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I. Thematic Field. Food Science, Technology, Biotechnology, Ecology and Toxicology

Plenary report

The role of technology progress in food security management

Prof. Dr. Ing. Dr.h.c. Wolfram Schnäckel

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Summary

On base of general and global technical development is shown that in future the main source for more productivity is human capital. There is a need of well qualified, high motivated and healthy experts. Prerequisite for this is global food security. The presentation is focused on the question how technology progress in the field of food processing can contribute to reduce losses or wasted food and/or to increase the yield in food production There is shown the contribution of European Food and Beverage Industry for securing European and global food demands. Especially are shown and discussed specific technical innovations and their input for food security like new traceability and IT systems, machine vision, robotisation, new strategies for food preservation, new functional foods, increasing use of food biotechnology, intelligent packaging systems and modern systems for process control and regulation. It can be concluded to ensure food security, there are necessary changes in quantity and quality of food production and processing worldwide. Technical progress and technical innovations can contribute to minimize losses and waste in food production. Necessary is more research and development in the field of food processing to use the available agricultural sources. So named „by products“ are not enough utilized.

Section IA. Food Science and Technology

1.1.

Acidification rate and survival of microorganisms in kefir, enriched with lactulose

I. Nacheva, K. Loginovska, Al. Valchkov

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Abstract

The development of fermented milk product - kefir based on goat's milk and enriched with prebiotic component - lactulose is one quality addition to the existing range of dairy products with functional purpose. The effect of lactulose at a concentration of 1, 3 and 6% on the rate of acid formation in the fermentation of kefir and the amount of microorganisms during storage were studied. The results demonstrate that the addition of lactulose, regardless of its concentration, results in the activation process of the propagation of the microorganisms during the fermentation. The addition of 3% lactulose provides optimal growth of the main groups of microorganisms during fermentation and more prolonged retention of their number during storage was found.

1.2.

Creation of freeze-dried foods buffalo meat with improved fatty acid composition

I. Nacheva, K. Loginovska, Al. Valchkov

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Abstract

Creating innovative meat foods with high content of polyunsaturated fatty acids is a steady trend in recent years due to the ever increasing demands of consumers for eating quality and safe food. The goal of scientific development is the creation of dietary lyophilisates from buffalo meat for specialized nutrition with addition of oils and products of plant origin.

Based on the experimental results obtained were set schemes for the preparation of meat enriched food with an improved fatty acid composition.

Novel foods are characterized by a high content of ω -3 and ω -6 fatty acids and the optimal ratio between them, which helps to improve the nutritional and health qualities.

1.3.

Improvement of the technological and sensory properties of meat by whey marinating

D. Vlahova-Vangelova, D. Balev, St. Dragoev, G. Kirisheva

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Abstract

The aim of this study was to investigate the technological and sensory properties of poultry fillets after whey marinating. Six samples (Cf - control samples stored in air, Fw - poultry fillets marinated in whey and 2% NaCl; F1w - poultry fillets marinated in water and whey (50:50) and 2% NaCl) were examined after 12 and 24 hours marinating. Compared to untreated control, the treated meat show higher marinade pick up and weight gain. The growth of lactic acid bacteria in marinated fillets decreased the pH and extends the shelf life of the studied test samples (Fw and F1w). While the marinating with 50:50 water and whey, and 2% salt for 24 hours (F1w24) improves tenderness to the best extend, the scores for aroma and flavour in this samples were found lower ($p < 0.05$). The use of whey and 2% NaCl for 12 hours show (Fw12) the best results ($p < 0.05$) on the sensory properties (aroma and flavour) in marinated poultry fillets.

1.4.

Application of spice freon extracts in the processing of Hamburgski" sausage

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Abstract

The cooked sausages are under high risk of microbial cross-contamination and physical impurities came from ground spices. On the other hand, they loss their quality attributes during refrigerated storage. The aim of this work was to study the replacement of encapsulated oleoresins of black pepper (*Piper nigrum* L.), and nutmeg (*Myristica fragrans*) with their aliquots of tetrafluoroethane extracts on quality and safety of a typical representative of cooked sausages Hamburg salami. The proximate composition, sensory properties, colour characteristics, acid value, peroxide value, TBARS, free amino nitrogen, protein carbonyls, pH, residual nitrites and total plate count of aerobic mesophilic microorganisms of Hamburg salami were determined. The replacement of encapsulated oleoresins of black pepper and nutmeg with tetrafluoroethane essential oil extracts in Hamburg salami effectively save the sensory scores for colour of cut surface, taste and odour, and the L*, a* and b* values.

