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P 01

Ice-cream production and public health

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Ice-cream is sweeter most widely consumed in the world and the more the varieties. The frozen milk is product, containing some of the flavor and sweetener that obtained after heating and homogenization processes. Freeze will be offered the desired softness and proper construction with give to air, make up about half of the volume, during the freeze freezing. Ice-cream is offered for consumption in various shapes, different flavors and packages.

Ice-cream in Turkey, outside the few big businesses, especially because of the technical impossibilities, in small businesses or pastry shops, lack the modern tools and equipment, in primitive conditions of poor quality raw material, non-standard techniques, carried out by people who don't have enough information.

Ice-cream is not a sterile product, but harmful microorganisms are not available make appropriate techniques in hygienic conditions. The products to be frozen are preventing development of many bacteria. Microbiological characteristics of ice-cream can be said to be a reliable product in qualities.

Ice-cream manufacturers prefer to use ice instead of milk in some ice-cream. Although a there are various reasons behind the prefer to use ice instead of milk, this kind ice-cream consumed threatens human health. Icy ice-cream, especially consumed by children, does not carry the feeder property than milk. Ice-cream made of ice the are also higher rate of calories than ice-cream made from milk, because of more sugar include. Icy ice-cream is increases the risk of diabetes if continuously

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consumed.

If ice-cream production implementation of hygienic rules and this to maintain, a very useful dairy ice-cream will save the public health threat. However, cold products of ice-cream should not be forgotten and this should be taken into account of consumption. Iced desserts which sold under the name ice-cream are useful of separately assess.

P 02

Bisphenol-A

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Bisphenol-A is an organic compound which is formed by recombination of two phenol and polycarbonate molecules. It is specially used for production of plastic, nylon, polyester and PVC. It has 2-3 million ton production of worldwide. Physical properties of bisphenol-A could be classified as; white powder or crystal appearance, melting point: 158-159 °C, boiling point: 220 °C at 4 mmHg, vapor pressure: 0,2 mmHg at 170 °C, density: 1,195 g/cm³. Bisphenol-A (BPA) could be used production of plastics in many years by combination of other chemicals. It is used for making polycarbonate (transparent and solid plastic). It could be used in food contact materials. It is also used for protection and coating in food and beverage packaging. It has usage area such as; plastics, dyes, dentistry, medical materials, food canned, storage vessels.

BPA could be contaminated to food and beverages through little amount of BPA, polycarbonate plastics or epoxy materials. It is also passed through food from packaging materials with plastics damaged. BPA as a chemical, which could effect hormonal systems like estrogen. BPA released 55 times faster with temperature influences, while released as 32 ng/h under normal conditions. Type 3 (PVC) package contains BPA, while polimerization or packaging forms of type 1 (PET), type 2 (HDPE), type 4 (LDPE), type 5 (polypropylene) and 6 (polystyrene) are not contain BPA and by this way they are not released BPA to food.

P 03

Melamine

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Melamine is a trimeric cyanamide with 1,3,5 triazine skeleton. It is also known as cyanuramide or triaminotriazine. It contains 66% nitrogen by mass. In general, it is widely used in plastics, adhesives, benches, kitchen materials and white boards. It is also reported that a degradation product of some disinfectants used in food equipment. FAO/WHO Codex Alimentarius Commission and other national authorities are not accepted to use it in foods. However, it is used to hide adulteration which is water adding to the milk used in foodstuffs. The addition of melamine to prevent coming into open of adulteration increase the amount of nitrogen so protein amount apparently increase. At the same time, migration from plastic to food products have been studied. Direct effects of melamine on human health is not known yet; information about the side effects observed in animal studies are available. Under the commission decision 2008/757/EC of the European Union Member States, it has been reported that all compounds including at least 15% of China origin dairy products must test systematically prior to importation and shatter products containing more than 2.5 mg/kg of melamine. Australia, China, Malaysia, New Zealand, Nigeria, South Africa, Thailand, the United States and Vietnam give permission for melamine in infant formula or baby foods up to 1.0 mg/kg, but it is 2.5 mg/kg for other food or feed. Although these values are the same in Canada and Japan for food or feed, it is 0.5

mg/kg for infant formula and baby food. Melamine researchs were not observed except aiming plastic safety for foods and insecticide residue until the recall of feeds in 2007. This may be due to consideration of low toxicity of melamine and expensive methods. In 2008, several methods for the detection of melamine were published.

P 04

Dioxin and PCB in Food

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Dioxin and polychlorinated biphenyls (PCB) are chemical structures which occur in nature as a result of bioaccumulation and are leading to contamination of various food and feed with the food chain, have high toxic properties. As a result of incineration of PCBs in unsuitable condition polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) derivatives occur. The term dioxin contains two large chemical group (dioxins and furans) which containing the different proportions of chlorine. PCB and dioxin are same complex chemical groups, but the difference of dioxin from PCB that are chlorine levels. These chemicals are evaluated as one group (PCB and like-PCB) because of similar toxic properties. 7 dioxin, 10 furan and 12 polychlorinated biphenyl and 6 indicator PCB not have a toxic coefficient that are toxic and risk in foods are analysed and serve a summons. PCBs do not attend natural source and all of them obtain as synthetic. Due to their physical and chemical properties, they accumulate in air, water and soil at different levels. PCBs continue to pose danger by transferring in nature. They are transferred long distance with air. Their concentration increases in organisms because of preferring adipose tissue. Major diseases because of toxic components are dermal toxicity, immune sytem toxicity, defect structure of endocrine and cancers. Dioxin intoxication generally takes place due to animal and plantal food. Plantal food has less dioxin level than animal food as meat, milk, fish. Inhalation and cutaneously intake of PCDD and PCDF are very low. According to the Stockholm Convention, the contracting countries must prohibit the use of certain chemicals and production, avoid emissions, dispose of unsold inventory and equipment containing these chemical and waste until the end of 2025 using the most appropriate technologies.

P 05

Effect of using some dietary fibers on chemical properties of strained yogurt

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Effects of using some dietary fibers on chemical properties were researched in the study. Apple, wheat and bamboo fibers were used in the production of strained yogurt at different ratios (1%, 2% and 3%). Cholesterol, dry matter, fat, ash, titratable acidity, pH and yield values of samples were analyzed in the study. According to the results, fat values of samples changed between 8.6 and 11.1%, titratable acidity values changed between 0.420 and 0.639%, pH values changed between 4.37 and 4.74, dry matter values changed between 25.85 and 31.80%, ash values changed between 0.70 and 0.93%, cholesterol values changed between 8.96 and 15.23 mg/100 g and yield values changed between 31.08 and 33.93%. Acidity values of samples increased and pH values of decreased in parallel with storage. Usage rates of dietary fiber affected only cholesterol values as statistical. Analyses were made two replications with its parallels. It was thought that this study suggested about using different dietary fiber in dairy products. In the near future, dietary fibrous strained yogurt production will play important role in nutrition of public and development of milk industry.

P 06

Investigation of Phenolic Content in the Extracts Obtained from Arbequina Olive Tree (*Olea Europaea*) Leaves

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One of the basic purpose of food industry is controlling microorganisms existing in food and avoid oxidative reactions caused by free radicals in order to prevent the spoilage of food and to provide food safety. Therefore, natural phenolic components are used as antimicrobial and antioxidative food ingredients in terms of food safety. In this study, Arbequina samples were collected from four different cities (San Antonia, Seadrift, Brazoria and Santa Fe) of Texas in the USA in order to compare the phenolic profile of the same variety from different geographic locations and harvesting period. Total phenolic contents of extracts obtained from the leaves collected in February and June were determined spectrophotometrically. Then, quantitative analysis of individual phenolic compounds (oleuropein, verbascoside, luteolin 7-O-glucoside and luteolin 4'-O-glucoside) of the obtained extracts were determined by HPLC. Consequently, the trees cultivated in different cities were seen that they had different values of phenolic components, although they were from the same origin. Additionally, the content of phenolic components was observed to have tendency to decrease in hot summer days. So, the evaluation of the extracts obtained from olive leaves came out as olive by-product and waste at harvesting time as a source of antimicrobial and antioxidative additive in food products was assessed to be beneficial from the point of economy and ecology.

P 07

Development of a continuous UV system and testing effect of UV light on microflora of spices

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Food irradiation has admitted as an effective food safety method for several food materials for more than 50 years and this technique was mostly applied as gamma irradiation and UV- irradiation. Gamma irradiation includes gamma rays from radioactive isotopes Co60 and Cs137 and inactivates microorganisms by breaking their DNA structure and disrupts metabolic activities. It is widely used in spice industry for sterilization. On the other hand, short wave ultraviolet irradiation (UVC, 254 nm) can reduce the microbial load in air or on surfaces and eliminate pathogens in water sources without destroying their DNA structure. The main problem of UV is the lack of penetration which depends on mainly the mineral content of the sample. By reducing the thickness or perfect stirring of the sample, this problem can be solved and UV can be used as an effective sterilization method. Aim of this current work is to develop a continuous UV sterilizer which can take the place of gamma irradiation by eliminating the disadvantages of this technique such as ionization, free radical formation and color loss. By developing UV sterilization technique, more rapid and effective spice sterilization can be achieved.

P 08

The effect of starter culture on the lactose and salt content in white brined cheese

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White-brined cheeses, including Feta and Domiati, are ripened under brine and have a high salt content and, consequently, they are grouped together as a separate category within the group of internal bacterially ripened cheeses.

The main objective of this research is focused on optimizing the process of production of white brined cheese.

It was determined following parameters: influence of the starter culture on the quality of the final product, optimal temperature of milk curdling and optimum time of cutting curd on improving yield of white brined cow's cheese, adequate technical processing of curd for standardization of the cheese composition in terms of quantity of water, fat and pH value and the correct way to ripening by directing and controlling the further changes in the cheese in order to improve quality.

Three variants of white brined cheese were made. Variant (K) in which was applied current technological process and was used yogurt as starter culture gained along processing of previous day. At (B1) and (B2) variants was used freeze dried culture of *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus* in ratio 3:1 and F-DVS YF-3331 Yo-Flex version: 2 PI-EU-EN, respectively. Processing of curd was applied 5 minute earlier from control variant and the temperature of curdling at (B1) variant was 37oC while at (B2) variant was 39oC.

The lactose content in the variant (K) cheese ranged between $2.68 \pm 0,44$ in first day, 1.96 ± 0.05 in 10 day, 1.86 ± 0.05 in 20 day and 1.30 ± 0.08 in 60 day. Salt content in those cheese variant varied from 3.98 ± 0.25 g/100g in first day, 4.48 ± 0.16 in 10 day, $4.36 \pm 0,48$ in 20 day and $5.43 \pm 0,23$ in 60 day.

P 09

Effect of milk quality and manufacturing method on the yield of the white brined cheese

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Yield is important determinant for profitability and economic success in all sectors of the dairy industry. Currently more than 35% of milk produced worldwide is utilized in cheese manufacturing. To estimate the influence of the milk quality and the production practices on the cheese yield, three different white brined cheesees were prepared. In the cheese designated as C, currently applied technological processes were applied and yogurt obtained from previous day's production was used as starter culture. In the production of cheeses B1 and B2, freeze-dried culture of *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus* (ratio=3:1) and F-DVS YF-3331 Yo-Flex version: 2 PI-EU-EN were used, respectively. The curd processing of B1 and B2 cheeses was performed five minute earlier than control (C) cheese. The temperature of curdling in B1 and B2 cheeses were 37oC and 39oC, respectively.

Based on the analysis of raw milk it could be concluded that the gross chemical composition of raw milk, on average, satisfy the criteria for the production of white cheese. The average content of non-fat-dry matter was $8.39 \% \pm 0.04$, and in most cases, it was less than the 8.5% which is an average level for cow's milk. The average lactose content was $4.41 \% \pm 0.02$. In the raw milk used for the cheese production, the microbial load was high. The total number of bacteria in raw milk ranged from 1.5×10^6 cfu/mL.

For production of one kg C, B1 and B2 cheeses, the required milk volumes were 7.8 liters, 8.1 liters and 8.3 liters, respectively. The yield of cheese was estimated to be $12.7\% \pm 0.62$ for C, $11.93\% \pm 0.36$ for B1 and $12.3\% \pm 1.61$ for B2 cheeses.

P 10

Effect of Irradiation on Colour of Liquid Whole Egg

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Egg and egg products cause a risk due to *Salmonella* infections. Irradiation is an effective technology to ensure the hygienic quality by eliminating pathogenic microorganisms. Irradiation of egg and egg products is applied in many countries for this purpose. Irradiation results in discolouration of the liquid egg. In this study, liquid egg samples are irradiated three different irradiation doses (1 kGy, 2 kGy ve 3 kGy). Total caroten content, L, a, b values by Minolta chromometer and colour point by sensory evaluation were evaluated, the possible correlations between these features were also assessed. The discolouration is observed due to the destruction of carotenoid and this effect is bound to be proportional to the irradiation dose. While total caroten content didn't change at irradiation of the 1 and 2 kGy doses, decreased significantly at irradiation of 3 kGy dose. Decrease of L, a, b values were also determined at irradiation of the 3 kGy dose. According to sensory evaluation, all irradiated samples were acceptable. Correlation coefficients between the total caroten and L ($r=0.809$), a ($r=0.834$) and b ($r=0.833$) are highly significant, while that of between the sensory colour points and other values are in medium degree.

P 11

Tourism Sector Food Safety

Torun B.

Antalya Branch Chamber of Food Engineers

Developing the tourism sector itself with the attempt to reach the world standards of quality have led to become important at every point. Ensuring the quality of the service sector, many factors requires the development of inter-related manner. Stages of production and presentation of applications in both the diversity in terms of both accuracy and effectiveness of hygiene practices, meticulous execution of guest relations, quality of inputs used in production, personnel, etc. Factors such as education and awareness is high, thereby strengthening the quality of the background of the rise of the industry provides. Fulfillment of all of them can be achieved by the presence of professional bodies. Food Engineers in Tourism Sector ' was born in the presence of this need. More food-producing areas Engineers installation (construction) from the phase taking place within the subject, as infrastructural areas of manufacturing creates a safe and healthy and hygienic conditions during production to ensure the necessary quality systems in operation with the installation and training of personnel in this regard, I am interested in the development and maintenance issues.

P 12

The Relationship between Human Gut Microbiota and Food

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Bacteria are on the earth for 2.5 millions of years whereas human have adapted to the world on which those microorganisms dominate. Human gut microbiota has the capability to consume, store, produce energy, communicate within itself and with the host cell, and also replicate to preserve. Microbiota, which make up trillion numbers of cells in the gut, determine the

immunity system and widen the physiological definition of human being. It is known that the distribution of species in gut microbiota is variable among people (depending on age, gender, antibiotic treatment, inflammation, differences in eating habits). It is found out that microbiota aids in energy supplementation and increases lipogenesis by (i) supplying lipogenic substrates (short chain fatty acids, monosaccharides) to liver and (ii) increasing the activity of lipoprotein lipase (LPL) enzyme. It is proven that there is a strong relation between the changes in microbiota and energy metabolism. More Bacteroidetes (more than 50%) but less Firmicutes (less than 50%) are observed in obese people compared to slim people. Recent microbiota studies have shown that the changes in bacterial diversity can cause several health problems such as obesity, diabetes, non-alcoholic fatty liver disease and even cancer. However, the varieties in nutritional habits of people and the ingredients of these foods are known to be important parameters in determining the composition of microbiota, there is no study conducted on the interaction between human gut microbiota and food additives in our knowledge.

