amounts of CaCO<sub>3</sub> content. This soil partially eliminates the acidity of the syrup in addition to partial clarification. Traditionally, the cooking process is performed in caldron by mixing with wood. It is required to increase the dry matter content to about 85% after boiling process. The dry walnuts that are to be used are soaked overnight in the water for softening then they are stringed, ringed and laths are placed between them. Prepared walnuts are dipped 2-3 times in grape slurry and hanged. The walnut sausages are stored following the drying in open air. It is important to establish a HACCP system in order to ensure food safety of this product, which is produced by a traditional method and is sold commercially in Mardin. For this reason, grape, white soil, lathes, equipment, personnel, drying and storage are considered as critical control points during the production process. Because of the possibility of the high amount of pesticide residues in grape and soil used in the production as well as contamination of the soil with various substances such as asbestos and polycyclic aromatic hydrocarbons, these two components have been identified as chemical critical control points. Because of the use of unsuitable equipment for food production, lack of personnel hygiene, drying environment that is open to contamination and observation of mold growth due to improper storage conditions, these stages have been identified as biologically critical control points. In conclusion, production of walnut sausage, which is a commercial source of income in this region, according to the HACCP system, will contribute to supply safe food products to the market and will also contribute the awareness for healthy food products from farm to table.

**Keywords :** HACCP, walnut sausage, production



***Traditional Sweet Products***

***Abstract Reference : 361***

**THE PRODUCTION OF GHOST ALMOND CANDY**

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Almond is a kind of tree and fruit that is defeated by the Prunoideae family. 2% of world's almond production is covered by our country. Turkey's almond production in 2016 was about 85,000 tons. With 2,100 tons of production, Mardin is in 14th place in Turkey's almond production. Some of the produced almond is used in the production of almond candies, which has been produced in the region for many years. First step of the production is to roast the inner almonds. By making this, the water activity of the product is reduced. Then the almonds are taken into the coating boiler and covered with previously prepared syrup. The amount of sugar that syrup contains, which used for coating, plays an important role in determining the thickness of the coating. Water, sugar and the madder obtained from the “lahor” tree, are used in the production of the syrup. The first step of the coating is to coat the coating vessel with the boiling syrup. Then the roasted almonds are added to the coating vessel and some syrup is spilled on it. In the coating boiler, which continually heated, the sugar particles crystallize on the almond when the water in the syrup is starts to evaporate. The same procedure is repeated by adding syrup to the almonds. This process takes about 25 minutes. The almonds covered in the desired thickness are taken to the cooling area and the product is rested for 1 day. After packing the almond candies are ready for sale. Ghost almond candies have high shelf life due to high sugar concentration and low water activity. But generally it is a traditional product consumed freshly by local people.

**Keywords :** Almond candy, production, traditional

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***Abstract Referance : 212***

**Traditional Bozkır Haşhaş Halvah and Production**

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“Haşhaş Halvah”, one of the our traditional foods, is commonly made and consumed in Bozkır, a county of Konya. ‘Haşhaş Halvah’ is made with poppy seeds, pekmez (grape molasses) and butter. For making “Haşhaş Halvah”, poppy seeds are cleaned and roasted. The roasted seeds are ground by large mortar. Pekmez and butter are boiled in another cooking pot. Then ground seeds are added into pekmez mixture. After the mixture is stiffened, the cooking process is terminated. The halvah is poured into trays. The “Haşhaş Halvah” is a dessert that is consumed lovingly in the winter evenings. The pekmez used in the production of halvah is obtained from the grapes grown in this region and the poppy seeds are produced on a limited scale in the region. This dessert has high nutritional value and high energy value, because it contains poppy seeds and pekmez. Pekmez contains important minerals in terms of nutrition and is an important carbohydrate source. In addition to its vitamin and mineral content, the poppy seed has a rich fat content and is rich in linoleic acid, oleic acid and omega fatty acids. In this study, the traditional style of production and importance in the nutrition of these dessert in Bozkır region are discussed.