1.5.

The effects of garlic extract on the product quality of lakerda

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Abstract

In this study, the content of eight biogenic amines, chemical and microbiological compositions were determined throughout the manufacture of lakerda, a traditional salted fish product made in the Mediterranean region. The effect of the use of garlic extract supplement was also studied. For this purpose, fresh bonitos handled with dry salting method were ripened at +4°C. Biogenic amines were determined by high performance liquid chromatography. Tyramine and spermine were the most abundant biogenic amines in fresh fish and ripened products. The total amine content decreased significantly ($P < 0.05$) in the both groups during the ripening. The use of garlic extract significantly ($P < 0.05$) decreased the total biogenic amine content. In addition, supplementation with garlic extract prevented the products from lipid oxidation and also inhibited microbiological growths ($P < 0.05$). The present study was carried out with financial support of Scientific Research Fund of COMU (Project no 2010/28).

1.6.

Determination of seasonal differences in the composition of protein and lipids of *Mytilus galloprovincialis* in Gulluk gulf, Turkey

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Abstract

Mussels are living organisms feeding through filtration of water. The main factor in the development and consequently in the quality of their meat is the abundance and the nutritional characteristics of the materials of the water environment. In this study, the chemical composition of *Mytilus galloprovincialis* cultured in 2 stations in Kazıklı seaport, Gulluk Gulf, Turkey was determined. The first station is located far from the coast in a place where a private aquaculture company cultivates fish in cages. The second station is located near the coast but far from the cages. The mussels located on the ropes on anchoring systems and put in the determined stations in nets in May 2013. The mussel samples were seasonally collected and the protein and lipid compositions were determined with respect to season and compared between the stations. According to the results, the maximum crude lipid value (2.6 %) was found in the station near to the cage in summer.

1.7.

Nutritional changes of minimally processed wedge clams

(*Donax trunculus*)

E. Kunili, F. Arik Çolakoglu, H. B. Ormanci

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Abstract

Wedge clam, *Donax trunculus*, is an economical bivalve species which they are very unstable at cool storage conditions. For this reason, it was aimed to determine the effects of different minimal processing methods on nutritional compositions. Clams were subjected to depuration for 3 days and then samples either microwaved or boiled for 15 or 90 seconds. The proximate composition, amino and fatty acid profiles of all groups were determined. According to findings, protein and lipid contents of fresh samples were found higher than other groups. Saturated fatty acid contents were found at maximum level in fresh samples (42.4%) and minimum level at microwaved samples (40.1%). While monounsaturated fatty acids were found at highest level in microwaved samples, polyunsaturated fatty acids were found in fresh samples. The total amino acid contents of fresh samples were lower than other samples. All processing methods, other than 15 second boiling, were caused to decrease of free amino acids.

1.8.

Proximate composition of *Holothuria tubulosa* from Çanakkale (Turkey)

E. Kunili, F. Arik Çolakoglu

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Abstract

Holothuria tubulosa is an economic sea cucumber species found in Turkey Seas. In this study, it was aimed to investigate comprehensively the nutritional properties of *Holothuria tubulosa* found in Çanakkale Strait. A total of 120 specimens were collected by scuba up to 15 meters depth from Southern Coasts of Çanakkale Strait seasonally. The body walls of sea cucumber species were dissected and analyzed in point of proximate composition, fatty acid and amino acid composition. According to findings, highest values of protein, lipid and ash contents (%) were 10.2, 1.9 and 5.1, respectively. Saturated, monounsaturated and polyunsaturated fatty acids were (%) 42.8, 28.4 and 35.1, respectively. Total amino acids (g/100g meat) were ranged between 9.8 and 8.1. All essential amino acids were found in body wall tissues and ranged between 7.1 and 5.9. In conclusion, *Holothuria tubulosa* can be considered good nutritional food stuff if they are caught at summer session in Çanakkale, Turkey.

1.9.