The aim of this review is to analyze the distribution and functional properties of commensal microorganisms of gut microbiota together with to determine the possible effect of variously dosaged commonly used food additives on human health. By this way, the first step will be taken in searching the interaction between heavily consumed food additives and microbial distribution of human gut.

P 13

Morphological changes of high hydrostatic pressure (HHP) treated *Escherichia coli* O157:H7 and *Staphylococcus aureus* cells

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HHP induced inactivation of microorganisms has been investigated intensively during the last decade. The pathways for inactivation depend on the organisms and their environment, and are subject to ongoing research. Recent findings show that pressure primarily affects functions of the cell membrane through denaturation of membrane-bound proteins and pressure-induced phase transitions of the lipid bilayer. Electron microscopy has been employed to characterize pressure-induced morphological changes in microorganisms in order to understand the events leading to cell inactivation.

The objective of this study was to examine the changes in cell morphology due to HHP treatments by scanning electron microscopy (SEM).

Staphylococcus aureus 485 and *Escherichia coli* O157:H7 933 were subjected to different levels of pressure (200 to 400 MPa) and time (1 min and 5 min), at constant temperature (40°C), in peptone water. SEM images of microorganisms before and after treatments were taken by fixing the cells on membrane filters.

In this study, unpressurized cells exhibited a smooth surface appearance. *E. coli* O157:H7 933 cells exposed to 200 MPa- 1 min treatment had smoother surface appearance and appeared larger than the untreated cells. The surface of *E. coli* O157:H7 933 cells after 250 MPa- 1 min treatment was distorted with dimples and pinches. In case of *S. aureus* 485, the cells pressurized at 200 MPa and 250 MPa for 5 min did not show any significant change in the original smooth surface and cocci shape. The surface appearance became rough and cracked when the cells were exposed to higher pressure levels (300 MPa, 350 MPa and 400 MPa, 5 min).

It was apparent that *S. aureus* 485 cells were less affected by higher pressure- time combinations. SEM micrographs also

showed that even if the pressure treatment leads to total inactivation of the population, individual cells retained their morphological characteristics.

P 14

Food Security Approach And Applications in The European Union

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Food safety defined by FAO-WHO Codex Alimentarius commission of experts. According to the commission Food safety; Food production in order to ensure a healthy and perfect foods, taking measures to comply with the necessary rules in all stages of production. All the countries of the world, such as in the European Union countries has given great importance to food safety and this countries took the necessary precautions and measures. The basic principle of EU food safety policy, to ensure the effective functioning of the internal market, in every field of human health and consumer interests in relation to food is to provide a high level of protection. The goal of the policy; feed production, primary production, food processing, storage, transportation and sale in all stages of the food chain 'from farm-to table "by applying an integrated approach to food safety, animal health, animal welfare and plant health is to ensure. The first step toward the development of food legislation in the European Commission, the European Union in 1997 on the Principles of the General Food Law have been taken to publish the Green Book [COM (97) 176 final, 1997]. In this review, the European Union's food safety approach and aim to describe some of the applications.

P 15

Comparison of LCD-Array and Real time PCR Techniques for Detection and Verification of Animal Species in Meat Products

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Detection of animal species present in meat products and verification of declared labelling are one of the key interest areas in food safety. It is critically important for protection of customers with high standards in quality, inhibition of food-manufacturers from unfair competitive practices and achievement of labelling requirements as certified for food safety. DNA based molecular techniques have been popular because they have comparative advantages to traditional ones based on less time required for completion of analysis, getting fast and accurate results in identification and required less amount of sample in analysis. LCD Array (LCDA) and Real time PCR (rtPCR) techniques are differentiated from each other in terms of additional preparation steps to be able to make simultaneous detection in a sample in one reaction. DNA isolation is the common starting point for both of these techniques. LCDA is able to perform simultaneous detection of more than one species whereas rtPCR requires multiplex study by using specially designed primers and therefore needs optimization of running conditions. In this study, 76 of meat product samples (11 in ready made ground meat, 16 in meat ball ready to grill, 6 in sausages, 36 in faggots and 7 in salami) commercially available in chain markets, public bazaars and delicatessen stores located in İstanbul. were analyzed by Chipron LCDA Meat-Species 1.6 System. Among 76 samples 43 were out of the declared labelling in species. On the other hand, no equine meat was observed but buffalo meat was found in 7 samples. The results obtained by LCDA System were also validated by Agilent Stratagene Mx3000P rtPCR System.. In conclusion, DNA based molecular techniques such as LCDA and rtPCR should be promoted in food safety and quality issues in meat products for being fast and accurate techniques

in detection and verification of animal species in meat products.

P 16

Antimicrobial Activities of Edible Films and Coatings Enriched with Natural Plant Extracts

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In recent years, some researchers have directed to use of alternative natural antimicrobial substances due to consumer's sensitivity for using chemicals additives especially in minimum processed foods. In this context, some researchers have proved that the natural plant extracts have antimicrobial activity against many microorganisms including pathogenic and saprophytic. The results obtained from natural plant extracts have encouraged for using of them as protective systems with combination for unsure food safety. One of the most recent studies in this area is antimicrobial edible films and coating materials which enriched with natural plant extracts which is contained in active packaging systems. In vitro and in vivo studies gained momentum today which about production of edible films and coating materials obtained from protein, polysaccharide and lipid polymers which enriched plant extracts such as thyme, coriander, basil, garlic, onion, ginger, cinnamon, black and green tea. In this manner that will be possible to extend of the products shelf life and ensure food safety by these models systems which have successful results for inactivation of a lot of important pathogenic bacteria such as *L. monocytogenes*, *S. aureus*, *E. coli* O157:H7 and *S. Enteridis*. Also by using environmentally friendly packaging materials will be possible to reduce the amount of solid waste.

In this review will be discussed that antimicrobial activities of edible films and coating enriched with natural plant extracts by giving some examples in vivo and in vitro studies in recent years based on their methods of implementation.

P 17

The Effect of Bacteriocins from Enterococci Isolated from Foods and Clinical Sources on Some Pathogen Bacteria

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In recent years, interest in natural preservatives has increased to extend the shelf life of foods and ensure food safety. In particular, it has been explained that the use of bacteriocins as antimicrobial metabolites may be a new bio-preservation method. Because enterocin produced from *E. faecium* and *E. faecalis* strains have stronger physicochemical properties and biological activity than the other bacteriocins, they are bacteriocins with the technological potential. However, it was reported in some studies, antimicrobial activities of these bacteriocins varied according to isolated sources (clinical, food or environmental resources). In studies so far, food-borne strains of enterococci mostly have focused on the potential use as a natural preservative. On the other hand, enterococci of clinical origin also produce bacteriocins with high antimicrobial activity and this situation also emphasizes the need to investigate their potential use as a natural preservative.

In this study, bacteriocins were obtained from Enterococci strains isolated from both foods and clinical sources by partial purification and antimicrobial activity of these bacteriocins against some pathogen microorganisms (*Escherichia coli*,

Staphylococcus aureus, Bacillus cereus and Salmonella Enteritidis) were compared.

P 18

Quality characteristics of fresh and dried solar industrial varieties of tomatoes

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Tomatoes are one of the most grown vegetables in Macedonia. The aim of this work is to determine and compare the quality characteristics of the different varieties of tomatoes industry: Arizona, Rio Grande and Alexander. Fruits of tested varieties are suited to raw material for the industrial processing as confirmed with high random. Although different in relation to the weight, height and width the research focus to the chemical composition of fresh and dried fruits from solar industrial tomato. Chemical composition of the fresh tomatoes is very important because they are the main potential for obtaining a quality dried product. The contents of dry material, total sugar and the relation between sugars and acids are important parameters for determination the quality of the tomatoes.

Of the tested tomato varieties are characterized with rich chemical composition on: in fresh fruit variety Alexander was distinguished by highest content of total dry material 5.4%, total sugars 2.66% and 0.33% total acids, Rio Grande variety had highest the content of vitamin C from 15.29 mg%, with the highest protein content 1.16% and mineral materials of 0.44% was the variety Arizona. For solar dried fruits variety Rio Grande was distinguished by the highest content of total dry matter 88.0%, total sugars 10.55% and 10.60% mineral materials, the variety Arizona was distinguished by the highest of Vitamin C 38.81 mg% and protein 17.63%, and with the highest content of total acids from 6.56% was variety Alexander.

Industrial varieties of tomato which used in industry for different processing can be recommended for the solar drying. For this work was used solar dryer. According to the obtained results solar dried tomatoes are characterized by high quality because in them have all saved nutrients.

P 19

Effects of food additives on acrylamide formation in food

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Acrylamide (2-propenamide-CH₂CHCONH₂) is a slightly acidic, solid white crystal that has vinyl group in its structure. Acrylamide is formed through Maillard reaction that occurs between amino acids and reducing sugars. According to reports in literature some of food additives enhance acrylamide formation while some others prevent. The use of antioxidants which can react with acrylamide or its precursors decreases acrylamide formation in heat processed foods. It was observed that antioxidants containing especially flavanoid decrease acrylamide levels. However, addition of antioxidants such as BHT, sesame and vitamin E to lean beef prior to cooking caused high levels of acrylamide. As ascorbic acid degrades itself during cooking, it was found ineffective to decrease acrylamide formation when used as antioxidant. It was found that the use of ammonium bicarbonate as baking agent increases acrylamide formation in cereal products. Changing of ammonium salts by sodium or potassium salts decreases acrylamide formation. As a result it can be concluded that the use of different food

additives in different foods affects acrylamide formation in different ways.

P 20

Screening of pork and horse meat in raw meat by Real-Time PCR

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In a healthy and balanced diet 40-50% of daily protein intake should be supplied from animal origin proteins. Meat contains adequate amount and variety of amino acids. As economic value of meat and products is high, adulteration of meat and meat products may increase. Adulteration is decreasing of product quality intensively by adding another material, by exchanging with poor quality substance or processing with no expensive material. Adulteration must be detected because of economic, religious and health reasons. For this reasons, several analytical methods have been developed. Adulteration of meat and meat products can be determined by immunology based ELISA (Enzyme Linked Immunosorbent Assay) or DNA based PCR, Real-Time PCR and microarrays methods. In this study, it is aimed to screen of 20 raw meat samples for presence of pork, horse meat. 10 raw meat samples were obtained from local markets randomly. Isolations of DNA were performed by Food Prep Animal DNA protocol. Sure Food Animal ID Horse, Sure Food Animal ID Pork Sensitive commercial kits were used for screening. Pork meat was not detected in any of the sample, on the other hand horse meat was detected in one of raw meat samples by Real-Time PCR.

P 21

Effect of Acrylamide on Health

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Acrylamide was evaluated as environmental contaminant by 2002. It was observed that acrylamide was formed in heat processed starch based products in the study which was performed by Swedish National Food Administration (SNFA) and University of Stockholm at the same year. Acrylamide is formed in food by Maillard reaction which occurs between amino acids and reducing sugars. It is assumed that in Maillard reaction, Schiff's base is formed from a carbonyl source and amino group of asparagine and then Schiff's base converts to acrylamide by decarboxylation by heat. WHO and FAO announced that some foods, cooked at high temperatures, have acrylamide at important levels and these foods may have important risks for human health in 2005. Carcinogenic, neurotoxic and reproductive system effects of acrylamide have been detected. Acrylamide has been classified by the International Agency for Research on Cancer (IARC) as probably carcinogenic to humans (Group 2A). In animal researches it was determined carcinogenic effects of acrylamide and effects on reproductive and nerve system at high levels in later years. Besides, glycidamid, a metabolite of acrylamide, causes genetic damage by binding DNA.

P 22

Evaluation Of Dioxin And Dioxin-Like PCB Presence In Foods In The Frame Of Food Safety

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Heterogeneous mixture of chlorinated dibenzo-p-dioxin&dibenzofuran congeners that are called as dioxins and dioxin-like polychlorinated biphenyls are extremely toxic substances due to their chemical structure, negative health effects & stable nature. They are not deliberately added to foods or formed during food processing. Forest fires and uncontrolled burning of industrial wastes or households cause contamination of air, water and soil, so these substances come into the food chain. Because of their chemical nature, dioxins are dissolved in fat/fatty tissues and their half life is around 7-12 years in human body in addition to their stability in the environment. Hence, dioxins are assessed in the group of persistent organic pollutants and their accumulation in the body cause so many health problems including reproductive system disorders and neurotoxic, carcinogenic or genotoxic effects. EPA declared that the main human exposure comes from dietary route, especially animal originated fats are considered to be the primary nutritional source along the foods, while other ways of exposure, inhalation & skin contact have been evaluated as minor factors. On the other hand, determination of these substances in the meat, milk or eggs of animals which consume dioxin contaminated feeds and when it is obtained that fat-rich fish is also included in risky group increases the seriousness of the case and enlarges the risky product scale. Regulations associated with the tolerable residual amounts in foods have been quite strict. WHO and many other organs declared the tolerable daily intake between 1-4 picograms. In this context, many factors such as localization & environmental conditions of food manufacturing areas, contamination level of animal originated tissues or products to be used or feeds and water which are to be consumed by animals should be taken into account, feed & food materials should be analysed. Also, environmental regulations as well as food legislation can be thought to play an important role in providing maintaining food safety & consumer protection. Therefore, this study deals with the presence of dioxins in several foods, potential dangers that threaten public health and recommendable solutions.

P 23

Nitrate and Nitrite Contents of Infant Foods

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Nitrate and nitrite are unwanted compounds in foods because of their harmful effects on human health. Nitrate ion is not directly toxic; it can readily be converted to harmful nitrite ion by microbial reduction. Nitrite can interact with hemoglobin to form methemoglobin by oxidation of ferrous iron (Fe+2) to the ferric state (Fe+3), thus preventing or reducing the ability of blood to transport oxygen, a condition described as methemoglobinemia that is dangerous, especially in infants and it is called as blue-baby syndrome. In the stomach, the reaction between nitrite and secondary amines leads to the formation of nitrosamines, some of which are known as carcinogenic, teratogenic, and mutagenic. Green leafy vegetables are the main sources of nitrate in diet. The presence of nitrate in vegetables is mainly due to the nitrogen compounds in soil. The use of nitrogen-containing fertilizers increases nitrate concentration in the soil and therefore, the nitrate content of plants grown therein is above the normal level. Nitrite causes important health problems in babies. There have been a limited number of studies about nitrate and nitrite content of infant foods in literature. Nitrate and nitrite analyses were made in 27 infant foods in a study. Infant foods, which contain carrot as main ingredient, had the highest nitrate concentration. Some of the samples

contained nitrate above 250 ppm. The average nitrite contamination was found to be 204.07 ppm in 42 samples in another study. The aim of this review was to summarize literature researches about nitrate and nitrite contents of infant foods.