**Keywords :** Haşhaş Halvah, Pekmez, Poppy Seeds, Bozkır

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***Abstract Reference : 45***

**Sugar Profile of Muğla Pine Honeys**

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Honey sugars are formed by the action of several enzymes on nectar sucrose. Sugars in honey are responsible for properties such as viscosity, hygroscopy, granulation and energy value. In almost all honey types, fructose and glucose are the main sugars. These two sugars account for nearly 85–95% of the honey carbohydrates. Small amounts of various sugars such as trehalose, maltose and mebibiose constitute the remaining carbohydrates. Sugar profile depends highly on the types of flowers used by the bees, as well as regional and climatic conditions. Pine honey is brown color and intensely flavored product. Turkey and Greece are the major pine honey producing countries in the world. In Turkey, pine honey is generally produced in Muğla Province. In this research, it was aimed to determine sugar profile of pine honey samples collected from beekeepers who live in 5 different locations of Muğla Province/Turkey. Sugar contents of totally 15 honey samples (three samples from each location) were analysed using high-performance liquid chromatography. The type of sugar present in the highest amounts in the honey samples was fructose, followed by glucose and sucrose. Arabinose was under detectable limits in all samples. Location did not seem to effect significantly the sugar profile, and fructose to glucose ratio of honey samples.

**Keywords :** Muğla, Pine Honey, Sugar Profile

***Traditional Sweet Products***

***Abstract Reference : 371***

**Electrical Conductivity and Optical Rotation of Muğla Pine Honeys**

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Pine honey is produced from honeydew which is secreted by plant-sucking insects living on pine trees. Pine honey is brown color and intensely flavored product with a very low tendency to crystallize. Turkey and Greece are the major pine honey producing countries in the world. In Turkey, pine honey is generally produced in Muğla Province. As honey is a natural complex food, distinct characterization of honey samples requires the use of several parameters in order to obtain a good authentication procedure. Electrical conductivity (EC) is a good criterion related to the botanical origin of honey and thus used very often in routine honey quality control. Honey has the property of rotating the polarisation plane of polarised light. Honeydew honeys are dextrorotatory (positive values) in contrast to floral honeys, which are usually laevorotatory (negative values). The objective of this research was to determine electrical conductivity and optical rotation (OR) of pine honey samples collected from beekeepers who live in 5 different locations of Muğla Province/Turkey. Totally 15 honey samples (three samples from each location) were analysed. Electrical conductivity and optical rotation values [ $\alpha$  20] of the honey samples changed between  $1.06 \pm 0.03$  -  $1.36 \pm 0.25$  mS/cm and  $0.71 \pm 0.84$  -  $2.97 \pm 0.88$ , respectively. Location effects significantly EC and OR values of honey samples.

**Keywords :** Pine Honey, Electrical Conductivity, Optical Rotation

***Traditional Sweet Products***

***Abstract Reference : 280***

**MAY HALVA**

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The product, which is being produced in some regions of Giresun (Turkey) only in May, and which is why it is called May helvası, dates back to 200-250 years ago. Licorice root, lemon juice, sugar and water are the ingredients used in the production of this halva.

In the production of halva, the licorice root is first shredded, and then beaten into small pieces. The resultant licorice root paste is boiled and brought to a syrupy consistency, thereby obtaining a licorice root syrup. The licorice root syrup which comes to the consistency is filtered to separate the particles and then left to cool. The cooled syrup is foamed by mixing well and the resulting foam is left to be used for halva production.

Sugar and water are added to the pan and the cooked over a high heat. Then lemon juice is put into the syrup. Licorice root syrup foam is gradually added to the boiling sherbet cooked at a low heat. Halvah cooked in a low heat is boiled for about one hour continuously mixing. When appropriate consistency is achieved, the boiling process is terminated and allowed to cool. At the end of the cooling process, production is completed by packing. The May Helva can be produced as plain or as hazelnut flour added hazelnut May halva as well.

In this study, the production of the May Helva, which has been produced only for certain periods of the year for centuries in Giresun region, and its benefits for human health has been compiled.