Dispersion characteristics of oil-in-water emulsions with modified starches

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Abstract

Most food emulsions are characterized by high fat content and the development of reduced-fat food emulsions with the same physicochemical, rheological and organoleptic properties as the full-fat emulsions has been a considerable challenge. Reduced-fat food emulsions with modified cassava starches were prepared and the dispersion characteristics are analyzed by their microscope digital images. From the results for the median diameter (Md) the highest values were obtained for the emulsion with 12% cassava maltodextrin (CM), followed by the sample with 6% CM. The largest average volume and average surface of colloidal particles had the control full fat sample. For samples with CM and a mixture of the two types of modified starches, CM and pregelatinized cassava starch, were observed more influence of the quantity of the starches.

1.10.

Erythritol like sugar substitute in the composition of starchy cream

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Abstract

Sweeteners from the group of polyols (sugar alcohols) find wider application in the manufacture of dessert food from type „Food with no added sugar“. One of the newest sweeteners from this group is the erythritol, what makes it different from other polyols is its energy value assumed for 0 kcal/g and its digestive tolerance. The purpose of this study was to define the impact of erythritol, like sugar substitute in the composition of instant starchy cream, on the main physicochemical parameters and properties. On the basis of a comparative analysis were defined the physicochemical parameters and rheological behavior of instant starchy cream with polyols, including erythritol. It is shown that differences between samples and the control (obtained with sugar) exist at parameter-total sugar content and calculated energy value. It was also found that starchy cream with erythritol was with 63% lower energy value than starchy cream with sugar. There were not observed differences in rheological properties.

1.11.

**Technology of confectionery products using germinated seeds
Hippopoe Rhamnoides L.**

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Abstract

The technology of confectionery with use of seeds of a sea-buckthorn is developed. Introduction of germinated seeds of a sea-buckthorn causes fruitcake creation with functional properties due to enrichment of biologically active agents and an optimum ratio of components, increase of moisture-holding ability, increase in a product yield and improvement of organoleptic properties as a result of compounding harmonization, decrease in prime cost of a ready-made product.

Introduction of germinated seeds of a sea-buckthorn in a compounding of a fruitcake causes increase of biological value, at the expense of the considerable content of biologically active agents of seeds of a sea-buckthorn. And also allows expanding the range of flour confectionery of a functional purpose.

1.12.

Total phenolics content and free radical scavenging capacity of sweet cherry fruits from Canakkale, Turkey

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Abstract

Fruits comprise an important part of human diet and are known to contain functional compounds such as phenolics, flavonoids, with beneficial health effects. In the present study, the total phenolics, flavonoids and condensed tannins content of two sweet cherry (*Prunus avium* L.) varieties (Napoleon and Starks Gold) cultivated in Canakkale, Turkey were determined. Furthermore, the free radical scavenging capacity of the ethanolic extracts of sweet cherries using the DPPH assay method was evaluated. Napoleon type sweet cherry had higher phenolic (144.80 ± 2.17 mg gallic acid/ 100 g fresh sample) and condensed tannins content (417.13 ± 4.29 mg catechin/ 100 g fresh sample) while there was no statistical difference between the flavonoids content of the cherry varieties. Stark Gold type sweet cherry fruit exhibited significantly lower DPPH free radical scavenging capacity in terms of IC_{50} values. The phenolics content of cherries varieties was found to vary with cherry types.

1.13.

Free radical scavenging capacity and total phenolics content of tahini halva

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Abstract

Tahini halva, prepared with sesame seeds paste, sugar and soapwort root extract, is a famous traditional dessert, especially in the Balkans, Middle East and Northern Africa. The fact that an appreciable proportion of tahini halva consists of sesame seeds paste, raises the concern of the functional properties of this confectionery product. Thus, in the present study, the total phenolics and flavonoids content as well as the 1, 1'-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging capacity of tahini halva was evaluated. Extracts from defatted halva samples were prepared with methanol, ethanol (pure, 80%, and 50%). The total phenolic content was found in the range of 84.97 – 403.42 mg gallic acid / 100 g halva, while the total flavonoids content varied between 925.70 and 1393.50 mg rutin / 100 g halva. The IC₅₀ values ranged from 2.51 to 9.69 µg/g halva and all samples exhibited significantly lower DPPH free radical scavenging capacity when compared with α-tocopherol and butylated hydroxytoluene.

1.14.

Effect of beer yeast on gas formation properties of wheat flour

R. Chochkov, V. Chonova, St. Jovchev

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Abstract

The effect of different quantity of beer yeast by partial and full replacement of the liquid phase and yeast on gas formation properties of flour was evaluated. Results indicated that by partially replacing the liquid phase of the dough with the beer yeast is improved the gas formation properties of flour, which will lead to an increase in the volume of final product. With partial and full replace the yeast with beer yeast, a gas formation of flour significantly reduced.