P 24

Determination of Levels of Bisphenol A Diglycidyl Ether (BADGE) in Processed Fish Offered at the Market

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Nowadays, Bisphenol A, which is produced over 2 million tons per year, is the basic monomer used in the production of polycarbonate plastic and epoxy resins. In this study, the levels of Diglycidyl Ether of Bisphenol A (BADGE) in smoked trout, anchovy, sardine and mackerel; marinated anchovies, and two different brands of canned tuna offered at the market was carried out by using Solid Phase Micro Extraction (SPME) and High Performance Liquid Chromatography (HPLC). As a results of this study, the mean BADGE levels of samples varied between 0,02 mg/kg-1 meat and 0,15 mg/kg-1 meat. The levels of BADGE in fish were found to change depending on different processing methods and types of packing materials. In this study, the levels of BADGE were found to be higher in canned fish products than fish packaged in polyethylene bags. The lowest BADGE level were found in smoked trout and sardines (0.02 mg / kg of meat), while, the highest BADGE level were observed in smoked anchovy (0.15 mg / kg of meat). As a result of this study, the levels of BADGE in all the samples obtained did not exceed the European and Turkish legal limit' s of 0,6 mg/kg-1 for food.

P 25

Controlling of potential hazards in safe food production

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Food manufacturers have the major responsibility to provide food safety. Therefore they should take necessary precautions against all threats that will affect the food safety. Generally, food safety hazards are classified as biological, chemical and physical hazards. From these, biological hazards consist of microorganisms such as bacteria, viruses and parasites and chemical hazards, which has a wide variety, consist of toxins produced by plants, fish and fungus, compounds formed by processing of foods (e.g. acrylamides, biogenic amines), contaminants from environmental factors (e.g. dioxins) and food packaging materials (e.g. bisphenol A) and various residues (e.g. antibiotics, hormones). In regard to physical hazards, materials like glass, metal, wood and bone which normally not found in food matrix can give as examples. In order to achieve food production in a safe manner, all these hazards should be hindered. Especially the whole production stage should be improved in respect to prevent contaminating the foodstuff with environmental contaminants. Production equipments should be suitable for their intended use and if possible, be portable to facilitate the cleaning. Effective cleaning and sanitizing programs are also important to obtain an adequate level of hygiene. Staff undertaking or supervising food handling operations should effectively be skilled for food safety and hygiene matters. Adding acidulants or chemical preservatives to the foods, reducing the available water of foods are other possible control methods to prevent potential hazards.

P 26

Assessment of Dietary Acrylamide Exposure

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Acrylamide is one of the contaminants generated after heat treatments in foods. Discovery of this compound in carbohydrate-rich foods processed at high temperatures has attracted wide attention throughout the world due to the classification of acrylamide as probably carcinogenic to humans (Group 2A) by the IARC. In this context, national/international science academies, scientific societies and regulatory bodies have aimed to estimate dietary acrylamide exposure of the population depending on the consumption of acrylamide containing foods. Exposure assessment is qualitative and quantitative determination of the magnitude, frequency, and duration of the dose of the chemical which is in contact with the body with different routes. In acrylamide exposure assessment studies, dietary intake of acrylamide is estimated by using the acrylamide concentration levels in different foods, consumption amounts of these foods and the body weight parameters. The Joint JECFA estimated the average daily intake of acrylamide as 0.3-0.8 µg acrylamide/kg body weight/day. EFSA reported the mean acrylamide exposure in Europe for adults, adolescents, children and toddlers as 0.31-1.1, 0.43-1.4, 0.70-2.05 and 1.2-2.4 µg/kg b.w. per day, respectively. According to the obtained data from the exposure studies indicates that children would generally have higher exposures than those of adults. This situation can be explained by the fact that children have lower average body weight. In addition, acrylamide rich foods may have been frequently consumed by children. National researches about acrylamide exposure reported that exposure levels are different among the countries due to having different nutrition profiles, growing crops and production models. International authorities recommended that the acrylamide levels in processed foods should be as low as reasonable achievable (ALARA). Basic approach in this context is determination of acrylamide exposure levels in considerably consumed foods by the population and optimization of production parameters of foods by giving priority to that kind of foods.

P 27

Microbial Contamination Of The Traditional Vanilla Ice Cream Sold In The Northwest Region Of Iran

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Ice cream is a popular dairy product throughout the world. At this study, samples (30) of the traditional vanilla ice creams were collected randomly from dairy stores in Tabriz and Khoy cities during June 2009 to October 2009. Samples were examined for total bacterial and coliforms contamination. The means of total bacterial count were 5.45 ± 0.13 log cfu/g and 7.02 ± 0.26 log cfu/g in Tabriz and Khoy respectively. All samples (100%) had the coliform contamination more than Iranian standard limit (50/g). The current investigation has indicated a poor overall level of hygiene in the service of traditionally sold ice cream in the north west region of Iran. The mandatory adoption of a food safety management system based on the Hazard Analysis Critical Control Point (HACCP) should improve the quality of ice cream.

P 28

Bisphenol A Analysis in Food Contact Plastic Materials and Resins

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Bisphenol A is a monomer used in production of food contact materials. Bisphenol A, chemical name 2,2-bis(4-hydroxyphenyl)propane, used in production of polycarbonate and epoxy resins. In this study, the usage of Bisphenol A, its harmful effects and analysis methods were evaluated.

The Analysis were performed for packaging materials including polycarbonate and epoxy resin material. Bisphenol A analysis is based on following principles: First, food contact material is faced with related food simulant for a defined period and temperature then migrant is injected to the HPLC-FLD to determine the quantitative amount. Analysis conditions are defined in Turkish Food Codex, Basic Rules for migration test of food contact materials directive (2005/34) or on plastic materials and articles intended to come into contact with food (Commission Regulation EU 10/2011)

This reference methods can use for analysis ; TS CEN/TS 13130-13 or TS EN 14350-2

Bisphenol A is banned in all EC Countries and Turkey for baby food products because of its negative effects in hormonal system. Beside this, it has been investigated for usage in other products. In the EFSA ve WHO reports carcinogenic and hormonal system disruptive effects are stated as a risk. As a result of a research completed in September 2011; BPA presents in polycarbonate (PC) bottles (19 L), even if they were kept at 35 C for 60 days, migrates to water 1/200 of the limit stated in the International Standards. In order to get a dangerous level of BPA intake at the detected migration level, a person should consume 60PC bottles/day of water. For babies it is defined as 6 PC bottles/day of water.

Bisphenol A has carcinogenic, mutagenic and negative effect on immune system. As a results of these studies, damages and levels of Bisphenol A migration from plastic products to food have stil been discussed.

P 29

Pork DNA Detecting by Real Time PCR in Gelatin Samples

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In this study, the target is detection of pork DNA by Real Time PCR after DNA extraction from gelatin samples (used for food) and defining the limit of detection. Commercially available kits were used in DNA extraction and Real Time-PCR screening assays.

DNA extraction from bovine and pork gelatin samples was performed by Sure Food@Prep Animal X kit. The quantity of DNA obtained after extraction was measured with NanoDrop device. 5µL of DNA isolates, certain amount the master mix, and Taq DNA polymerase (Sure Food Animal ID Pork SENS ® Plus V kit) were homogenized in accordance with the kit procedure and then amplified by Real Time PCR instrument. In each study, extraction control, negative template control and positive control were used. Verification studies were carried out with 2 different staff in different days with 10 parallel analysis.

In addition to this, 1% pork gelatin was added to pork gelatin free bovine gelatin and above process was performed in order to define the limit of detection.

After extraction, DNA amount was measured as 96.12 ng / mL for bovine gelatin, 57.72 ng / mL for pork gelatin. During the study, no contamination and no inhibition were observed for extraction control, negative template control and positive control. Pork DNA was not detected in bovine gelatin. The ct values of pork gelatin and 1% pork gelatin were 33-40 and 35-40 respectively.

Pork DNA detection in high processed food samples like gelatin can be performed reliably by appropriate DNA extraction protocol, Real Time PCR method and verification studies.

P 30

Findings of Higly Contaminated Butter and Butter Wrappings with PBDE

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Polybrominated diphenylethers (PBDEs) are widely used as flame retardants in polymer materials, textiles, electronic boards and various other materials. Technical PBDE preparations are produced as mixtures of mainly Pentabromo-, Octabromo- or Decabromo- diphenyl ethers. For a number of BDE congeners bioaccumulation has been observed.

As part of a series of market basket surveys of U.S. food 10 (ten) butter samples were collected from Dallas supermarkets during 2008-2009. They were first combined (pooled) and one analysis was conducted.

Surprisingly high level of Deca BDE (BDE 209) was detected in the analysis of the pooled sample at 5.2 ng/g fat. Normal values for butter were found to be < 0.1 ng BDE 209 / g fat. Individual analyses were performed for each of ten single butter samples. One sample only was found to be highly contaminated with the Decabromo congener at 37.6 ng/g fat and accounted for the elevated level found in the pooled sample. The paper wrapping was then analysed to determine if the contamination was from the paper or the butter itself. The paper was found to have higher levels of Nona- and Deca- BDE (BDEs 207, 208 and 209) than the butter itself. BDE 209 was found at a concentration of 614 ng /g wrapping paper. For this reason it was felt unlikely that the dairy cattle and milk were contaminated.

The manufacturer of butter was notified and an investigation was undertaken to determine how this paper was contaminated. Since a second butter samples from the same manufacturer was not contaminated, the specific paper used at the plant where contamination was present showed a high contamination.

Clearly, the very high levels should be reduced for the protection of consumers. To date, this information has not been generally known so there has been no health problems documented from this contamination.

P 31

Reliability in terms of methanol of alcoholic beverages On Muş Province

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In our study, we investigated the reliability of alcoholic beverages offered for sale on Muş Province. Therefore samples taken within 3 years were analyzed in different alcoholic beverages. Methanol is a substance in colorless, odorless liquid form at room temperature. Alone Methanol does not have toxic effects, formaldehyde and formic acid to be metabolites must occur toxic effects in methanol. As illegal Prepared and released alcoholic beverages containing methyl alcohol, a very important part of methyl alcohol poisoning is constitutes on our country. Although It is taken on the studies an effective medical treatment of intoxication, the mortality rate of 20% on methyl alcohol poisoning were recorded, For this reason, methyl alcohol on alcoholic beverages were sought for Food Safety. According to a study, on alcoholic beverages

, detectable levels of alcoholic beverages (1 g / hl) were not found to methyl alcohol. According to these results in terms of methanol of alcoholic beverages offered for sale was concluded to be reliable on Muş Province.

P 32

Food Security On Meat and Meat Products

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On Production and consumption of meat and meat products the most important process is traceability. It is created the main condition can be preserved of food safety issues need to know, need to take measures Long a process Until the shape of consumption, consumption to food the consumer's, beginning from the slaughterhouse On Meat and meat products. It is formed the basis prerequisite programs' for food safety to hygiene, sanitation manufacturing plant's on Meat and meat products. For this reason, it is formed food security's basis take measures accordingly and knows to the possible physical, chemical and microbiological hazards on production, storage and consumption stages. in order to minimize risks' can be occur in foods, energy consumption's and quality losses' manufacturers' traditional heat treatment methods should be used alone or in combination an alternative as such ads of new technologies ultrasound, high-pressure applications and concluded consumers' that informed about how the products should be maintained and it is concluded that should be informed of consumers about how preserved and consumption to foods.

P 33

Migration of Contaminants from From Food-Contact Paper and Board Based Packaging Materials to Foods and Production of Safe Packaging Materials

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Recent years, due to its crucial importance for human health, it gets great interest to contaminants migrating from food contacting board or paper based materials into foods. Therefore it became very important to produce safe packaging materials which causing less amount of migrant into foods by improving the process. In cardboard based packing materials, benzophenone (BP) which is used as a photoinitiator in print inks, is migrated from inks is migrated to food.

On February 3rd in 2009, RASFF (Rapid Alert System for Food and Feed of the European Commision) indicate that 4-methyl benzophenone and benzophenone migration was determined in the packing materials of grains produced in Belgium. There is no specific regulation related to benzophenone migration from print inks used on cardboard based packing materials in European Union. However, for plastic packaging materials, EFSA indicated total migration limitation of BP and 4-MBP from ink, as 0.6 mg/kg in 2009.

Companies have to obligate to related Directives about substances and additives used in cardboard raw material for cardboard based packing material production. Although, there is not any legal obligations or regulations for migrant limitations for cardboard based packing materials in Turkey, Turkish companies that export their goods have to obey legal obligations because it is a must in European Union and exported goods that fit legal limitations (BP and 4 MBP total limit: 0.6 mg/kg) especially for ink migrants. In this review, using paper and cardboard based packing materials as primary and secondary packing materials, contaminants migrate to foods, regarding regulatory aspects and health effects will be mentioned and rules to produce safe packing materials process will be summarized.

P 34

Determination of Migration of Bisphenol A and It's Derivatives From Plastic Packing Materials During the Storage of Extra Virgin Olive Oil by Using HPLC-MS-MS

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The studies involving materials which, migrates to the food from the packaging materials are of great importance to the human health and food safety. Migration is defined as the mass transfer that results due to interaction between food stuff and packing material. In this study, the main purpose is the quantitative determination of migration of Bisphenol-A(BPA) and Bisphenol-Diglycidyl-ether(BADGE) into olive oil from its packing material at different storage conditions.

In this study, olive oil produced from the olives harvested at the same year (2011) were put in plastic bottles right after extraction process, and stored under ambient temperature for 90 days and the analysis of the migrant in the oil samples were achieved at the end of the 30,60 and 90th days of storage. Moreover, commercially produced extra virgin olive oils were analysed as control. Another part of the study includes the investigating of the effects of time and temperature on BPA and BADGE migration from packing material to oil was analyzed by using accelerated shelf-life tests (40°C-10 days, 70°C-2 h and 100°C-1 h).

In this study, ultra-fast-liquid chromatography (UFLC) coupled with mass spectrometry method was used. According to Turkish Food Codex, the total limit of migration for BADGE and derivatives is declared as 9 mg/kg(Communiqué-no:2005:32) and 0,6 mg/kg for BPA(Communiqué-no:2011/29). In this study, migration of BPA and BADGE from plastic packing material for different storage time and temperature was also determined. In this study, it was observed that specific migration amounts for BPA and BADGE found in olive oils stored in plastic packaging materials were increased depending on the increasing in time and temperature of storage.