**Keywords :** Halva, Licorice Root, Confectionery, Black Sea Region, Hazelnut

***Traditional Sweet Products***

***Abstract Reference : 221***

**A TRADITIONAL DESSERT: BULAMA**

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Bulama is a traditional dessert indigenous to Tekirdağ region. Bulama has cream color and it is a viscous product usually consumed at breakfast. It has a special flavor that is similar to the halva prepared by treating grape molasses with *Saponaria officinalis* (covenotu). There are three stages of production. First of all, mature grapes are crushed in a dig. In this way the syrup of the grape is obtained and this syrup is treated with grape soil and concentrated by boiling in the next day to make molasses. On the third day, the roots of the *Saponaria officinalis* are boiled for a long time until they soften in boiling water. The excess of *Saponaria officinalis*'s involvement or lack of it directly affects the taste of Bulama. The prepared molasses is mixed with the foam of the *Saponaria officinalis* formed in boiling water. Thus, the structure, taste and color of bulama are developed.

**Keywords :** Saponaria officinalis, molasses, grape, Tekirdag

***Traditional Sweet Products***

***Abstract Reference : 139***

**Mitigation of HMF in grape pekmez via ozone treatment**

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Grape pekmez is the most commonly consumed pekmez type among others such as mulberry, carob. Although the productions were in small scale in the past, recently several factories have been set up for the pekmez production. Due to the difficulty in finding fresh grapes at all season, factories utilize dried grapes (raisin) to produce pekmez. HMF (5-hydroxymethyl furfural) is one of the most important quality characteristics of pekmez. Acidic nature of the grape is the key factor for the HMF formation in grape pekmez production. During drying process, significant amount of HMF can be accumulate in raisins and it is the main factor the high HMF levels in the final product. The contribution of evaporation step is relatively lower in industrial pekmez production due to the short time and mild temperatures.

Ozon (O<sub>3</sub>) is a non-radical reactive oxygen specie that is readily degrade to oxygen. In food industry, ozone is generally used in disinfection. In this study we examined the possibility of the use of ozone in HMF reduction in grape juice obtained from raisins. To this aim, raisins macerated in water to obtain grape juice (14 Brix). Then ozone gas produced from pure oxygen was bubbled in the grape juice at different durations (20 and 50 min) and temperatures (10, 25 and 35 °C). The resulting juices were evaporated to 70 Brix pekmez samples and compositional, sensorial and microbiological properties were evaluated.

It was found that application time is important in HMF reduction. However long contact time (50 min) caused an undesirable flavor and taste. It was probably due to the oxidation of phenolic compounds present in grape juice. On the other hand, 20 min of ozone treatment caused HMF reduction without a significant change in the sensorial properties of pekmez. It was also found that HMF decrease in the experiment done at 35 °C was lower compared to 10 and 25 °C. Ozone treatment caused no significant change in sugar composition and organic acid profile except a slight decrease in tartaric acid level. Along with chemical changes, significant decrease in total yeast content was recorded during ozone treatment.

**Keywords :** Grape, Pekmez, HMF, Ozone

***Acknowledgments : This study was supported by Şitoğlu company and KOSGEB (Small and Medium Enterprises Development Organization)***

***Traditional Sweet Products***

***Abstract Reference : 146***

**A Traditional Milky Dessert from Turkish Cuisine: İncir Uyumması**

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Milky desserts of the rich Turkish cuisine are lighter than the dough and myrtle desserts, are easier to digest, and have higher nutritional value. Milky desserts with a wide variety are low-cost economic desserts. There are many products in Turkish cuisine like traditional desserts such as Sütlaç, Keşkül, as well as other desserts from world cuisine. Unlike these, the less known ‘İncir Uyumması’ are a milk dessert produced by the Turks in Anatolia and Middle Asia. The composition of the sweet constitutes milk and fig, and the fig provides stabilization and at the same time imparts aroma. Depending on the locality, sugar and other flavor, odor and structure-imparting additives can be used in the production. In addition to having a composition-rich nutritional content in general, it is also interesting to give a different taste. Dried figs are rich in protein, vitamins and minerals in terms of nutrition. 100 grams of dried figs supply 17% of calcium, 30% of iron and magnesium, 20% of phosphorus, 5% of vitamin B1 and 4% of vitamin B2 of the daily requirements of the body. 100 g of dried figs are about 350 calories, 70% carbohydrate, 6% protein, 1.3% fat and 6% dietary fiber. Studies have shown that figs exhibit high protease activity. Ficin enzyme is the one of the protease which ensures the consistency of İncir Uyumması. This review focused on the general properties of İncir Uyumması, dried figs and ficin enzymes, and studies on İncir Uyumması.