1.15.

The use of artishoke to obtain a concentrated extract

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Abstract

In scientific research paper presents the results of preliminary processing chips artichoke scalding steam and hot water and installed reduced loss of dry matter content in the processing of a pair of 17%. For concentrate extraction processes used artichoke inulin clean it in different ways, and evaporation from the extract to obtain a concentrate containing 30 % solids. To carry out the extraction and concentration of the extract used modern laboratory equipment. This concentrate can be used in the food industry for the production of biologically active food additives. The process of concentrating the juice of Jerusalem artichoke and defined quality indicators of the finished product, confirming its high quality by quantity derived inulin and low cost compared to other sugar substitutable products.

1.16.

Combining of enzyme preparations in decoction mashing and high content of maize grits

Iv. Ignatov

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Abstract

The laboratory experiments have been carried out in order to obtain wort for special lager beer, comprising the use of maize grits up to 50%. A combination batch mashing method has been applied, including independent and joint use of enzyme preparations with combined and thermo stable α -amylase activity. The benefit of adjusting the pH of the malt mash by improving a number of technological parameters has been proved. It is determined that there is a significant reduction in the dynamic viscosity of the wort and an increased utilization of the starch within combining enzyme preparations. A substantial increase in the content of α -amino nitrogen has been achieved while using a complex enzyme compared to the samples without such usage. In all the developed variants, it has been found that there is an undesirable reduction in the color of the wort within the gradual growth of the maize grits portion in the total malt grist.

1.17.

The possibility of artichokes development in distillate obtaining

S. Ropciuc, A. Leahu , M. Oroian, C. Damian, A. Prisacariu

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Abstract

Tubers of Jerusalem artichokes have been used as the source of carbohydrates to produce ethanol distillate. Distillate of Jerusalem artichokes was obtained from tubers fermented by yeasts, in particular of *Saccharomyces cerevisiae* and *Kluyveromyces marxianus*. The quality of the distillate obtained from tubers of Jerusalem artichoke is determined by the chemical composition, in particular by inulin content and esters obtained during the process of fermentation which gives it a distinctive flavor. The percentage of fructose will vary depending on the degree of polymerization of inulin, a condition that is influenced by species, variety and the harvesting period of tubers. The extracts from tubers fermented and distillate may be used for the production of beer, wine, and spirits. The obtained distillate was assessed in terms of physicochemical characteristics, causing the density, the alcoholic strength and acidity.

1.18.

Study the processes of melanoidin formation in coffee

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Abstract

Melanoidins are high molecular brown coloured substances and products of sugar-amine reaction of Mayard. They are formed during roasting green coffee beans under different thermal regimes of heat treatment. In the technological production of different types coffee beverages, the coffee powder is subjected to after-heat treatment. In these additional operations again become active processes of melanoidin formation and their changing their structures. This is changes of the Melanoidins have different effects on human health. It is therefore important to know their chemical structures and changes. Previous studies have shown that polysaccharides, proteins and chlorogenic acids are included in the formation of these melanoidins. However, the precise structures of coffee melanoidins and mechanisms involved in the formation are not yet clarified. This article systematizes available information and provides an overview of research obtained so far on the structure of coffee melanoidins.

1.19.

Investigation of quantity and chemical characteristics of carp by-products

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Popović, M. Ristić

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Abstract

Quantity and chemical characteristics of by-products obtained at primary processing of carp were investigated in this paper. The authors found that the total average mass of by-products was cca 900 g or cca 40% in relation to live body mass (cca 2.200 g). Biochemical characteristics show that this material, besides water, contains significant amounts of crude protein and fat suitable for feeding. Carp heads are suitable for usage as edible product and fins and internal organs as inedible by-products. Proteins are high biological value.

1.20.

Changes in the beer wort in partial substitution of barley malt with malted einkorn

Iv. Ignatov

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Abstract

The current experiment has examined the changes in the basic quality parameters of the malt mash and the wort, obtained using different ratios of malted einkorn and barley malt between 0 and 50%. A standard method of EBC and analytical methods generally accepted in the brewing practice have been applied during the mashing. Minor amendments of the wort extract content but significant difficulties in the starch saccharification have been experimentally established while increasing the share of the malted einkorn within the total malt grist. Growth in the dynamic viscosity, decrease in the content of the alpha-amino nitrogen as well as loss of the wort color have been also determined under the same conditions. As a result of the experiments, a serious deterioration in the quality characteristics of the wort has been observed while using more than 25% malted einkorn.