P 35

Evaluation of heat treated sucuk-like product from the view of food safety

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Sucuk, a kind of fermented sausage, is a product that is preserved by fermentation and drying/ripening. Heat treatment has also been included in the manufacturing process, especially in recent years. These products, which are manufactured by fermentation-heat treatment-drying, are released under the name of "heat treated sucuk-like product". Heat treatment is applied in many plants with a lack of sufficient acidification during the fermentation stage. Different combinations of temperature-time are applied without considering foodborne pathogen bacteria such as *Listeria monocytogenes*, *Escherichia coli* O157:H7, *Staphylococcus aureus* and *Salmonella* in application of heat treatment. After heat treatment, the product is packed without drying and released. This type of products are quite risky microbiologically, because of their high values of pH and water activity. Therefore, these products should be re-evaluated by extensive research within the perspective of food safety, taking into account raw materials, production process, final product and storage conditions. In the present study, studies on heat treated sucuk-like products up-to-date have been investigated, and factors such as pH, water activity, pathogen bacteria, fermentation temperature, quality of raw material, storage conditions and curing agent have been discussed in detail in order to provide a reference to the possible studies in the future.

P 36

Of the standard, ISO 22000 Food Establishment; Food Safety Investigation of the Effectiveness

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ISO 22000 Food Safety Management System, enterprises engaged in food production has to show significant progress. However, the standard accepted practice throughout the world co molarak wrong applications arise. 10 implements the ISO 22000 system Bilecik province and around the business were examined. These businesses; 3 meals out of business, 2 pieces of frozen food business, two business units that sell fast food style, 1 liquor factory, and 1 out of 1 cake refrigerated meat integrated plant in producing enterprises. In general, all enterprises, inadequate procedures applied in emergency situations and other maddelerdede recall insufficient applications have been identified to occur. In addition, the system controls accredited companies omissions were identified.

P 37

Application Under FMEA ISO 22000

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Industrialization in our country with the world and the importance given to food safety has increased, in this context to ensure food security and to facilitate continuous improvement in organizations formed a separate standard, ISO 22000 Food Safety Management System. This risk management system must determine the most important pillar. There are many methods of risk analysis. Failure Modes and Effects Analysis (FMEA-FMEA Failure Mode and Effect Analysis) defects in the system, without causing an accident hazards identification and improvement of a method to provide a top priority than the beginning, as well as other risk analyzes of accidents in different pre- discernible that there also. In this study, conducted in various parts of risk management in a food factory in Bilecik, which will be used for the first time in the field of Food Safety REALIZATION OF FMEA method is discussed. Example application consists of improvements to the food security.

P 38

Food Safety Management System Approach In Our Country

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Although food safety management system concept has been receiving more interest in recent years, it is not yet sufficient. Considering firms are usually meeting food safety management systems due to customer demands, importance of the sector and insufficiency of our country at this aspect can be seen.

To settle the consciousness that food safety management system certifications; BRC, IFS, ISO 22000:2005 are essential to provide food safety rather than a commercial obligation to hang on the walls, more effort must be made.

The source of FSMS certification BRC is British and IFS is German, French and Italian. But besides food safety, the commercial dimension of this must not be ignored. Although we don't have our own standard as a country this does not mean we do not give importance to food safety, but considering commercial dimension of the process having a standard peculiar to Turkey that emphasizes our regard to the subject and provides prestige, will raise our right to speak.

In our country there are a number of certification agencies. Many factors such as customer demands, price, prestige and prevalence affect the preference of these agencies which provide both national and international accreditation services.

Consumers want to know that the product is controlled at every step from farm to fork and this system is carried out by

specialized staff in order to consume the product with peace of mind. But at the demand and supply market the fact that producers want the certificates just for its name, makes it difficult for certification bodies and causes inability to give importance that food safety deserves. Because of this reason, setting the food safety consciousness may become easier by a local standard and local authority.

As a consequence having a standard, in the name of having right to speak and making our name be heard more as a country in this global world in the area of certification, will make our companies more deliberative and will raise our prestige as a country.

P 39

Development and validation of an HPLC-FLD method for rapid determination of histamine in fishes

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Sea foods have high nutritional value since they contain comparatively high levels of proteins and other nitrogenous compounds. This case makes the sea foods quite susceptible to the microbial spoilage. Biogenic amines such as mainly histamine, putresine, cadaverine and agmatine are produced by bacterial decarboxylation of amino acids. Some studies have reported that histamine content increases with the progress of fish decomposition at processing plants or even immediately after catching. Therefore, the presence of histamine is of great importance when evaluating food toxicity; it has also been proposed as an indicator of hygienic quality.

Several methods to determine histamine levels in food have been developed in recent decades. These methods used most frequently, with high sensitivity and linearity due to the high-pressure liquid chromatography. HPLC methods use a pre-column or post-column derivatization step to facilitate detection, since the majority of biogenic amines do not possess chromophoric or fluorophoric moieties. A number of reagents can be used for histamine derivatization. Dansyl chloride, fluorescamine, benzoyl chloride, and o-phthalaldehyde (OPA) are the four derivatization reagents most frequently used by various researchers for histamine determination. The advantage of OPA from the others is that it reacts quickly with biogenic amines. This study of histamine in fish samples for the determination of the HPLC-FLD device validation studies have been carried out as a result of the rapid, sensitive and reproducible method of analysis has been developed.

P 40

Microbiological Quality of Poultry Meat

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The purpose of this study was to determine the microbiological quality of the packaged poultry and poultry products which offered for sale. In this study 62 samples of packaged poultry and poultry products were used. The number of aerobic mesophilic bacteria, Staphylococcus aureus, Listeria monocytogenes, E. coli O157: H7 and Salmonella spp. were analysed using standard methods. The samples were analyzed between June and November of 2011. Microbiological quality of poultry and poultry products were examined and evaluated according to the Turkish Food Codex Communiqué on Microbiological Criteria (Communiqué No: 2009/6 E. coli O157: H7 and Staphylococcus aureus were not detected in all of the 62 samples but 14 out of 62 samples were found to be contaminated with Salmonella spp and 7 out of 62 samples were found to be contaminated with Listeria monocytogenes When results were evaluated, it was found that the aerobic mesophilic bacteria number was exceeding the limit values in 4 out of the 62 samples. The presence of Salmonella spp. and Listeria monocytogenes in the poultry and poultry products indicates that the animals either were not raised hygienically or were not

slaughtered under appropriate conditions. When consumed without properly cooked (core temperature reaching 72 °C for 10 minutes), the foods which contaminated with these pathogenic bacteria, may present threat to human health. In order to prevent this, microbiological control mechanism has to be implemented in every stage of the production process from farm to fork, cold chain has to be maintained during the storage and transportation and the consumer awareness activities must be increased to prevent cross-contamination.

P 41

Effect of Ultrasound Application for Enzyme Inactivation in the Food Industry

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Today many foods are subjected to heat treatment in order to maintain food safety. In this way, the activity of microorganisms and enzymes is controlled. Although, heat treatment is very effective for the inactivation of microorganisms and enzyme; especially high temperature heat treatments have adverse effects on nutritional and sensory properties of foods. High temperature results with the negative effects in foods such as the loss of volatile taste-odor compounds, vitamins and other nutrients, texture abnormalities and off-flavor formation. In recent years, non-thermal preservation techniques have been used as an alternative to conventional methods. Use of non-thermal preservation techniques has gained importance in the food industry for the production of higher quality food. In recent years, ultrasound is one of the popular non-thermal preservation techniques. For enzyme inactivation in food processing low-frequency (20-100 kHz) and high-power ultrasound (ultrasound power) is used. The use of ultrasound alone is not sufficient for inactivation of the enzymes, and combining ultrasound with temperature and / or pressure treatments increase its effect. Small bubbles consist when the ultrasonic sound waves are applied to liquid. These micro bubbles will collapse violently when they reach a certain volume because they are unable to absorb more energy. This phenomenon is known as cavitation. With the explosion of these bubbles, sudden changes occur in the heat (5000K) and pressure (50MPa). The resulting high temperature and pressure are effective in inactivation. Another mechanism that causes inactivation is free radical formation. H + and OH- radicals are formed as a result of sonolysis of water during ultrasound. The resulting free radicals lead to denaturation of the enzyme and as a result inactivation occurs. Ultrasound alone or in combination with heat and /or pressure application is reported to be effective against various food enzymes such as lipoxigenase, pectin methylesterase, peroxidase, and polyphenol oxidase.

P 42

The Tea and Effects on Human Health

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Tea is a member of Camellia genus which grows at tropical and rainy climates. World's largest tea producers are India, China, Sri Lanka, Kenya, Indonesia, Turkey and Japan respectively. According to FAO 2008 statistics, tea production fields are 2.806.443 hectares and annual tea production is 3.749.780 tones. Our country is 7th according to tea production field area, 5th according to processed tea production, and 4th according to annual tea consumption per person, among other producers worldwide. "Black tea" is obtained by slightly grounding the freshly collected tea leaves and letting them to be oxidized and turn black.

The most important property of tea is that it is absolutely natural and does not contain any additives. Unprocessed tea contains carbohydrates, sugar, starch, pectin, pentosans, raw fibers, protein, lipid, polyphenol and caffeine. The polyphenols in tea act as anti-carcinogens by reducing and decreasing active forms of carcinogens and other toxic materials with their powerful anti-oxidant activities. Negative effect of the polyphenols is reducing the digestibility of foods by inhibiting the digestion enzymes. Caffeine in tea effects heart and circulatory system, taste and smell senses, brain activity and digestion system in a positive way.

The increase of radiation levels in tea after the Chernobyl disaster is the first issue comes to mind when effect of tea on health are discussed. A harmless limit was identified by Turkish Atomic Energy Institution and European Economic Community and teas were sorted according to their radioactivity and stored. In a study carried out in 2011, 29 black tea samples and one green tea sample were collected from Turkish market and analyzed by gamma spectrophotometer. Although the results showed that radiation levels were below the identified limit, they were still higher than normal.

Humans are consistently exposed to radiation and it is known that high levels of exposure cause cancer. Radiation can cause thyroid cancer, leukemia, lung cancer, bone cancer, childhood cancers and sterility.

P 43

Importance Of Some Preservation Methods For Food Safety

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Foods can stored with safety for long time without carrying any risk when foods that have quality raw materials stored in suitable conditions. The aim of food preservation methods; preventing or stopping the microbial activity. By the preserving of foods, either spoilage can be avoided or nutritional value can be prevented, physical and sensorial losses can be minimized. Some methods are developed for this aim. Low temperature preservation, high temperature preservation and stored in modified atmosphere are some of preservation methods. While these methods preventing adverse changes in foods, they can minimize the enzymatic and oxidative reactions and help protect the food in a safe way.

P 44

Consumers' Food Safety Perceptions in Istanbul Province

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In this study, it was aimed to determine the levels of information and risk perception of consumers' in Istanbul about food products and to determine the factors affecting "consumers' perceptions of safe food. Furthermore, it was intended to introduce consumers' perceptions and attitudes towards safe food in terms of demographic differences.

For this purpose, a 21-question survey was administered to 415 people in 2011. First eight questions of the survey consisted of the questions asked to determine demographic characteristics; subsequent questions were related to the determination of food safety for consumers and for the known existing applications and developments (the last three questions) in our country. According to the results of the survey, "taste" was the word came to consumers' 'mind first' with a total of 26%, when asked about food. At most, consumer concerns about food poisoning have emerged and among consumer's corn and soybeans,

genetically modified organisms (GMOs) were expressed as the most worried products. 41% of consumers participating in the study answered the most trusting source for food-related matters as "scientists / universities", "avoid running out of time" was the answer when they hear about news on unsafe food from media. It was found that up to 17% of consumers, "expiry date" was important during food shopping. Among consumers, although concerned about GMOs were ranked in the first five in terms of rate of 11%, "Biosafety Act," was the least known application with a rate of 5%. Survey respondents of 53% believes that there are developments in the production of safe food in the last 10 years in our country, 69% of the respondents have the opinion that insufficient measures are being taken in relation to safe food production by official authorities. It was thought that, this study is an important work in determining consumers' perceptions of food safety particularly in the province of Istanbul under the age of forty and the results obtained could be useful to public authorities and the private sector in the perception and improvement of food safety.

P 45

The Use of Dry Ice Technique in Cleaning and Disinfecting of Poultry Slaughter House

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Cleaning and disinfecting has an important role in hygienic production of meat and meat products as the all food staffs. In meat industry, cleaning and disinfection operations continued and concluded in successive stages has an essential importance for the hygienic production. A variety of methods have been applied for cleaning and disinfecting food processing surfaces and equipment. In addition to traditional cleaning and disinfection methods, the implementation of a limited number of food industry equipment and surface cleaning with dry ice is available on applications of a technique. Dry ice technique has been used in cleaning and disinfection of the equipment that come into contact with food products and it has been also used for transporting of products under the cold chain. It has a distinct advantage over conventional cleaning and disinfecting techniques in that there are no residues and no wastes on surface cleaned. In this study; before and after the treatment of dry ice, total five swab samples which were taken from surfaces between the two plucking robot and cylinders output of the chiller boiler, packaging board, knife and staff hands along the line of cutting and shredding in two different time were analyzed for the microbiological characteristics of total mesophile aerobic bacteria (TMAB), yeast and mold. According to the obtained results, in swab samples which were taken from surfaces, knife and staff hands after the treatment, a decrease of 2-3 logarithmic units was determined in total mesophile aerobic bacteria, mold and yeast counts. As a result of this study, it was concluded that the technique of dry ice as a decontamination technique can be use safely for meat industry.

P 46

Investigating the Antioxidant Potential of Pollen Samples Collected From Istanbul

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Pollen collected by honeybees is an apicultural product which is composed of nutritionally valuable substances and contains significantly high amounts of polyphenolic compounds, mainly flavonoids. As a healthy apicultural product, bee pollen is considered to be a first-rate reservoir of antioxidants. Pollen has anticarcinogenic and therapeutic properties including antioxidant and antibiotic activities.

The main objective of this study was to investigate the total phenolic, total flavonoid contents, and antioxidant activities as well as phenolic profile of 29 pollen samples collected from Istanbul, Turkey.

In order to evaluate the antioxidant capacity of pollen samples, 2,2-azino-bis (3 ethylbenzothiazoline)-6-sulfonic acid (ABTS), 1,1-diphenyl-2-picrylhydrazil (DPPH), ferric reducing antioxidant power (FRAP) and copper reducing antioxidant capacity

(CUPRAC) assays were performed. Total phenolic and total flavonoid contents were measured by spectrophotometric methods. Phenolic profile of pollen samples was also determined using HPLC system coupled with PDA detector. The results indicated that the total flavonoid contents of all pollen samples were high, ranging between 13,2-69,4 mg QE/g. Similarly, the total phenolic content of pollen samples were found to be in between 9,3-49,9 mg PC/g. According to the antioxidant capacity assays the highest values were obtained by the CUPRAC method. The highest antioxidant capacity was determined as 89,4 mg TEAC/g within all antioxidant capacity tests. In the study, the phenolic profile of all samples was also evaluated and the results indicated the presence of gallic acid, quercetin, kaempferol, galangine, pinocembrin, naringenin, hesperidine, chrysin ve luteolin in pollen samples.

May 4th, 2012, 2. Day (POSTER PRESENTATIONS)

P 47

Staphylococcal Enterotoxins

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Staphylococcal enterotoxins are synthesized when enterotoxinogenic staphylococcus reach the number $\geq 10^6$ kob/ g and they cause intoxication in food. The objective is to give information about staphylococcal enterotoxins and the method of their detection.