**Keywords :** incir uyutması, traditional desserts, fig, ficin



***Traditional Sweet Products***

***Abstract Reference : 239***

**Traditional Sweet Product: Zile Pekmezi**

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Molasses (pekmez) is one of the traditional food products and produced generally fruits with high sugar content. There are many variation of the molasses depending on the raw material and production process. Zile pekmezi is made of grape with a production process different from usual method which is increasing dry matter with thermal applications. Moreover, in contrast with the usual molasses appearance (dark, liquid) Zile pekmezi is known as white hard molasses. The reason of the hardness and white color is the secret ingredient that is egg white. White hard pekmez (Zile pekmezi) is mainly produced from grape juice. The acidity of grape juice is decreased with the application of CaCO<sub>3</sub>- and the grape juice is settled. Obtained clear grape juice is concentrated to the desired Brix degree under atmospheric pressure, or vacuum. After concentration of grape juice, it is mixed with egg white as bleaching agents, and pectin as gelling agent and then beaten. Pekmez is nutritionally important food product, especially for babies, children, sportsmen and in situations demanding urgent energy. Furthermore, pekmez provides important organic acids and mineral materials in addition to energy supply because of glucose and fructose. Zile pekmezi has also improved functionality because of egg white content. This review was conducted to examine the production process and functional properties of Zile pekmezi.

**Keywords :** zile pekmezi, white hard molasses, egg white

***Traditional Sweet Products***

***Abstract Reference : 321***

**ASİDE**

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People meet the need for dietary nutrition from past to present with various foods. The diets vary according to the regions and lifestyles in which each different society lives. Anatolian geography has a rich cuisine because it is influenced by the cultures of different communities and nations. With the widespread use of technological developments, local specific foods have also become unknown to everyone.

Aside; it is a traditional dessert in the Central Anatolia Region, which can be made in different shapes and mention different names. Haside, molasses slurry, also known as molasses dessert, this dessert has a very high energy value. Aside is very delicious dessert and prepared using molasses, butter, flour / starch and walnut. Some water, molasses and flour are mixed and boiled. After being cooked, take the casserole and add melted hot butter. It is optionally served with walnut. In some regions, firstly butter is melted, then flour is added and roasted. It is boiled by adding a mixture of molasses and water in a separate pot. The mixture is taken in cradles and served with walnuts. Aside is one of the indispensable tastes of Nevşehir, Kayseri, Yozgat and Konya meals in Central Anatolia due to has the high energy, and nutrient, short time of preparation.

**Keywords :** Aside, molasses, dessert, butter.

***Traditional Sweet Products***

***Abstract Reference : 430***

**A Traditional Confectionery Product that Consumed Delightfully in Turkey: Akide Candy**

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The confectionery industry is one of the key sectors of the food industry throughout the world and has access to a wide range of different products that widely consumed in many countries. Turkey is one of these countries with a large number of traditional confectionery food products due to the different cultural heritage. One of these traditional confectionery products, Akide candy, is a traditional flavor coming from Ottoman cuisine, and also called as hard or rock candy. Akide candy is a type of hard candy that has a unique glassy appearance and melts slowly in the mouth. It is prepared by boiling the basic syrup that contains sugar, water and one or several acids, such as potassium bitartrate and citric acid at high temperature (up to 160°C) in a boiler until the excess water has evaporated. After this process, various flavorings, food colorings, and other ingredients are added while the mixture is still hot and then it is cut and left to cool. Today, Akide candy can be produced industrially or by traditional methods. However, both methods have in common that the moisture content of the final product should not exceed 3% in order to obtain high quality. In recent years, optimizations have been made to improve the production process of Akide candy and new methods have been applied to prevent production losses, increase the quality, and extend the shelf life of the final product. In this regard, the aim of this paper is to describe extensively the production process of Akide candy and to determine what affects the product quality.