1.21.

Evaluation of physicochemical composition of cow's milk based on race (Simmental, Simmental combined, and Hollshtaj-frizia) and animal nutrition

L. Salihu, D. Salihu, A. Musaj, V. Gjinovci

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Abstract

Kathy research work was conducted with the time frame from January, March and June 2016. The changes of fat and protein were assessed by analysis of milk samples. The physicochemical composition of fresh milk during January was determined. He results shown, the cows fed on silage, concentrate combine, hay, the fat in Simmental combined race was 3.82%, and protein 3.5% protein, fat in Simmental race was 4:32%, and proteins 3.54%, to race Frizia was for fat 4.87%, and proteins 4:38%. In March, Simmental combined race, the fat was 2.61%, and proteins 3.85%, the fat in Simmental race was 3.93%, and proteins 3:59%, Frizia race was 5.24% fat, 3.70% protein. In June, Simmental combined race 2:26 l% fat and 3.69% protein, the fat in Simmental race, was 3.95% and 3:54% protein, Frizia race had 4:37% fat and 3.65% protein. From the results obtained shows that the milk in 3 races in June has changes, due to temperature and feeding with green fodder, while milk production has increased

1.22.

The co-pigmentation interactions between strawberry anthocyanins and high concentration caffeic acid with different methods

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Abstract

Interactions between strawberry anthocyanins as pigment and caffeic acid as co-pigment were studied. Investigations were done in different temperatures from 20 to 50°C, at hitting system and cooling the same system at 40 - 20°C. The system was investigated with high concentration of caffeic acid 1:20 to 1:100 molar ratio. The thermodynamic parameters of the system ΔG , ΔH and ΔS were calculated as function of temperature at heating and at cooling. After obtained results was found that the interaction between pigment : co-pigment couple was destroy at heating to 50°C and with following cooling to 20°C was not seen reversibility of the co-pigmentation process.

1.23.

Short- and long-term retrogradation of corn starches of various amylose content

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Abstract

The aim was to study the susceptibility to the retrogradation of the pastes and gels of normal (NCS) and waxy (WCS) corn starches, within 90 day storage on cooling. Studies of the retrogradation included the mechanical spectra, syneresis as well as textural properties measurements. Properties of the fresh and stored on cooling (for 1, 2, 10, 30, 60 and 90 days) gels were studied. It was found that the biggest changes were noticed after 30 days of storage. The gels of the WCS were characterized by a smaller retrogradation than those of the NCS during the whole period of storage. They had up to 10 times lower hardness and to 40 times reduce syneresis in comparison to the NCS gels.

This project was financed from the funds of the National Science Centre of Poland awarded basing on the decision number UMO-2013/11/B/NZ9/01951.

1.24.

Retrogradation of the pastes and gels of waxy potato starch with an addition of xanthan gum

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Abstract

The aim was to study the retrogradation of the pastes and gels of waxy potato starch (WPS) without and with an addition of xanthan gum (XG), within 90 day storage on cooling. Studies of the susceptibility to the retrogradation included the mechanical spectra, textural properties as well as syneresis measurements of the fresh gels and those stored on cooling for 1, 2, 10, 30, 60 and 90 days. It was found that the biggest changes in the properties of the samples were observed from 30 to 90 days of storage. The susceptibility to the retrogradation was higher for the gels containing 6% of the WPS than for those of the 4% WPS samples. An addition of the XG caused an increase of the long-term retrogradation (especially for samples containing 6% of the WPS) in comparison to those without this additive.

This project was financed from the funds of the National Science Centre of Poland awarded basing on the decision number UMO-2013/11/B/NZ9/01951.

1.25.

Organoleptic properties of sugar-free cookies

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Abstract

The aim of this study was to evaluate the impact of saccharose replacement by polyols on the organoleptic properties of wheat cookies. Research material consisted of four kinds of wheat cookies with saccharose (control bread) and without, with an addition of: (i) xylitol; (ii) sorbitol; (iii) maltitol. Organoleptic assessment based on a five-point scale. Top-rated by the consumers were the sucrose cookies (4.5 points). The lowest marks gained the cookies with maltitol - 3.56. Concerning flavor, the best one were sucrose cookies (0.97), slightly lower with sorbitol (0.93), xylitol (0.83), while the lowest score got biscuits with maltitol (0.8). The worst consumer ratings in terms of overall appearance, such as: shape, surface and color, taste and smell obtained the cookies with maltitol.