VIDAS® Staph enterotoxin II, automated VIDAS® system, based on ELFA method (Enzyme Linked Fluorescein Test) is an enzyme immune-test which is used to specifically detect staphylococcal enterotoxin.

25 g/mL food sample is weighed into 25mL extraction buffer, food sample is homogenized and incubated for 15 min. at room temperature. Afterwards, the mix is centrifuged for 15 min (3000-5000 rpm). Supernatant is extracted with injection syringe that contains wet cotton. The pH value of filtrate is adjusted to 7.5-8.0. Then 0.5 mL of filtrate is taken and placed into the VIDAS SET2 reagent test kit sample cell and is put on device.

In our microbiology laboratory, 30 positive results (11.6%) have been found out in 257 different samples as a result of the food analysis with VIDAS® Staph enterotoxin II ELFA since 2003. Results of analysis show that samples of uncooked meat products contain high risk. Turkish Food Codex Microbiological Criteria Regulation (dated 29 December 2011) forbids the existence of staphylococcal enterotoxin in food.

Detecting of staphylococcal enterotoxins in food is important in terms of food safety and consumer health. The precision of AOAC approved VIDAS® Staph enterotoxin II ELFA technique is 100% and the limit of detection is 0.25ng/g. As being an accurate and reliable technique, this method can be used in detection of Staphylococcal enterotoxins in food , to obtain quick results by easy application in our laboratories.

P 48

Chemical and Rheological Properties of Yoghurt Produced by Lactic Acid Cultures Isolated from Traditional Turkish Yoghurt

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Yoghurt is a fermented product from milk by bacterial fermentation. Starter cultures are acid-producing microorganisms that are used in production of dairy products. These use lactose to produce lactic acid, carbon dioxide, diacetyl, acetaldehyde and several other components that give characteristics to the products. In yoghurt production, generally two bacterial species are *Lactobacillus delbrueckii* spp. *bulgaricus* and *Streptococcus thermophilus*. The quality of yoghurt varies greatly with chemical

composition of yoghurt milk and microbiology of starter culture. Yoghurt milk is standardized according to the desired final product with respect to fat and total solid content. Starter cultures are available in generally three forms, namely, lyophilized (freeze-dried), frozen or spray-dried form. Commercial starter cultures are supplied from foreign countries with high costs. In Turkey, starter culture production is not an emerging market. The aim of this study is to determine the yoghurt production properties of these lactic cultures isolated from traditional Turkish yoghurts. Yoghurts were produced by using these different culture mixtures and analyzed. The conducted analyses were pH and titratable acidity determination during storage, serum separation, texture analysis, exopolysaccharide production, acetaldehyde determination and sensory analysis. After all these analysis, the most appropriate culture mixtures will be selected and prepared as freeze-dried cultures.

P 49

Virus Originated Food Poisonings

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Viral infections make up perhaps one third of cases of food poisoning in developed countries. In the US, more than 50% of cases are viral and noroviruses are the most common food borne illness, causing 57% of outbreaks in 2004. Most common food-borne viruses are Norovirus, Rotavirus, Hepatitis A Virus and Hepatitis E Virus. Norovirus and Hepatitis A virus are currently recognized as the most important human food borne pathogens with regard to the number of outbreaks and people affected in the Western world. Food borne viral infections are usually of 1-3 days incubation period. Viruses cause measles, mumps, yellow fever, poliomyelitis, influenza, gastroenteritis and common cold. All food borne viruses originate from the human intestine and contamination of food occurs either by contamination from an infected food handler during preparation or by contact with sewage, sewage sludge or polluted water. Control measures of virus oriented food borne mainly depend on staff education and good hygiene practices. The use of clean water for irrigation of crops that are likely to be eaten raw and cultivation of shellfish in sewage-free seawater are also essential to prevent viral contamination of food. The aims of this report are present the properties of the most important food borne virus groups, contamination routes, number of outbreaks and control measurements by using the present existing knowledge.

P 50

Histamine (Scombroid) Poisoning Caused by the Consumption of Seafoods

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Histamine poisoning (HP) is the result of decarboxilation of free histidine to histamine in scombroid fish species (mackerel, tuna fish, bonito) and some other type of fish (herring, sardine, anchovy). The reaction is catalysed by some bacteria that have histidine decarboxylase enzyme namely, *Clostridium*, *Vibrio*, *Photobacterium* and *Lactobacillus*. The members of Enterobacteriaceae family, play the most significant role on production of biogenic amines (BA) in seafoods. Furthermore, all strains of *Morganella morganii*, some strains of *Klebsiella pneumoniae* and *Lactobacillus buchneri* have this enzyme. Although histamine alone is used as quality index in some fish species, generally Biogenic Amine Index (BAI) takes place as quality indicator. The primary symptoms of HP connected to quality loss are, cutaneous (hives, edema, local inflammation, rash),

gastrointestinal (nausea, vomit, diarrhea), hemodynamic (hypotension) and neurologic (mouth inflammation, fatication, blushing, and perspiration, irritation, swelling). Acute complications such as cardiac palpitations are rare. Other BA are potentiators of histamine toxicity. BA are considerably stable against to heat. Once produced, it is difficult to damage even they have autoclaved. In accordance with American Food and Drug Administration 20 mg histamine /100 g of flesh is indicated the spoilage and 50 mg/100 g is toxic dose in tuna fish. Diamine oxydase (DAO) and histamine N-methyltransferase (HMT) are naturally present in the intestinal tract of human and damage the structure of histamine thus, the effects are weaker in low quantity. Typically, mesophilic bacteria take majority in production of histamine hence, high levels of histamine is observed at high temperatures (15 - 20°C). However, the levels of histamine could be reached toxic levels at lower temperatures (5°C). Thus, chilling with ice after catching, prevent from histamine formation. Refrigerated sea water should be used in high fishing efficiency species (i.e anchovy) instead of ice and captured fish should be chilled as rapidly as possible.

P 51

Importance of *E.coli* O157:H7 Serotype In Terms of Seaf oods

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The major properties of microorganisms that make them important in foods are to spoilage. The existed microorganisms in the natural microflora of foods can be eliminated by cooking, pH fluctuations and processing. These microorganisms do not threat the public health untill the counts reached certain numbers which has been determined by international comission. Furthermore, pathogens are playing role as indicators in foods and applications are generally taking place in food safety issues as presence/apsence tests instead of the limit values. The serotype of *E.coli* O157:H7 is the most important type among *E.coli* types that rapidly outspreaded in Europe causes hemolytic uremic syndrome (HUS) and hemorrhagic colitis (HC). This strains of the mentioned bacteria produce verotoxins that inhibits the ribosomal activity of the cell. These toxins also causes the serious damages on the intestine wall, gave the same characteristic with *Shigella dysenteriae* and produced many. Disease may emerge with abdominal pains and diarrhea. Researchers are trying to find a way to inhibit this bacteria after it has outspread across the Europe. The strain of *E.coli* O157:H7 can be destroyed at temperature higher than 75°C. Researchers claimed that the elimination of *E.coli* in fruit juice and other foods is possible depends on the density of essential medical plants oil. From the view of seafoods point, researchers emphasize that the contamination is possible from the water and also cross-contamination when evaluated in terms of seafoods. Cross-contamination has great importance in the seafood plants where the highest hygienic conditions should be applied. Beside, detailed investigations should be held for the specific inhibition of *E.coli* O157:H7.

P 52

The Importance of Probiotic Culture Use About Production of Biogenic Amine in Fermented Sausages

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Biogenic amines are components that are naturally present in many foods and formed by decarboxylases activity of microorganisms. Biogenic amines can present a health hazard because of the direct toxic effect and have a role as indicators

of quality and/or acceptability in foods. Fermented sausage is foods in which biogenic amines were frequently found. Cultures that are used in fermented sausage and found in natural microflora have effect on production of biogenic amine (especially tyramine, 2-phenylethylamine, tryptamine, cadaverine, putrescine and histamine). So far, some strategies to reduce biogenic amine accumulation have been mentioned in most of studies about fermented sausages and at the beginning of these strategies there are use of decarboxylase (-) starter culture or starter culture with low decarboxylase activity and/or use of probiotic cultures. In studies investigating the production of biogenic amines in fermented sausages, it was mostly based on probiotic cultures such as *L. rhamnosus*, *L. plantarum*, *L. acidophilus*, *L. fermentum* and *L. reuteri* and *L. casei* and it was reported that production of biogenic amine changed according to used culture. As can be seen, product won functional characteristics with use of these probiotics in fermented sausages; on the other hand safer food product was obtained by preventing biogenic amine formation.

In this review, it was based on the importance of probiotic culture use about production of biogenic amine in fermented sausage.

P 53

Changing the physical-chemical and microbiological parameters at the traditional Sharri cheese

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The purpose of this paper is to evaluate safety aspect of Sharri cheese by analyzing some microbiological parameters. This type of cheese is produced from unpasteurized sheep's milk. This form of production is a centuries old tradition for farmers of the Sharri mountains. Therefore the microbiological study is especially important for the manufactures, consumers, and the relevant institutions of control, having in mind that in the Republic of Macedonia in the current rules, are not allowed products from unpasteurized milk, but this product is present in the markets due to its long-term tradition and characteristic taste. From these reasons the present study was undertaken. The cheese samples produced under the traditional conditions from sheep's milk were collected two weeks after production. The cheeses were matured for a period of two months and at every two weeks samples were analyzed to monitor the physico-chemical and microbiological changes. Physico-chemical analysis employed were: pH, acidity, %NaCl in the cheese, pH and %NaCl of brine, aw, % H and T °C of the environment storage. Microbiological studies covered the counts of aerobic mesophilic bacteria, *Staphylococcus coagulans* positive.

P 54

GMO Screening of Souce Corn Chips Samples by Real-Time PCR

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Genetic modifications in agricultural products are aimed to enhance the robustness, yield, quality and to extend shelf life. Genetical modifications are carried out in agricultural products such as maize, soy bean, sugar beet, potatoes, tomatoes, rice and canola. Maize is one of the most commonly cultivated transgenic plants around the world. The use of maize as ingredient in many food and food additives increases importance of GMO analysis for public health. GMO analysis have to be performed

in import of food and feed according to legislation called "Import, process, export, control and inspect of organisms and products in which genetic structure has been changed food and feed purpose" which came into effect on date 26.09.2009. GMO consumption effects on human and animal health are not known yet. However, it is expressed by some authors that its negative results may come out in following years. Today's, GMO analysis are performed by ELISA and/or Real-Time PCR methods. In this study, 10 source corn chips samples were obtained from local markets randomly for screening of GMO. Isolations of DNA from samples were performed by Qiagen Kit protocol. 35S promoter, NOS terminator and 34S promoter (FMV) were screened by Eurofins genescan multiplex kit protocol. 35S promoter was detected positive in three of the samples, 35S promoter and NOS terminator were detected positive in one of the samples, no GMO was detected in the rest of the samples. Ministry of Food Agriculture and Livestock is the only authority at the import of food and feed in Turkey and GMO screening analysis are performed in Ministry laboratories.

P 55

Natamycin and Use of Dairy Technology

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Foods are convenient media because of food nutrients for proliferation of microorganisms. The application of preservatives in milk products is one of the methods for prevention of microbial growth. Contamination of milk products by mold and yeast due to production of milk products in unsanitary conditions is a serious problem in our country. Antimicrobials and antifungals such as natamycin, sorbate, benzoate are widely used for prevention mold and yeast growth, their toxins and for extending products' shelf life. However, these substances may have some risks on human health. Using of these preservatives are restricted in Turkey like many other country. According to legislation these substances will be not be present 5 mm depth in the surface applications of hard cheese, semi-hard cheese, semi-smooth cheese and dried sausages. They are allowed to be using of 1 mg/dm² level. In this study, natamycin analysis were performed by HPLC in 35 different milk products consumed mostly such as white cheese, yogurt and yogurt containing fruit. Natamycin was detected in 4 of 15 white cheese samples in the outer surface, 2 of 15 white samples both inner and outer surface, 9 of 15 yogurt samples, 2 of 5 yogurt containing fruit samples.

P 56

Melamine Analysis Methods in Foods

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Melamine (C₃H₆N₆) is a white coloured powdered organic material is used in the production of rigid plastics. In addition to plastic materials, melamine is widely used in the production of adhesive, worktable, plate, white board. Melamine is detected in wheat and rice protein concentrate products imported from China to be used producing cat and dog feed, at the end of the investigation on suddenly death of cats and dogs due to kidney failure in 2007. It is founded that melamine is added to infant food, yogurt, ice cream, milky chocolate, powdered coffee, milk and milk powder in the analysis performed after this case. As Kjeldahl and Dumas tests gives protein level by measuring nitrogen content and melamin contains high level protein, protein value is obtained at high levels in these food samples. In these products, high level of protein is a desired situation and by adding melamine high protein levels are obtained by cheaply. Melamine is not a food additive. It is a synthetic and toxic material used for preventing nitrogen deficiency. Four children were died and many children was ill who eaten infant food

containing melamine in China. Addition of melamine to food is not approved by Food and Agriculture Organization (FAO) and World Health Organization (WHO). It was detected that migration of melamine from plate and packaging materials to food at level of 1 ppm and migration of metabolite product of cyromaze used as insecticides. Food containing milk and milk product at level of 15% and more must be analysed before import and products of which melamine values exceed 2.5 mg/kg must be annihilated according to EC legislation 2008/757/EC. Gas Chromatography (GC), Gas Chromatography Mass Spectrometer (GC-MS), High Performance Liquid Chromatography (HPLC), High Performance Liquid Chromatography Mass Spectrometer (LC-MS/MS) methods are widely used for detection of melamine.

P 57

Food Safety Applications In Hotel Kitchens

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Applications of HACCP system became obligatory after 1996 and depending on this, necessary regulations were arranged in Turkish Food Legislation. Thereby, HACCP system became to be applied in the frame of “food safety management system” in our country since 1997. The progress in HACCP system primarily took place in production companies which have an export trade with Europa and America and then it was applied in national firms. Manufacturers of export products have always been the pioneers in the field of food safety. But until 2004, the audits were actualized by government department and city halls, the authority complex continued, so the companies other than export firms could improve slowly. The sense of food safety was accepted by hotels after food manufacturing companies. The major reason is that the main activities in hotels are accommodation and entertainment in addition to the absence of a quality assurance department which takes place in a food production company. The same department produces and controls the food and the kitchen staffs that do not have any professionalism related to food safety control the food that has already been prepared by them. Beginning from the 2000s, the importance of hygiene and food safety in hotels has increased quiet much with the expectations of tour operators and the aim of preventing both materialistic and incorporeal losses due to the food-borne illnesses and acute poisonings.

Today, food hygiene has become one of the most important issues for big hotels, especially for 5 and 4 star hotels. As soon as the understanding of food safety began to be worked as a management system, many national standards which had been prepared for this started to be applied in food production firms. This review deals with the required food safety standards and and hygiene practices for hotel kitchens.

