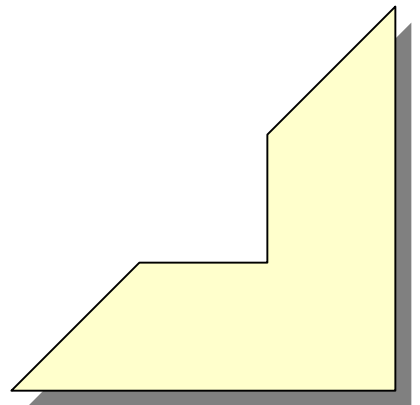


***The 2nd International
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PL1

THE CHEMISTRY OF VANADIUM WITH AMINO ACIDS AND THEIR DERIVATIVES. RELEVANCE TO HEALTH AND DISEASE

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Vanadium is a highly acclaimed chemical element in the chemistry and biology of eukaryotic organisms. Outstanding among the various functions of that elements at different oxidation states stand the antitumorogenic and insulin mimetic activities. The latter reactivity acquires special interest in the case of the human disease of *Diabetes mellitus II*. IN an effort to explore the potential chemical reactivity of vanadium in the presence of physiological amino acids and the biologically important hydrogen peroxide, research efforts were launched to investigate the potential structural speciation of ternary systems of that element with the aforementioned reagents. The emerging ternary species exhibit unique composition and structures, the physicochemcial properties of which suggest a diverse chemistry in the framework of biological insulin mimetic activity.

PL2

MINERALS IN FOOD

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Minerals in food are constituted in principal from different organic (salts of organic acids, metalloenzymes) or inorganic (halogenides, sulfates, phosphates, carbonates) compounds of metals present in different part of foods originate from vegetables or animals sources. After the concentration of metals components in these compounds we can classify food minerals in bulk (macro) or trace (micro) minerals. Compounds of calcium, magnesium, sodium and potassium forms the principal

bulk minerals and compounds of iron, manganese, zinc, copper, nickel, cobalt, cadmium, lead, mercury, chromium, molybdenum and vanadium form the trace minerals. A lot of nonmetals or semimetals elements like boron, silicon, germanium, selenium, arsenium, phosphorus, iodine, sulfur can also generate different minerals present in food in bulk or trace concentration. Human life is not possible without some of these minerals and the principal source of them is foods. Some of them (manganese, copper, nickel, lead, selenium) are toxic in high concentration and another is toxic in very small amount (mercury, cadmium, arsenium). Food's source of them is: soil, water, manure, chemical fertilizers and pesticides, food additives and food processing. Mineral's composition of foods is very large, from ppm to % and qualitative different. Some foods contain more minerals like another and for a balanced nutrition an optimal amount of some minerals are necessary. On the other side some minerals in small amount can be very toxic. These reasons make necessary to knowledge the contents of minerals in food and on the other side, the impact of these minerals on the health. In our work are presented the essential and toxic minerals, the principal effect of them on the health and the food sources of some essential or toxic minerals. Calcium, the principal mineral of strong bones, proceeds from dairy products (milk, yogurt and cheese) seeds, vegetables and some fruits. Magnesium rich sources are seeds, vegetables and meat. Potassium and sodium also proceeds from vegetables, fruits and seeds. In generally, green foods (vegetables, fruits, and seeds) are rich source of macro minerals. Foods from animal sources (eggs, meats) provide especially trace minerals (Fe, Zn, Cu, Co, Se) but also seeds are important source of them. Toxic metals like mercury provide especially from animal source (marine fish) and cadmium from vegetables (soil or fertilizers).

Polluted environment (soil, water or air) with heavy metals favors accumulation of them in cereals, fruits or vegetables and then by trophic chain, in animal and human body. Here they can affect the health for short or long time and reduce drastically the life quality. Mineral deficiencies in human body are also possible. High productive grain cereals, vegetable or fruits, more processed foods, are poor in essential minerals. From here, by trophic chain, little minerals in human body and more mineral malnutrition with different symptoms are present. Especially by children and pregnant women, mineral malnutrition can affect drastically the life quality and development of health body.