This study has been carried out with financial support from Agricultural University in Krakow. Grant No. BM-4706/KZCz/2016

1.26.

Effect of selected technological processes on antioxidant of rutabaga

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Abstract

The aim of this study was to evaluate the effect of processing (blanching, cooking in the water and steam cooking and also 1- and 3-months period frozen storage in two types of packaging), to changes in antioxidant activity of rutabaga. Antioxidant activities were determined based on free radical quenching capacity of ABTS^{•+}. All technological processes applied the effect of statistically significant ($p \leq 0.05$) lowering the antioxidant activity. This study showed impact of cooking method and packaging type on the antioxidant activity of rutabaga frozen stored. Vacuum packing caused statistically significant ($p \leq 0.05$) smaller losses of antioxidant activity than traditional methods of cooking and packaging.

This study has been carried out with financial support from Agricultural University of Krakow. Grant No. BM-4709/KŻCz/2016

1.27.

Changes on volatile compounds of coffee during storage

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Abstract

Coffee is one of the most widely consumed beverages in the world due to its wide range of aroma compounds. The aroma compounds of coffee depend on the origin of coffee beans, the fermentation process of coffee beans, the roasting process, time, temperature and degree of roasting, also the hot water extraction of coffee. Coffee contains more than 800 volatiles from different chemical groups including acids, alcohols, aldehydes, anisoles, esters, furans, ketones, pyrazines, pyridines, pyrroles, thiazoles, thiophenes, phenolic and sulphur compounds. Two mechanisms are suggested for staling: loss of aroma components that have low boiling point such as sulphur containing volatile compounds responsible for the fresh aroma and oxidative reactions responsible for off-flavour formation. Aroma indices which are the ratios between certain pairs of volatile compounds are used as indicators of coffee storage time. The ratio of 2-methylfuran and 2-butanone and the ratio of methanol and 2-methylfura were better.

1.28.

Volatile compounds of butter

C. Dadali, Y. Elmaci

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Abstract

Butter is water in oil emulsion and it is highly consumed all over the world and, essentially it is the fat of milk. It has high nutrition value due to its composition. Butter contains 80-82% fat, 15.6-17.6% water, 1.2% protein, calcium and phosphorus, also fat soluble vitamins A, D and E. Butter is generally used in food products such as cakes, cookies, pastries. It has higher consumer acceptance with its unique and pleasant flavour when compared with fats like margarine. Volatile compounds are responsible for the aromas of butter. The aroma profile of butter depends on animal feeding, production season, manufacturing process and storage conditions. It is reported that in butter 233, in butter oil 243 volatile compounds have been identified, but volatile compounds which has odor activity determined to be less than 50. Volatile compounds of butter belong to different chemical classes. Acids, aldehydes ketones, alcohols, esters, lactones, terpenes, and sulphur compounds are main chemical compounds were found.

1.29.

Multisensory determining the concentration of apple juice

R. Vassilev

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Abstract

A multisensory system for defining the concentration of apple juice is presented in this article.

An overview of the accessible information sources is given.

The concentrations of five different tests and the results of their investigation were presented.

1.30.

Shelf life of zinc- and selenium-enriched wheat bread

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Abstract

It has been found that in human nutrition there is a deficiency of some essential microelements such as zinc and selenium. They are very important for the overall health and the normal functioning of the human body. An opportunity for overcoming their deficiency is enrichment of wheat bread with zinc and selenium. The aim of the present paper is to study the effect of zinc and selenium enrichment on the shelf life of bread made from wheat flour type 500. Water-soluble compounds were used - zinc sulphate heptahydrate ($ZnSO_4 \cdot 7H_2O$) and sodium selenite pentahydrate ($Na_2SeO_3 \cdot 5H_2O$). The amounts of the microelements added were calculated according to the recommended daily intake levels. The measurement of the deformation characteristics of bread crumb (total, plastic and elastic deformation) was performed after 24, 48 and 72 hours of storage. The sample enriched with zinc and selenium keeps its freshness for longer time and after 72 hours the total deformation of bread crumb was higher.