P 58

The Creation of Food Safety Management System for Small Food Businesses: Adapting the UK’s “Safer Food Better Business” Approach

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According to the EU law (Regulation EC No. 852/2004 on the hygiene of foodstuffs) all food processing/manufacturing establishments have to have a HACCP based food safety management system in place. This system requires the food safety procedures to be written down and taking records of critical operations and processes. However, due to lack of technical

knowledge and resources, small food businesses especially, caterers are not able to meet the criteria. In order to help the small business to comply with EU law and keep their business' running legally, EU countries are providing help and support to small businesses. Turkey, trying to become an EU state, need to adapt its food safety law to EU standards and give necessary support to small businesses. The UK's "Safer Food Better Business (SFBB)" could set an example as a starting point.

United Kingdom Food Standards Institute conducted a campaign called "Safer Food Better Business" and delivered seminars throughout the country to explain the EU law to business owners and managers. A jargon-free generic HACCP based food safety management system pack (SFBB pack) was prepared and distributed to all catering businesses and food retailers. Then, the pack was introduced to the businesses by 2-3 hours one-to-one coaching sessions.

During the campaign, about 300 thousand SFBB pack were distributed to about 50 thousand catering establishments between the years 2006-2011. By this way, small food businesses were brought in line with EU law and the closure of the businesses were prevented. The campaign increased the food safety awareness and helped to raise the standards and quality in food businesses. It is also believed that the prevention of food borne diseases by increased food safety prevented major loss of financial resources.

It is important that we prevent the food borne diseases by implementing EU law and increase the food safety in small businesses in Turkey. UK's "Safer Food Better Business" campaign could set a good example as a starting point.

P 59

Antimicrobial Food Packaging

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Microbial growth occurs on the food surface is a major cause of food spoilage. Antimicrobial packaging is a promising alternative to direct application of antimicrobial substances to food surface. For this reason, in recent years, antimicrobial packaging has become one of the major areas of research in food safety. Conducted studies showed that antimicrobial packaging can help to reduce the microbial spoilage in foods and food safety risks related to food-borne pathogens. Concerns over the safety of some synthetic antimicrobial compounds used in food industry have prompted an increased interest in alternative natural antimicrobial compounds. Several naturally compounds can be used with packaging materials. Organic acids and their salts, enzymes, bacteriocins and plant-derived extracts are standing out among these naturally compounds because of their usage in foods are legal according to European Union directives. The loss of activity in bioactive substances may occur during the thermal polymer processing methods such as extrusion. This is the major limitation in the use of natural antimicrobial compounds in packaging industry. For heat-sensitive natural antimicrobials like volatile compounds use of biopolymer layer as carrier matrix in biopolymer coated synthetic films is an alternative approach for their use with synthetic polymers.

P 60

GMO Screening of canola samples by Real-Time PCR

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Genetic modifications in agricultural products are aimed to enhance the robustness, yield, quality and to extend shelf life. Genetical modifications are carried out in agricultural products such as maize, soy bean, sugar beet, potatoes, tomatoes, rice and canola. Canola is one of the most commonly cultivated transgenic plants around the world. GMO consumption effects on human and animal health are not known yet. However, it is expressed by some authors that its negative results may come out in following years. Today's, GMO analyses are performed by ELISA and/or Real-Time PCR methods. In this study, 10 canola samples were obtained from local markets randomly for screening of GMO. Isolations of DNA from canola samples were performed by Qiagen Mericon Food Kit protocol. 35S promoter, NOS terminator and 34S promoter (FMV) were screened by Eurofins GMO Screen RT (35S/NOS/FMV IPC) kit protocol. NOS terminator was detected positive in three of the samples; no GMO was detected in the rest of the samples.

P 61

Effect of washing with water, vinegar and commercial sanitizer on spinach microflora

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It's aimed to determine the effects of washing with water, vinegar and sanitizer on natural microflora of spinach.

Four groups have consisted of control (C), water, vinegar (S), and commercially available sanitizer (E). Samples from C were directly analyzed, while the others were washed for 2' under the tap water. Group S were hold at % 12 vinegar-water mixture for 3', group E were hold at % 12 sanitizer-water mixture for 3' and group water samples were hold in 2 liters water for 3'. After treatment the samples were examined for total aerob mesophilic bacteria (TAMB), Coliform and Escherichia coli. The Petri dishes were incubated at 30°C - 48 hours for TAMB, and at 37°C-24-48 hours for Coliform and E.coli.

Studies were carried out at 7 repetitions. Four out of seven studies of water, S and E had 1 logarithmic cycle reduction at TAMB. TAMB reductions of 2 log cycle by achieved with E and S. Remained 2 studies, water group had no effect, while S and E had 1 log cycle reduction at TAMB analyses.

Coliform were totally eliminated by using water, S and E at 6 out of 7 studies. Remained 1 study, coliform were eliminated with only sanitizer, while water and vinegar has lowered the counts.

E. coli has been detected at 1 out of 7 studies as 3,6 MPN/ml in C sample, and totally eliminated by using water, S and E.

Sanitizer, has been recognized as highly effective (99 %) on pesticides and microflora of foodstuffs at media. It has been performed at this research by means of sanitizer's effect on microbial flora, and founded no efficient difference effect from water and vinegar. Practices of washing with clean water and holding at water may provide reduction of microflora of spinach as much as sanitizer.

P 62

The application of edible films incorporated with essential oils against fungal growth in stored shelled hazelnut

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The notifications of European Union Rapid Alert System for Food and Feed reported that the number of "Rapid Alert" on

hazelnut and its products from Turkey was 65-74 cases in recent years. In the customs of European Union membership countries, the rejection of hazelnuts due to aflatoxin causes to the major economical losses, loss of confidence in exportation of Turkey, the decrease in the price of hazelnut and marketing problems. There are some studies for the detoxification of mycotoxin-contaminated food and feed such as physical allocation methods, microbial inactivation, fermentation, allocation with physical or microbial adhesion method, chemical methods, thermal inactivation and radiation methods. However, the consideration of applicable of these methods, recycling detoxification effect and convenience according to the products couldn't satisfy to the manufacturer and industrialist. There are a lot of searches on the inhibition of undesirable *Penicillium* and *Aspergillus* fungi species using with some plant extracts or essential oils. For this purpose, studies for the preservation of foods both reducing of chemical protective matters and the use and developing of bio-active films characterized by its antimicrobial and antifungal activities have been common increasingly. In general, some herbal products classified in Generally Recognized As Safe (GRAS) are recommended as an alternative to synthetic chemicals for fungal contamination. This presentation gives information about the edible film coating and the application of edible film coating incorporated with essential oils against mould growth in stored shelled hazelnut will be discussed.

P 63

Endanger Components for Food Safety and Determination

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Redo Analyzer Food Control and Analysis Laboratory

Requirement of food safety is the vitality subject for public health and food production. Chemical hazards in food and feed can be multiple and introduced at any point into the food and feed chain, including during production, processing, retail distribution, food preparation, and consumption.

In recent day, chemical hazards that have been threated food safety, include the presence of natural toxins (e.g., mycotoxins, plant toxins, bacterial toxins), residues of plant protection products, processing-produced toxins (e.g., aromatic amines, and furans), food allergens, heavy metals (e.g., lead, arsenic, mercury, cadmium), industrial chemicals (e.g., dioxins, perchlorate) in food and feed.

It will never be possible to completely exclude the possibility of hazards entering the agro-food chain. However, food safety is becoming a global issue for food industry, consumers and the authorities responsible for regulation because of threatening of public health.

No single discipline will be able to provide a definitive answer covering all the multifaceted matters. Hence, a multidisciplinary approach is needed to manage the complex challenges of food safety. Modern gas and liquid chromatography systems with mass spectrometer detectors, atomic ord inductively coupled plasma absorption systems and enzyme linked fluorescent immunoassay were responsible for progress in detecting, quantifying, and assessing the risk of food contaminants and adulterants.

Although considerable advances have been achieved over the past century in the understanding of the chemical hazards in food and ways for assessing and managing these risks, the contamination problem in food safety is still a major concern not only for developing countries but also for the industrialized world.

P 64

Ion Mobility Spectrometry and Its Applications in Food Residue Analysis

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Ion mobility spectrometry (IMS) is an ion separation technique used to separate ionized molecules in the gas phase based on their mobility in a carrier gas. Ion acceleration, along with permanent collisions between ions and gas molecules, leads to an average ion velocity over a certain path length. Ions of different mass or structure reach different velocities and get separated. There are four types of ion mobility spectrometry which are classified drift time, aspiration, differential and traveling wave. All of them are used with different types of mass spectrometers. The most important feature of the ion-mobility spectrometry method is the capability for gas-phase ion separation prior to mass spectrometry analysis (MS). It has improved selectivity and resolution power for mass spectrometry studies.

Significant time and effort are required for sample preparation in food residue analysis by mass spectrometry. IMS reduces time and effort in sample preparation steps. In addition, IMS/MS methods significantly reduce the background signal level and eliminate interference problems from liquid sample matrix. Sometimes, clean up steps in sample preparation or column separation in HPLC is not necessary. The extracted sample can be infused directly into the mass spectrometer by ion mobility spectrometry devices, such as High-Field Asymmetric Waveform Ion Mobility Spectrometry that is capable of ion separation, focusing and trapping.

Ion mobility spectrometry was applied successfully on various examples in the field of food quality and safety in recent years. A broad range of compounds, such as mycotoxins, biogenic amines, herbicides, pesticides, haloacetic acids, metabolites, aromatic hydrocarbons, and illicit drugs can be detected by IMS. IMS significantly improves the identification capabilities of mass spectrometry in the food residue analysis methods.

P 65

Review on Bisphenol A (BPA) Migration into Foods: Factors, Health Effects and Studies

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In recent years, BPA is attracting great attention as a contaminant migrating into foods. Migration routes into foods are: inner coating of food cans, baby bottles, milk, water/beverage bottles and food cooking/servicing equipment. Toxic effects of BPA are reported in many scientific articles: insufficient brain development in babies and fetus, structural changes in body, hyperactivity, prevention of fertility and reproduction for its estrogenic activity which may effect on breast cancer development. These negative effects led to revisions of legislations and increase in studies focusing on subject. European Food Safety Authority announced Tolerable Daily Intake (TDI) of BPA as 50µg/kg/day. In Turkey, BPA addition during the manufacturing of polycarbonate baby bottles is banned. As a result of studies, temperature, heat application duration, microwave application, contact period, damage or scratch and pH factors are found to be effective factors on migration from polycarbonate materials. In epoxy resins migration was effected from lacquer type and content used, process conditions (temperature and time) and food content (salt and fat). From research on different foodstuff, highest migrations were obtained for canned meat/fish products and soups, especially when they are high in salt and oil. For polycarbonate baby bottles, migration seemed to increase with repeated usage and scratching by means of high temperatures during sterilization. In a study performed in USA, BPA was frequently (95%) observed in human urine samples and data was correlated with canned food consumption. In Turkey, BPA migration studies focused on plastic water bottles and migration was not at harmful levels. Future studies are necessary to understand migration levels to different foods and also migration from equipment used in service and that are in contact with foods at different conditions. In this study; sources of migration for BPA, effects on health and research available in the world and in Turkey is reviewed.

P 66

Pulsed Electric Fields and Heat Pasteurization of Orange Juice with Respect to Pectin Methyl Esterase Inactivation

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Due to the rich vitamin C content and fresher taste freshly squeezed orange juice is one of the most preferred and consumed juices worldwide. However, the quality of orange juice is reduced by pectin methyl esterase (PME) enzyme if not inactive. Heat processing applied to inactivate PME can cause loss in orange juice quality. Therefore, alternative technologies such as pulsed electric fields (PEF) are in search both to inactivate and to keep important properties of orange juice with extended shelf life.

In this study, PEF and heat pasteurization treatments were applied to orange juice samples obtained from Kozan Yerli variety and stored at +4C for 180 days. Effects of various processing treatments and their respective intensities on pectin methyl esterase inactivation of orange juice samples were measured and also PME inactivation kinetics was determined with new developed mathematical model. In addition, analyses were repeated over the storage period to determine PME inactivation changes. Our results indicated that PME inactivation level was 93.82 % following PEF application with E8 (25.26 kV/cm, 1206.2 μ s) energy level. According to developed mathematical model which related PEF treatment conditions, the reaction rate constants (k_e) between 587.84-2375.38 s⁻¹, D_e values between 969.53-3917.71 μ s, z_e value 63.68 J, activation electric fields 8.48 kVcm⁻¹mole⁻¹ and finally electrical activation energy 37.70 Jmole⁻¹ were calculated. PME activity of PEF applied samples decreased or not changed during storage while PME activity of heat pasteurized samples increased during storage.

P 67

Food Safety Issues of Novel Processing Technologies

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Owing to their potential to provide consumers with safer and fresh-like quality foods, emerging novel food processing methods such as pulsed electric fields (PEF), high hydrostatic pressure (HHP), ohmic heating, ozone, ultrafiltration have been of growing interest. Numerous studies were conducted with these technologies to process different food products with preservation of important physical, chemical and sensory properties and nutritional quality as well as inactivation of spoilage and pathogen bacteria, mold and yeasts. Studies revealed that different factors such as physical properties of food products, the limitations of the technologies used, and process parameters greatly affect the success of the processing. Moreover, inactivation of pathogen bacteria which have the significant importance for that particular food product from food safety issues is also changed depend on the factors indicated above. Food safety of these technologies needs to be ensured to enable public health and meet legal requirements. In order to extend the use of these technologies in food industry food safety issues, new trends and future of these technologies needs to be explored.

P 68

Selection of microbial strains for biologically controlling pink rot of potatoes in storage based on favorable growth

kinetics and efficacy

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Extensive research on the development of microbial environments suppressive to plant pathogens has increased exponentially in recent years. Despite intense interest in developing biological control agents of plant pathogens, relatively few antagonists have been patented and successfully commercialized. At least part of the reason for the infrequent commercialization of biological control agents that are active in the laboratory is that many of these agents were chosen using improperly conceived microbial selection strategies. In this study, selection strategies that involve growing microbial isolates in shake flask cultures on cost – effective liquid media and evaluating both the growth kinetics and biological control efficacy of the cells produced are described by using a model system of developing a biological control product active against *Phytophthora erythroseptica* Pethybr which is the primary causal agent of Pink rot of stored potatoes. The crucial importance and methodology is described, of selecting six strains that significantly reduce the severity of pink rot ($P \geq 0.05$) with enhanced potential for commercial development based on strain exhibiting both favorable growth kinetics and bioefficacy when grown in commercially feasible liquid media.