PESTICIDE RESIDUES IN ORGANIC SEED

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In autumn 2009 a big German retail store chain reported on pesticide residues found in organic vegetable and herbal seed. This is a fraud for the consumer. In special cases, if seed is identical to food (e.g. coriander, anise, caraway) it can also possibly endanger food safety. Consequently the state of Baden-Wuerttemberg (Germany) started a monitoring on pesticide residues in organic seed in spring 2010. In this report the analytical method and the result of the survey will be presented.

EVOLUTION OF ANTIOXIDANT ACTIVITY IN SEA BUCKTHORN DURING TECHNOLOGICAL TREATMENTS

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This paper presents the study of total antioxidant activity evolution during different technological treatments of sea buckthorn. In order to assess the total antioxidant activity, the photolorimetric method, utilizing DPPH radical, was used. Sea buckthorn was subjected to various technological treatments: freezing, freezing with prior blanching, conservation with sugar, with subsequent refrigeration and pasteurization, with the purpose to determine the stability of the antioxidant activity during these treatments and further storage.

From researches it was determined that freezing is the optimal method of conservation, in terms of preserving antioxidant substances. It was also noted that blanching prior to freezing makes the preservation of antioxidant activity more efficient. Freezing juice with pulp proved to be as effective as whole frozen fruit freezing in terms of antioxidant activity's stability immediately after treatment. In the case of sea buckthorn conservation with sugar, total antioxidant activity and sensory properties were better preserved in the chilled product.

THE EFFECT OF ACUTE HOMOCYSTEINE ADMINISTRATION ON SUPEROXIDE DISMUTASE ACTIVITY IN YOUNG AND AGED RATS

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In mammals, dietary methionine is the only source of homocysteine (Hcy) whose metabolism depends on the availability of B vitamins. Although Hcy is an essential metabolite, hyperhomocysteinemia yields to aged associated neurodegenerative disorders. The oxidative stress is the main ethiopathogenical mechanism involved in alterations induced by hyperhomocysteinemia. It is generally accepted that Hcy level increases, respectively the antioxidant protection decreases by aging.

In this experiment we have studied the effect of Hcy acute administration on erythrocyte superoxide dismutase (SOD) activity. Wistar rats (20 young and 20 aged) have received a single intraperitoneal injection of saline (control) or Hcy (0.6 μmol/g body weight). Significantly lower levels of SOD activity (87184.22 U/gHb versus 48153.23 U/gHb; $p < 0.03$) were seen in young rats treated with Hcy versus control group. Lower levels but not statistically significant were observed in aged rats.

In conclusion, hyperhomocysteinemia induces a significant decrease of SOD activity only in young rats.

RESEARCH ON THE RHEOMETRIC ELEMENTS OF THE POTATO DOUGH AND THE INFLUENCE OF MEASURED VARIABLES UPON BREAD QUALITY

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The aim of this study is to establish the relationships between values of measured variables that would characterize rheometric elements with characteristics bread with potato. The other added materials and operational parameters were constant in order to better emphasize the influence of the studied adding (potato pulp that replaces flour). To establish the hydration capacity of the mixture we used the Haubelt Flourgraph E6 and rheological behavior and the dough containing potato pulp performed by Haubelt Flourgraph E7. The studied quality parameters of the bread were specific volume, the height/diameter ratio, elasticity, porosity and to appreciate the chemical composition we determined the humidity. They were used to analyse standard methods and their modified variants. Bread improves its quality index, the specific volume increases, the height/diameter increases, the porosity decreases and the elasticity increases. Humidity increases as well. In general bread quality has improved. This study shows that choice for potato variety is important because based on its structural and functional characteristics the technological results on the bread manufacturing flow diagram are more or less profitable. We consider that Orchestra variety would be a more appropriate choice than Impala variety.