1.31.

Influence of collagen supplements on morphological characteristics of cooked sausages

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Abstract

Cooked sausages are the most widely spread meat products and their characteristics are directly related to their structure. The aim of this study is to establish the influence of extra added collagen sources on morphological characteristics of cooked sausage type("krenvirsh"), using two different supplements: CPS-C – commercial one; and CPS-U – laboratory produced from pork skins by mechanical treatment. For this purpose, experimental samples - with supplements addition in amounts of 15.00, 25.00 and 35.00 g.kg⁻¹, and a control sample - without collagen addition, were produced. Light microscopy analysis was conducted. The obtained images indicate that collagen proteins have great influence on products morphology. The addition of CPS-U in amount of 15.00 g.kg⁻¹ has positive effect, resulting in fat globules coating, as well as stabilization of the protein matrix of the finished product. The use of supplements in amounts of 25.00 and 35.00 g.kg⁻¹ was found negative due to form

1.32.

Influence of starter culture of bifidobacteria and lactic acid bacteria on pH-value and color of dry fermented sausages

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Abstract

The aim of this work is to investigate the effects of monoculture of *Bifidobacterium longum* (B2) and a combined starter culture of *Bifidobacterium longum* (B2) and *Lactobacillus plantarum* (L6) on pH-value and color characteristics of dry fermented sausage type ("lukanka"). Therefore two experimental and a control sample (without culture addition) were produced and compared. The obtained results show that the used starter cultures lead to faster and more considerable decrease of pH-values. This effect is well pronounced in the sample produced with combined starter culture of *B. longum* (B2) and *L. plantarum* (L6). Used cultures accelerate also the process of color formation, as the observed color characteristics of experimental samples are better expressed, compared to these of the control sample.

Addition of starter culture of *B. longum* (B2) and *L. plantarum* (L6) lead to 24.40% higher a-values on the 1st and 30.50% on the 5th day of storage, compared to control sample.

1.33.

Investigation of connective drying tomatoes manner

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Abstract

The article presents a study of the process of convective drying tomato quarters and slices at a constant temperature in the working area. The drying process was performed at 70, 80, 90°C for slices and 90, 100, 110°C for quarters. Found that perform better drying tomato slices, where the total drying period is less than half, due to the size of the dried material. Results for regenerative capacity tomatoes were discussed. The research results approximated to the appropriate regression equation by which to establish the moisture content of raw materials depending on the drying temperature and duration of drying for both periods. During micro photographing different forms of dried tomatoes found that moisture removal is proportional to the increase in temperature.

1.34.

Impact of albinism on the quality of the chilled rainbow trout (*Oncorhynchus mykiss*)

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Abstract

The objective of this study was to determine the impact of golden albino line on the quality of 9 days refrigeration stored rainbow trout. Two samples (ordinary and golden albino) of rainbow trout were studied on 1st, 3rd, 6th and 9th day of their storage at 0 - 4°C. The pH values of two samples were in their usual limits. The significant differences between pH values of ordinary and golden albino samples weren't determined. The pH values variations between 6.79 (on 1st day of storage) and 7.18 (on 9th day of storage) were found. The albino line golden rainbow trout was characterized with significantly ($p^* < 0.05$) higher content of total lipids (4.00 - 4.50%) comparing to 3.00 - 3.75 % in the ordinary rainbow trout. The trends of free fatty acids (FFA) and TBARS accumulation determined in two samples weren't significantly ($p^* > 0.05$) different. Naturally approximately threefold increase in FFA and six and a half fold increase in TBARS were found.

1.35.

Fixing of shelf life of sausages of gerodietetic application

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Abstract

Ukraine has a poorly developed market of meat production, which can meet the physiological demand of the population of older age groups. The authors have developed a recipe of sausages from the meat of quail with herbal supplements and partial replacement of animal fat with vegetable oil. The work is devoted to the study of the dynamics of changes in the physicochemical and microbiological parameters in the process of storage, as well as the fixing of the shelf life of a new product. The investigators studied the changes in acid value, peroxide value, thiobarbituric value and active acidity index, as well as the number of mesophyllicaerobic and facultative anaerobic microorganisms (MAFAnM), coliform bacteria (*E. coli*), sulphite reducing clostridia, coagulase-positive staphylococcs (*St. aureus*), pathogenic microorganisms, including bacteria of Salmonella genus and *L. monocytogenes* within 12-day storage period. The investigators fixed that adding of the meat flakes and walnut oil to wheat germ has no significant impact on the quality indices of the ready-made product. All the studied indices meet the requirements of regulatory documents. The results revealed that the developed product can be stored under the same parameters as the sausages of conventional product range - temperature 0 - 6°C, shelf life - up to 12 days, relative humidity 75 - 78% with the application of vacuum packaging in thermoforming film.