P 69

Significance from the point of food safety of migration arising from food packages

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Package is a tool that preserves the product that is placed into it, until the product reaches the consumer, and that introduces the product to the consumer. Various materials can be used in package production. These materials can cause the product to be contaminated with chemical substances on either high or low levels. While this contamination is called migration, the contaminating substances are called migrant. Factors such as the contact duration and area of the food and the packaging material, temperature, type and concentration of the migrant, physical and chemical properties of the packaging material, amount of the materials ready to migrate, particle, dust, liquid or paste consistence of the foodstuff, properties of the foodstuff the relation with product elements with the migrants are important in terms of migration. Migrants can cause taste and aroma changes in foodstuffs. Also, migration of toxic substances from packaging materials to foodstuffs is an important health issue. It can cause disorders in hormonal functions and nervous system, suppression of immune system, several different types of cancer and mental disorders. Packaging of foodstuffs has a great importance in terms of ensuring food safety. Although some restrictions are introduced as precaution, controls must sustained. Results may arise, transitions to food, rates of the additives must be continuously observed.

P 70

Comparison fried and microwave cooked Jerusalem artichoke chips in terms of quality parameters

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Jerusalem artichoke is a widely grown produce in Turkey, and it has advantageous properties as compared to potatoes. For

diabetic patients Jerusalem artichoke chips (product rights protected by patent) are a superior alternative for potatoes chips, since it contains inulin instead of starch. Two cooking methods were used in this study. The first method of cooking was frying that has positive effects on color, texture and palatability. The second method of cooking was microwave cooking. Microwave cooking offer tremendous advantages, such as time and energy savings, in food processing operations. The main objective of this study was to investigate compare the microwave cooked and fried chips from Jerusalem artichoke in terms of quality parameters. To achieve this goal fried and microwaved cooked chips were compared in terms of moisture content, color, texture and sensory properties. Jerusalem artichoke chips were fried in a bench top deep fat fryer for 120s, 180s and 240s at 160°C, 170°C, 180°C and 190°C. When microwave oven was used samples were cooked for 60s, 75s, 90s, 105s, 120s, 135s and 150s at 600 Watt and 900 Watt. In the light of the experimental results obtained as frying temperature and treatment time increased, moisture content and lightness of the Jerusalem artichoke products have decreased but a* and b* values, hardness, fracture increased. As microwave power level and duration of treatment increased, moisture content and lightness of the microwave cooked Jerusalem artichoke products have decreased, but a* and b* values increased. Hardness and fracturability values of the products first increased with time and then decreased. Since treatment time for cooking was significantly reduced when microwave cooking was used, this method could be recommended as an alternative to conventional deep fat frying, as oil is not used as well.

P 71

Aflatoxin Contamination Sources in Milk and Protective Measures

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Mycotoxines are secondary metabolites that are produced by several species of fungi, particularly by *Aspergillus*, *Fusarium*, *Penicillium* and *Alternaria*, and have varying toxic effects on humans and animals. Aflatoxin, on the other hand, is the general identification of the metabolites produced by the toxic strains of the fungus *Aspergillus flavus* and *Aspergillus parasiticus*. The major aflatoxins of concern are designated as B1, B2, G1, and G2. Aflatoxin B1 is the most dangerous one among these. Having a very wide range of biologic effects as being carcinogenic, mutagenic, teratogenic, estrogenic and immunosuppressive, aflatoxins also have metabolic effects as DNA, RNA and protein synthesis inhibition, reduction in miscellaneous enzyme activities, depression of glucose metabolism, free fatty acids, triglycerides, and cholesterol and its ester, and coagulation factor inhibition. Aflatoxins pass into milk by dairy cattle consuming feeds contaminated with Aflatoxin B1, conversion into Aflatoxin M1 through enzymatic hydrolyzation, and then the excretion of the mammary gland of the cattle. Fungi species and strains effective in the production of aflatoxins in milk grow on some foodstuffs and feeds under convenient temperature and humidity conditions. Also ecological or environmental conditions contribute to the mykotoxin production of fungus on foodstuffs and feeds. It is highly important to decrease Aflatoxin growth on these feeds and take protective measures against the fungus that increase toxin production. Besides the ambient temperature, humidity and the moisture content of the feed, pH and the mechanical damages that may occur are the factors that affect fungi formation in feeds. It will be possible to produce safer and healthier foods particularly with internal controls and the existing HACCP controls. In this present study the contamination sources of the mykotoxins in milk and milk products and the protective measures that can be taken in order to prevent mykotoxin formation are focused on.

P 72

Food Safety Evaluation of Microwave Heating: Food-Packaging Interactions

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Microwave heating has been widely used in domestic and industrial applications. It is a fast technology, providing more uniform and controlled heat treatment as compared to the conventional heating. Thus food products with higher sensory and nutritional quality are obtained with microwave heating. Apart from its advantages, there are some food safety concerns about microwave technology in terms of food-packaging interactions. Studies indicate that with the effect of microwave numerous molecules could migrate from packaging material into food products such as plasticizers, monomers, oligomers and polymer degradation products, ink, ink residues and volatile migrants. This migration occurs due to either direct effect of microwave radiation or indirect effect of temperature increase as a result of product heating. Several parameters interfere in the rate of migration of these compounds into food products such as heating time, treatment intensity, type of packaging material, type and concentrations of the additives, molecular size of the migrating compounds and food content. In this study migrating compounds that are produced during microwave heating and their potential risks, factors affecting the rate of migration and related regulations are reviewed.

P 73

Reuterin as a Biopreservative Agent

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Lactic acid bacteria are the most important bacteria in the production of fermented foods. Their metabolic activity has an imperative role on the quality and shelf life of fermented foods. As a result of lactic acid fermentation process, a variety of antimicrobial metabolites such as organic acids, hydrogen peroxide, enzymes, bacteriocins, acetaldehyde, diacetyl, carbon dioxide, and reuterin are produced. In the presence of glycerol and under anaerobic condition, 3-hydroxypropionaldehyde known as reuterin is produced by *Lactobacillus reuteri*. Reuterin is water soluble, neutral, non-proteinous, resistant to proteolytic and lipolytic enzymes, and effective in a wide range of pH. The antimicrobial spectrum of reuterin is very wide, and it has antimicrobial activity against Gramnegative and Grampositive bacteria, along with yeasts, molds, and protozoa. Reuterin inhibits the growth of pathogens such as *Listeria monocytogenes*, *Escherichia coli* O157:H7, *Salmonella typhimurium*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Klebsiella pneumoniae* and *Helicobacter pylori*. In this review, issues such as biosynthesis, chemical structure, mode of action, inhibitory spectrum and biosafety of reuterin, factors affecting its production and possible application in food industry will be discussed in detail.

P 74

Inhibition of *Escherichia coli* O157:H7 in Milk by Lactococcin Bz

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In this study, the inhibitory effects of lactococcin BZ (a bacteriocin produced by *Lactococcus lactis* ssp. *lactis* BZ) against *E. coli* O157:H7 in full fat (3.0%), half fat (1.5%) and low fat (<0.1% fat) UHT milk were determined. The milk samples were inoculated with *E. coli* O157:H7 approximately at the levels of 10², 10⁴ and 10⁶ cfu/mL and then treated with lactococcin BZ (0, 400, 800, 1600 and 2500 AU/mL). All types of UHT milk samples were incubated at 4°C or 20°C. The viable cell numbers

of *E. coli* were determined at certain intervals during the storage. The UHT milk samples containing only *E. coli* O157:H7 at the levels of 10², 10⁴ and 10⁶ cfu/mL were used as a positive control. The UHT milk samples with or without bacteriocin were used as a negative control. There was no bacterial growth in the UHT milk samples with or without bacteriocin during the whole storage period.

Lactococcin BZ had a bactericidal effect against *E. coli* O157:H7 in all UHT milk samples stored at 4°C or 20°C. However, antibacterial activity of lactococcin BZ was decreased when fat content of milk and inoculum level of the bacteria increased ($P < 0,01$). Lactococcin BZ had higher antibacterial activity against *E. coli* O157:H7 at 20°C than at 4°C ($P < 0,01$).

As a result, lactococcin BZ has a potential usage as a biopreservative in dairy industry due to its rapid and strong antimicrobial activity against *E. coli* O157:H7.

P 75

Control of *Clostridium estertheticum* in Vacuum Packed Fresh Meat

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Within last two decades, new psychrophilic *Clostridium* species causing spoilage in vacuum-packaged and cold stored fresh meat, especially on beef meat, have been isolated and identified. This spoilage, which is called as "Blown Pack Spoilage", is caused particularly by *C. estertheticum* (*C. estertheticum* subsp. *estertheticum* ve *C. estertheticum* subsp. *laramiense*), with gas formation and a visible bulge in the package. Although both subspecies of this species have psychrophilic character, their minimum growth temperatures show differences. *C. estertheticum* subsp. *estertheticum* can grow at -30°C, while the minimum growth temperature of *C. estertheticum* subsp. *laramiense* is 10°C. Peroxyacetic acid treatment is recommended in many studies for inactivation of this microorganism causing economic losses to the meat industry. This microorganism cannot grow under pH 5,5. During the spoilage, initial number of microorganism, storage temperature and temperature of shrink process applied during vacuum-packaging play an important role, as well as pH value of meat. In this review, researches conducted on *C. estertheticum* causing spoilage in vacuum-packaged, cold-stored fresh meat have been examined and hurdle effects for control of mentioned bacterium are discussed.

P 76

Formation and Importance of Allyl – Isothiocyanate in Tracian Beverage Hardaliye

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Hardaliye which is produced at Thrace especially in Kırklareli region is a traditional beverage that is expressed as a valuable beverage in 1930 by Atatürk. Hardaliye is a beverage that is aromatized with mustard and cherry leaf and which is produced by lactic acid fermentation of grape must. Mustard seed is used both provided of typical aroma and supported of lactic acid fermentation which is inhibited yeast performed by ethyl alcohol fermentation. Sinigrinin which is glucosinolate in compound of mustard seed has the subject of numerous researches. Whenever mustard tissue is crushed or otherwise damaged, the enzyme myrosinase degrades sinigrin to an allyl isothiocyanate. In this study, formation of allyl isothiocyanate in Hardaliye and anticarcinogenic effect and its importance for human health was summarized.

P 77

Using Orbitrap Mass Analyzer for Residue Analysis in Food and Its Advantages

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Potentially toxic chemicals may enter the food supply from a variety of sources, including chemical residues and environmental contaminants. The residue analysis is a requirement for protection of human and environmental health. The procedure for residue analysis in food consists of several different steps: matrix homogenization, extraction, clean-up or purification, and instrumental determination. One of the most commonly used analytical instruments in residue analysis is mass spectrometers.

There are various types of mass analyser (quadrupole, time of flight, quadrupole-ion trap etc.) currently in use. Recently, tandem mass spectrometry (MS/MS), is one of the most powerful and versatile analyser for the determination of residues. However, tandem mass methods are suitable for a small group of compounds only or compounds belonging to the same chemical class. The novel trend is to develop analytical methods enabling a broad spectrum of analytes to be determined in a single analytical run. The problem is that the analytes to be determined simultaneously are often present at low concentrations, and have different physicochemical properties depending on their chemical structure. Moreover, the overall sensitivity fulfilling legal requirements of ng/g for residues have to be achieved. The Orbitrap mass analyser is a new and effective solution for these requirements.

Orbitrap supports a wide range of applications from routine compound identification (peptides) to the analysis of trace-level components in complex mixtures (pesticides, hormones, mycotoxins, veterinary drug residues, and etc.). It has high resolving power (up to 100000 fwhm) to ensure highly accurate mass measurements. Mass measurement error is typically less than 2 ppm with internal calibration. It reduces or eliminates background chemical noise and dramatically increasing sensitivity for confirming or eliminating the presence of isobaric analytes. The Orbitrap-based mass analysers provide the tools for combined qualitative and quantitative analysis in a single data acquisition for residue analysis of food.

P 78

Sensorial and Microbiological Quality Assessment in Aquacultured Fish

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Factors affecting the sensorial and microbiological quality of aquacultured fish may vary depending on features of fish species (age, sex, dimension, etc.), cultivation conditions (land culture or sea cage culture, temperature, salinity, sediment accumulation, bacteria, etc.), fish feeding regime (feeding frequency, starvation, etc.), practices during harvesting and post harvesting (stress state of the fish, killing methods, etc.).

If the fish are stressed and alive, the lactic acid level will be increased, therefore the pH value will decrease dramatically; in case of prolonged stress all the glycogen will be consumed, leading to a high level of pH. Meantime psychrophile and psychotropic aerobic, gram negative bacteria, usually living on the fish begin to multiply and causes the characteristic odors (ammonia, trimethylamine and biogenic amines produce their characteristic smell) affecting sensorial quality.

Water's pollution used for aquaculture fish production and the presence of sediment deposition indicate that to be exist the pathogenetic bacteria. Therefore, fish culture in offshore is accepted more safe in terms of sensorial and microbiological quality. Microorganisms can be caused pathogenetic impact and responsible for deteriorating quality of fish flesh. The most common pathogens in fish are *Salmonella typhi*, *E. coli*, *Pseudomonas fluorescens*, *Aeromonas hydrophilla*, *Proteus vulgaris*,

Staphylococcus aureus, *Shigella* sp.

To be ensure sensorial and microbiological quality in aquacultured fish are necessary to control enviromental factors, measures to prevent the contamination of sea water and hygiene practices.

P 79

Nutrigenetics

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Nutrigenetic, a new field of science which investigates the nutrition-genom interaction at the genotype level, become popular during recent years. According to the scientists studying nutrigenomics, stereotyped diets –which applied everybody- would not benefit sufficiently for any chronic diseases and since everybody's genetic disposition is different from each other. Hence designing a special diet for any individual would be fundamental approach for every diseases.

Nutrition applications, revealing the individual nutrition-genom interactions are brought into the open by Cellf Test that is easily applied and gives individual genetic array. Consequently life standards of people with genetic susceptibility towards chonical-complex diseases will be determined according to their genetic disposition and healthy life style will be achieved with proper diet-exercise applications. In this review, it is mentioned about nutrigenetic terms and some advantages of nutrigenetic test with its availability are explained.

P 80

Smart Labelling Technology and its Availability

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Smart labelling is the one of developed innovations in food industry in the recent times and also it comes up a new technology that can be alternative method to traditional packaging. The packaging of food has especially served for three purposes which are covering, keeping and marketing of product for 50 years. On the other hand, the availability for manipulation of food packaging and consumer's unconsciousness about writings related to ingredients on package make the food product open to trick, therefore food material can be unhealthy and also be fatal. It is thought that this forgery and the negative effect on human healty and also food safety can be reduced owing to smart labelling. Radio Frequency Identification Labels (RFID) and Package Indicators called smart labelling technology provides to keep information and feedback. Besides, the mechanical, chemical, electrochemical, enzymatic or microbiel changes can be observed. Smart labels are both indicators provided consumer to realize if the food product is safe and reduce the economical loses occured during shipment and storage. Some smart labelling technologies, like temperature-time indicators, controlled gas dispersion and so forth, are used at a certain level all around the world. In this review, general information about the subject mentioned most often recently which is 'Smart Labelling Technology and Availability'are summarized.