INFLUENCE OF FOLIAR FERTILIZER TREATMENTS, FUNGICIDES AND INSECTICIDES ON THE QUALITY OF SOME WHEAT VARIETIES

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Wheat crops are affected by numerous diseases that have caused quantitative and especially qualitative losses in Transylvania conditions. The effect of treatments on winter varieties was studied in S.C.D.A. Turda during the year 2008-2009. Four variants (T1, T2, T3, and T4) were tested using combinations of foliar fertilizers, fungicides and insecticides on wheat varieties: Arieșan, Apullum and Dumbrava. The four variants were four important moments in vegetation phenology (the resumption of vegetation, and the brotherhood end phenophase and herbicidation, the bellows phenophase and the flowering phenophase).

Differences between applied treatments have been observed. The best results were obtained at the T1 treatment, at the application of foliar fertilizers in all four major phenological stages: insecticide at the resumption of vegetation in the spring, at the bellows stage and at the flowering stage and fungicide at the bellows stage and at the flowering stage. The crude protein values ranged between 14.4% (T3) and 15.1% (T1) at the Arieșan variety, between 13.35% (T3) and 14.30% (T1) at the Apullum variety and between 13.6% (T3) and 14.37% (T1) at the Dumbrava variety. The wet gluten content and the Zeleny sedimentation index shows small variations between treatments, the best results have been obtained also at T1 treatment.

Thus, the higher value of wet gluten content at the Arieșan variety is of 36.85% (T1), at the Apullum variety of 35.03% (T1) and at the Dumbrava variety of 35.13% (T1). For the T1 treatment, the Zeleny index has values between 49.22 ml at the Arieșan variety and 52.77 ml at the Dumbrava variety. Hectoliter mass increases through the bellows stage, the varieties T3 and T4.

The foliar fertilizer treatments on the vegetation (fungicides and insecticides) provide the superior expression on biological potential of wheat varieties (production and quality).

SWEET SORGHUM BIOMASS PROCESSING WITH A VIEW TO MANUFACTURE FOOD AND JUICE DERIVATIVE PRODUCTS

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This paper presents research results of physical-chemical properties of highly productive hybrids of sweet sorghum "Porumbeni 4" and "Porumbeni 5" with advanced cultivation by seedling, which allows to achieve the technical phase of the plant earlier by 20-25 days in comparison with traditional cultivation technologies (with planting in the open ground).

Original methods are proposed for obtaining clarified juice of sweet sorghum in industrial conditions using modern materials and techniques of clearing, including ultra-filtration. There were studied the chemical compositions and directions for use of Bega Sorghum meal obtained from pressing.

The use of the leaves and Bega Sorghum meal is indicated, for obtaining some fodders for domestic animals.

Special attention should be given to renewable energy production sources - briquettes begasa with humidity max. 10%.

MICROBIOLOGICAL QUALITY OF A FERMENTED DAIRY PRODUCT CONTAINING BREWER'S YEASTS

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The purpose of this study was to evaluate the microbiological quality of a kefir-like product obtained in a fermentation process of skimmed milk with a complex mixture of microorganisms containing lactobacili, kefir and brewer yeasts. The product was monitored during the shelf-life (storage at 4 °C from 1 to 21 days) by the quantitative determination (enumeration) of coliforms count, *Escherichia coli*, total staphylococcal count, mold count and the detection of *Sallmonella ssp* and *Listeria monocytogenes*. All the microbiological tests were performed according to Romanian official methods for microbiological investigation of foods. The results showed a good microbiological quality of this type of fermented dairy product; the microbiological parameters, except the molds count, recorded lower values than admissible levels according to the criteria used. The brewer's yeasts addition in the kefir-type product did not affect negatively his microbiological quality and by his presence contribute to the functional properties of the final product.

INFLUENCE OF IRON AND VITAMINS COMPOUNDS ON THE QUALITY OF WHEAT FLOUR DURING THE STORAGE

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Among alimentary factors of especial significance for human health the most important role is played by full-value and regular supply of his body with all essential micronutrients, i.e. vitamins and mineral substances.