1.36.

Effect of ripening temperature on the proteolysis in cow milk kashkaval cheese

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Abstract

It traces the changes in protein fractions of cheese from cow's milk in the process of maturing in three different temperature regimes, respectively, $t = 8-10^{\circ}\text{C}$, $t = 10-12^{\circ}\text{C}$ and the $t = 12-14^{\circ}\text{C}$. Degree and nature of proteolysis in the tested samples were evaluated using indicators to water-soluble total nitrogen (WSN / TN), non-casein total nitrogen (NCN / TN), and non-protein to total nitrogen (NPN / TN) and of free amino acids. It was found that in the process of ripening cheese run hydrolytic significant changes to the cheese paracasein, as evidenced by elevated values of surveyed indicators. The most intense proteolysis was observed in the temperature regime maturation $t = 12-14^{\circ}\text{C}$. In mature specimens in this mode are set at high values of both high molecular weight protein fractions (WSN / TN, NCN / TN), and the products of deep proteolysis (NPN / TN and free amino acids).

1.37.

Monitoring of the somatic cells count for improving milk and dairy products quality

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Abstract

This review discusses current knowledge of the impact of mastitis on milk composition and processing properties. Dairy product quality defects resulting from mastitis are due to enzymatic breakdown of milk protein and fat. Somatic cell count (SCC) values are routinely used to detect the inflammation that results from intermammary infection of dairy cattle. Subclinical mastitis may cause more losses in a herd than clinical mastitis, since the animal does not exhibit typical symptoms of the disease. A useful tool for subclinical mastitis diagnostic is SCC. The increase of SCC in milk is associated with development of several undesirable sensorial defects in dairy products as salty flavours due to a change in milk mineral balance, rancid and bitter off-flavours due to increased lipase and protease activity, respectively. Proactive management of mastitis infections by using of SCC as a diagnostic tool could be extremely effective for improving milk and dairy products quality.

1.38.

Use of cytolytic enzyme preparations in the process of obtaining rye malt

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Abstract

The possibility of using cytolytic enzyme preparations in obtaining non-fermented and fermented rye malts widely used in food industry is studied in the paper. Concentration of cytolytic preparations «Finizyme» and «Ultoflomaks» added in steeping and germination of rye was optimized and practicability of their application in malting process was shown.

1.39.

Production technology of functional food products for ecologically adverse regions

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Abstract

A balanced diet is a diet that is sufficient in number, and half-fledged high-quality, satisfying energy, plastic and other needs of the body and providing the necessary level of metabolism. Good nutrition is built on the basis of sex, age, nature of work, climatic conditions, national and individual characteristics.

For normal human life requires not only the supply of adequate (in accordance with the needs of the body) the amount of energy and nutrients, but also the observance of certain relationships between numerous dietary factors, each of which belongs to a specific role in metabolism. Food, characterized by an optimal ratio of nutrients is called balanced.

1.40.

Some phenolic compounds of cocoa bean and their effects on taste

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Abstract

Cocoa beans originate as seeds in fruit pods of the tree is called as *Theobroma cacao*, which is cultivated in tropical regions round the world. Cocoa bean and its products (cocoa liquor, cocoa powder, and dark chocolate) are rich food sources about polyphenols. Unfermented beans have a high phenolic content of about 12–18% (dry weight). Three groups of polyphenols can be seen in cocoa beans: anthocyanins (about 4%), catechins or flavan-3-ols (about 37%), and proanthocyanidins (about 58%). The main catechin is (-)-epicatechin which is occurring for up to 35% of the polyphenol content. They have a vulnerable antioxidant capacity (as reducing agents, free radical scavengers and metal chelators etc.) and their potential beneficial is exist in human health. Cocoa is used in beverages and confectionary products due to its bitter and astringent characteristics. Quercetin-3-O-glycosides with luteolin, naringenin and apigenin glycosides, condensed tannins, flavan-3-ols glycosides

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