**Keywords :** Confectionery, Traditional foods, Akide candy

***Traditional Sweet Products***

***Abstract Reference : 450***

**OTTOMAN SHERBETS AND THEIR IMPORTANCE IN TERMS OF HEALTH**

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Our geography, which has a rich culture, owes it to being home to various civilizations from the past. Ottoman palace and public cuisine were also benefited from this cultural diversity. In Ibn-i Sina's "El-Kanun Fi't-Tıbb", in Evliya Çelebi's Seyahatname and in his "Nüzhētü'l-Ebdan fi Tercemet-i Gayeti'lutkan" (17th century) named book of Hekimbaşı Salih bin Nasrullah mentioned that beverages made from various plants, vegetables and fruits under the name of sherbet. Sherbet is one of the main beverages which is consumed by the Ottoman food and served to the guests on special occasions and it is reported that there are about 100 sherbet types. Macun (paste) and sherbets made from various plants in Ottoman culture are used for treatment purposes as well as health protection besides catering. In our traditional culture, ladies who gave birth are treated with dualı dut (mulberry) sherbet in order to reduce pain and soreness. In addition, our ancestors have used sherbet as a blood maker and body strengthener in the treatment of some diseases as well as finding healing because of the useful components they contain. As a result, they took the recipes of the strangers who had seen the benefits and excellence and took them to their country and put ice into the sherbet and presented it as a drink under the name sorbet. In the past period, sherbets were sold in shops in Istanbul, while traveling servers were traveling between the neighborhoods and selling sherbet in mânî (verse) accompaniment. Among the main sherbets made in the Ottoman period were violets, roses, dutchman's breeches (gelincik), hibiscus (gülhatmi), tamarinds, mulberries, woads, daffodil, jasmine flowers, pomegranate, peach, black mulberry, apricot, sour cherry, orange, lemon, citrus, cranberry, mint, grape, blackberry, plum, locust bean, strawberry, unripe grape, lavender, daphne, melon seeds, jujube, honey, sugar, narcissus, date palm flower (kavi), orange blossom, lily, flos elaeagni, lotus, acacia, sirkencübin (made from vinegar, honey and water). The most important issue in making sherbet is how to make the sherbet concentrate. In order to make sherbet concentrate, the white parts of the scented flowers that are collected and edible during the season are cut, they are being sorted out from the seeds and green petals, washed and drained. Then the water is dried and rubbed with sugar or lemon salt until the water is removed and kept cold in glass jars. These concentrates are then mixed with sugar and water to serve as sherbet.

**Keywords :** Sherbet, Ottoman, Traditional, Health

***Traditional Sweet Products***

***Abstract Reference : 465***

**Usage of Invertase Enzyme in Fondant Production: The Effect of Concentration on Quality Parameters**

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Fondant is a crystalized chewy candy. Fondant is a paste- or cream-like product heterogeneous system consisting of a solid phase (saccharose crystals), liquid phase (saturated saccharose solution and glucose/invert sugar) and gaseous phase formed due to incorporation of air during production. Fondant is used as a filing material and as a coating material for pastry, confectionery and chocolate products. Therefore, mechanical properties are important for both machinability and sensory properties of the fondant. In the present study, invertase enzyme was added at concentrations of 0.1, 0.2, 0.3 and 0.5% to investigate its effect on the textural and rheological properties of the fondant during storage period as well as sugar composition of the fondant. Hardness and stickness of the control sample at the 1<sup>st</sup> week of storage was found to be 221.1 g and -47.92 g.s, respectively. As hardness value of the sample prepared by addition of enzyme at concentration of 0.1 and 0.5 was found to be 69.24 and 48.22 g, respectively at 1<sup>st</sup> week of storage, stickness value was determined as -22.13 g.s and -21.10, respectively.  $G'$  and  $G''$  values of the fondant decreased by treatment with invertase enzyme. The results of the present study highlighted that invertase enzyme can be used to soften the product to improve sensory characteristics, machinability and to reduce or eliminate crystallization of sucrose negatively affecting quality parameters. Depending on the intended purpose of the fondant, invertase concentration can be optimized

**Keywords :** Confectionery, candy, fondant, rheology, texture, enzyme

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