P 81

Food Safety and Dangers

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Food industry has faced rapid developments depending on rapid improvement in science and technology and changes in legal

basis in globalising world. When considered global extents of food market, it can be seen that food safety is important for the protection of both producers and consumers. Main aim of the societies and international trade is to ensure the sustainability of food safety by regulating legal framework, constituting special standards and developing certification rules for practise. Food safety system is based on a risk assessment system including risk evaluation, risk management and risk communication. As for every risk, risk related to food products is not zero risk but acceptable risk. Risks resulting from food products are evaluated individually for the stages from production to consumption; processing, transportation, storage, purchasing, preservation, preparation and cooking and grouped into physical, chemical and biological risks. Traceability principle can work at this stage and when food safety problem is seen, origin of the risky products should be detected and required measures should be taken. From this point of view, approaches which are more systematic can be adopted considering and regulating legal frameworks by removing threats on public health caused by food products. In the present review study, it is emphasized that food safety is associated closely with public health, it is among main human rights and above all, consuming habits can offer opportunities for food safety while they can cause risks.

P 82

Supply Chain and its Importance

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Food safety practises important for public health and human life attempt to be performed on a basis "from farm to fork" system set up by controlling authorities in order to take the quality and safety under control and protect public health. Food supply across the world makes it more difficult to get safe food along supply chain. A mistake to be made in only one stage of the chain can have negative impacts on all chains (agriculture, food production, transportation, marketing points and distribution, consumers). In the first chain of this system beginning with agriculture, farmers adopt a systematic approach to ensure food safety and struggle with agrochemicals, pesticides, herbicides, soil loss and pollution, greenhouse gases and organic wastes. Processors aiming to produce safe food, apply suitable processing techniques to produce processed products by choosing raw materials supplied by growers, tools and procedures carefully and transfer them to markets under suitable storing conditions. The risk of food contamination by workers is always possible during transportation, in markets and distribution. This risk is especially valid for the products sold in open spaces and streets. This problem should be solved by taking required protection measures such as cold storage. The last and the most important chain of the system is consumer. Authorities responsible for the food safety should give information to consumers about food safety, preparation of safe food and especially the possibility of cross contamination. As the result of these works, consumers can learn the importance of safe food and be away from related dangers.

P 83

The Additive and Application of Natamycin

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The requirement for food preservative has been decreasing or is not necessary in foodstuff manufacturing under good manufacturing practices (GMP) in which all food spoilage and contamination factors are taken under control. Antimicrobial additives could be supplemented into products for eliminating of microbiological risks caused by contaminants where food plant has insufficient GMP conditions. The aim of the addition of food preservative shouldn't be covering up any defects in

foodstuff. If the factors threatening human health couldn't be controlled during food production chain in which the safe food production and risk management are maintained at the highest level, the use of food preservative should be preferred in this case. Natamycin (E 235), one of the food preservative permitted by Turkish Food Kodex (TFK) is used for preventing yeast-mould growth by applying to the surfaces of hard, semi-hard and semi-soft cheese and dried, cured sausages. The addition of natamycin determined by TFK should be applied to the all food surface homogeneously and by regarding the maximum level (1 mg/dm² in the outer 5 mm of the surface) that is based on daily intake (0-0.30 mg/kg body weight). On the condition that the hygienic rules and production conditions in accordance with techniques are ensured as a general rule, the risk of mould contamination to food products will be at the controllable levels in production, transportation and storage stages. The use of natamycin is not approved in many foods because of no technological necessity. Addition of natamycin to formulations is also forbidden. The application of food preservative to the approved foodstuff, which is stated in the annex of TGK, is compulsory for safe food and healthy life in a way that does not exceed the permitted maximum amount.

P 84

The Knowledge of Food Safety among Catering Industry Employees

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This study thus aims to assess the level of knowledge of the employee working in catering industries concerning food safety. The sample of this study consisted of a total of 500 volunteer employees working at four catering industries in Ankara. Data were collected through a questionnaire that comprises questions concerning general knowledge and knowledge of food safety. This questionnaire included a total of 25 questions on food safety. Each correct answer was given 1 point, while incorrect answers and "do not know" were given 0 points. The total score was classified into three groups on the basis of level of knowledge: 25-20 was considered sufficient; 19-13, mediocre; and 12-0, insufficient. Mean knowledge scores were analyzed in relation to such variables as participants' age, gender, level of education, training status in food safety, department and duty at the workplace, and work experience. "Independent t-test" and "One-Way Anova" test were used to analyze the data. The result indicated that 70.2% of the employees were male, and 36.0% were female. 36.0% were between 26-34 years of age, 49.2% were high school graduates, 56.4% were waiters or waitresses, and 54.8% were working in the service department. 56.0% of the employee had a work experience of ≤ 6 years. The mean knowledge score for all participating employee was 17.7 ± 3.3 . Mean food safety knowledge scores were higher for those who previously underwent training (17.9 ± 3.2 , $p > 0.05$), those who were holding administrative positions (19.9 ± 2.3 , $p < 0.05$), those who had a work experience of > 6 years (17.9 ± 3.3 , $p > 0.05$), and for project managers (19.9 ± 2.4 , $p < 0.01$) compared to other groups. It was found that the majority of catering employees (58.8%) have a mediocre level of knowledge of food safety. Improving the knowledge of catering employee is crucial for producing better, healthier and cleaner food.

P 85

Management of Antibiotics Residue in Milk and Dairy Plants

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Veterinary chemicals that contain antibiotics are used for the treatment of cows. Antibiotics pass to the milk of cows through blood circulation system. Discharge period of antibiotics from the body of cows is clearly presented on the packs of antibiotics. Milk which is produced in this period should not be sold or used that since it still carries a risk of containing

residual antibiotics. It is not possible to eliminate residual antibiotics by heat treatment (pasteurization, UHT, boiling). Consequently, residual antibiotics must not exist in milk which will be processed to milk and dairy products. In this presentation, types of antibiotics which are used in Turkey, methods of analysis and possible actions to take in order to prevent antibiotics presence in raw milk will be explained.

P 86

The Role of Milk Collection Centers in Food Safety

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Food safety in milk and dairy products, starts at the dairy farms that are first step in supply chain and continues at the table of the consumers. Supplying of the safe raw milk is the main problem of the Turkish dairy industry from the food safety perspective. Milk collection centers (MMCs) are indispensable components of the milk supply chain. MMCs can effectively reduce the cost of transportation and provide dairy industry to collect milk in a more organized and timely manner.

Milk collection centres (MCC) play an important role between the dairy farms and the dairy industry. In order to supply the high-quality, safe and adequate raw milk required by dairy processing firms, MCCs in the Turkish milk supply chain act as a bridge between the dairy farms and dairy processing industry.

MMCs can also provide the milk producers with market guarantee and are effective tools in enhancing technical knowledge transfer and training of the farmers. Concerning food safety regulations, taking all necessary safety measurement in the milk processing is not sufficient. Considering the structural characteristics of the Turkish livestock sector, because the milk in the MCCs is generally obtained from small-scale family farms, it is not of the desired quality from a food safety and food quality perspective Both the MCC personnel and the farmers must be educated on food safety and hygiene issues..

P 87

Safety Food Consumption

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In terms of raw and processed materials, food Industry is the most comprehensive one among the Agro-based industries branches. In a country that produce vary agricultural products like Turkey, it is very important to evaluate the products best in the way of both nutrition of society and Turkish economy. A wide range of agricultural products grown in countries such as Turkey, the best assessment of these products and nutrition of society, both in terms of Turkey's economy is important. Food industry has the share of 20 % of manufacturing industry. In addition, 15 % of employment in manufacturing industry and 13 % of the added value provided by the food industry.

Food security is provided by not harming human health, produced and consumed in hygienic conditions, physical, chemical or microbiological contamination that does not contain, without any problems with pests, can be achieved by delivery of food to consumers. In order to ensure the security of food quality microbiological, physical and chemical risks in food must be known. Food inspection policies should be established on the high food safety standards for safe food production and consumption.

Food safety should be ensured an efficient cooperation with the relevant international organizations, and joint training programs should be developed. In small enterprises that produce by traditional methods some problems occur because of food security concepts and measures to be settled enough to check for them, and inadequate educational programs, public

institutions and problems such as lack of cooperation between the private sector and consumer associations in production process.

P 88

Foods Preservation by Irradiation Method

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Due to reasons such as to reach to sufficient, safe and reliable food sources, the need for safe food is gaining importance with each passing day in the world. Food safety is required to be considered at all stages of the products from farm to fork and must be maintained by foods preservation methods to provide the food safety and quality. For the preservation of food many methods have been developed such as pasteurization, chemical protective use, freeze/cold storage, drying, modified atmosphere packaging. Today irradiation is one effective method in order to prolong the duration of the food preservation and shelf life.

Implementation of food irradiation method that provides elimination of pathogenic bacteria, hygienic quality, parasitic infection and disease prevention, the elimination of the insects or pests in storage stage, prevent of germination/further maturation, reduce losses at foods. In addition, with this method the organoleptic properties and nutritional value of foods will not be noticed much less change.

Food irradiation method used in conjunction with other preservation methods in terms of food safety and quality of thought that better results can be obtained. Food irradiation applications are authorized by Regulation on Food Irradiation which was published in 1999 in our country.

According to the published regulations, irradiation can be made depending on the product with certain doses on fresh fruits/vegetables, dried fruits/vegetables, spices, grains, beans, raw fish, poultry and red meat products. Gamma-rays, X-rays and electron rays of Cs-137 and Co-60 radionuclides sources are used at irradiation. Japan, China, Russia, Netherlands, France by 30 countries, this application mainly used in foods that offered to the public. However the concept of radiation is scary for the consumer, from this point on consumers must be awareness in relation to irradiation applications. More studies must be carried out to develop inexpensive methods, increase the beneficial effects and to continue to observe the effects of long-term use. If we get success at these conditions, it seems to be method of food protection for today and future.

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Determination of heavy metal and aflatoxin contents of bran bread

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When wheat is grown and stored unsuitable conditions, especially the outer layer of wheat can be rich in residue and contaminants. Although, bran contains functional compounds which are very beneficial effects on human health, it causes some health risk due to this residue and contaminants. In this research, some heavy metals, minor elements and aflatoxin contents of the bran bread were determined. Bran bread samples were obtained from eight different bakeries in Konya,

Turkey. In all samples, the values changed between 0.00-0.04 ppm for Cd, 0.07-1.27 ppm for Cr, 1.54-4.64 ppm for Cu, 0.017-0.090 ppm for Co, 12.06-29.95 ppm for Fe, 0.24-2.84 ppm for Ni, 0.05-0.25 ppm for Sn, 5.25-38.70 ppm for Zn. None of the samples had aflatoxin above the detection limits of the instruments. As a result, all bran bread samples were found safe in terms of heavy metal and aflatoxin content.

P 90

Determination of Viable *Escherichia coli* O157H:7 in heat-treated milk by using PMA/Real-Time PCR Technique

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Real-time is one of the most promising techniques for the detection of pathogenic bacteria in foods due to its sensitivity, specificity and the possibility of quantification. However, its inability to discriminate live and dead bacteria lead to an inaccurate estimation of bacterial targets present in food products. Recently, treatment of bacterial samples with propidium monoazide (PMA) prior to DNA-extraction has been proposed as a method that allow the detection of only live cells by selectively blocking the DNA from dead cells for PCR amplification. In this study, we investigated the potential use of PMA/real-time PCR method for the specific detection and enumeration of viable *E.coli* O157H:7 cells in heat-treated milk samples at different temperatures (60, 70, 80 and 90oC) and times (10s, 30s and 1min). Despite the viable bacterial counts in milk samples decreased to <10 cfu/ml after heat-treatment at 70 oC and above, the real-time PCR results of the samples without PMA were not statistically different from non-treated control groups (viable only). On the other hand the real-time PCR result of the PMA-treated samples were found compatible with plate counts and proportional signal reduction was observed due to increase of fraction of dead bacteria depend on the temperature and time of heat treatment. In conclusion, this study demonstrated that PMA real-time PCR technique can be successfully used for the detection of viable *E. coli* O157:H7 in heat-treated milk samples.

P 91

The Usage of Nisin in the Food Industry

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Nisin, is a protein bacteriocin, which has antibacterial effects and protein structure produced by certain strains of *Lactococcus lactis* subsp. *lactis*. Nisin is reported to be effective against bacteria such as *Lactococcus*, *Bacillus*, *Micrococcus*, *S. aureus*, *L. monocytogenes* ve *C. botulinum*. Nisin is considered the only bacteriocin which has been approved Generally Recognized As Safe (GRAS) additive by Food and Drug Administration (FDA) and nowadays it has been used in many food products and especially in dairy industry as a antimicrobial additive for years. Except for the use of nisin alone, the usage of nisin in thermal treatments and non-thermal treatments as high pressure (HP), pulsed electric field (PEF) and combined with other antimicrobials is promising for maintaining microbiological safety and sensory properties of dairy products. In this review, antilisterial activity of nisin on *Listeria monocytogenes* which is an important microorganism for dairy industry, the usage of nisin in food packages and edible films, the combined usage of nisin with antimicrobials in foods also the effects of processes which is applied to foods on antimicrobial activity of nisin will be discussed.

P 92

The Effect of UV Irradiation on *E. coli* During Cold Storage

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The aim of cold storage is to control microbiological and enzymatic spoilage in foods. Thus, the nutritional value and sensorial properties of foods are also maintained. In this study, *Escherichia coli* ATCC 22922 were exposed to UV radiation at different doses (0.89, 1.77 and 2.66 J/cm²) and the changes in bacterial counts were determined. The effect of different UV doses on *E. coli* was investigated both on culture media and red meat surface at different locations in UV cabin. The results were evaluated by taking into account the doses and locations that the samples were placed

P 93

Effect of MADS Box Genes on the Shelf Life of Fruits

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It is expected that until it reaches the consumer in the process to harvest the fruits have a long shelf and maintain viability. Fruits have been ripening after harvest. In this period, the control of the hormone ethylene. For this reason, fresh fruits, ethylene storage, distribution, marketing, shelf life is important for the effect of food quality and safety.

Today, the fruits of post-harvest applications of modified atmosphere for control of ethylene, ethylene against the use of various substances, as well as added to the source applications, such as genetic engineering methods.

Applications of genetic varieties of small RNA, the micro-ribonucleic acid (miRNA) regulation of gene transcription after the MADS box genes of the important areas in a variety of effective arrangements are made with fruit maturation. The fruits of this work at an early stage of the core, cortex, like the skin of various MADS box genes that are expressed in different parts are used. This is the beginning of the ripening genes and increased synthesis of ethylene are group depending on the presence or absence of respiratory climacteric and non-climacteric fruit, both groups are involved.

MAD Box is effective in the maturation of tomato fruit model studies of genetically engineered plant. At first tomato ripening inhibitor rin locus (LeMADS-RIN) is also Cnr genes, Gr mutants (Green ripe) are used as important regulators of some ripening. These conserved regions of MADS box gene fusion proteins with the ethylene signal generated by targeted disruption. Except tomato, banana, melon, strawberries, some fruits, such as ethylene signal-level changes in the post-harvest ripening and shelf life are changed.

This review, a variety of fruit ripening process of MADS box genes involved in the suppression of ethylene synthesis, mechanism, and these studies aimed to explain the effects of shelf life.

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