The scientific and technological aspects of food products fortification with micronutrients (vitamins, minerals) for human consumption and therapeutical and preventive uses are developed.

Scientifically argued choice of fortified products – bread, confectionary, cereals and biological active supplements in the form of instant drinks.

Scientifically argued choice of biological active supplements for fortification with vitamin and vitamin-mineral premixes.

Investigations were conducted on freshly milled wheat flour fortified with iron and vitamins in industrial conditions.

There was established the influence of vitamins and mineral complexes with different chemical forms of iron on quality indicators of fortified flour during the warranty period of storage.

Experimental samples of bread were made from fortified flour and there were determined their physico-chemical, microbiological and organoleptic indices and the integrity of components introduced.

SUBSTANTIATION OF RECIPES OF FUNCTIONAL DRINKS WITH ANTIOXIDANT PROPERTIES

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Researches concerning elaboration of functional drinks with antioxidant properties on the basis of extract of Echinacea with fruits juices were carried out.

The index AOA – the summary content of antioxidants equivalent to cvercetin was investigated for estimation of compatibility of extract of Echinacea with some juices. Addition of ascorbic acid in compositions leads to appearance of synergic effect.

There were elaborated recipes of the drinks with antioxidant properties.

Consumption of 200 cm³ of these drinks will satisfy 10-20% of daily needs in flavonoids, which composes 250 mg (including 100 mg of catechins) in accordance with the current requirements.

OBTAINING AND CHARACTERIZATION OF SOME PEACH (*PERSICA VULGARIS*) CAROTENOIDIC EXTRACTS

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The aim of this work is to obtain some carotenoidic extracts from peach (*Persica vulgaris*) pulp and pericarp, Red haven variety, and to determine by reverse phase-high presson liquid chromatography (HPLC) the content of β -carotene and total carotenoids. Also, were determined by atomic absorption spectrometry, 12 mineral elements (K, Na, Ca, Mg, Fe, Mn, Cu, Zn, Pb, Co, Cr, Ni) of raw materials and carotenoidic extracts obtained. The results showed that the peach pericarp are richer in β -carotene and total carotenoids than peach pulp. All macroelements from carotenoidic extracts are found in much lower concentrations than in raw materials. Concentrations of Na, Ca, Mg, Zn and Pb in the peach pulp and in the peach pulp extract are lower than the concentrations of these elements in the peach pericarp, respectively in the peach pericarp carotenoidic extract. Fe, Cu, Cr and Ni, however, are better represented in the peach pulp, respectively in the carotenoidic extract from it. Mn and Co are not present either in raw materials and in carotenoidic extracts.

GAS-CHROMATOGRAPHY FROM THE GC-MS ANALYSIS FOR THE WALNUT OIL GROWN IN ROMANIA

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In this paper, the fatty acids composition in saturated and unsaturated of walnut (*Juglans regia L*) core oil was determined.

The oil has been obtained using the Soxhlet method (petrol ether extraction of the core), solvent distillation and anhydrous calcium chloride drying. Walnut samples were collected during the 2010 harvest.

Of unsaturated fatty acids, the oleic acid content of the oil was 13.62 % of the total fatty acids, while the linoleic acid content was 56.57 % and the linolenic acid content was 12.09 %. It was found the palmitic acid was 9.75 % while stearic acid was 3.48 %. The fatty acid profile was determined by GC-MS according to AOAC standards.

OC6

RESEARCH CONCERNING THE EFFICIENCY OF HYGIENIZATION OF THE WORKING AREAS AT PIG SLAUGHTERING

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The researches have followed the determination of the total number of aerobic bacteria TGN/cm² and of the presence of coliform bacteria/10 cm² work area within a unit of pig slaughtering.

EVALUATION OF SURFACE CLEANING METHODS ON MYCOTOXIN CONTAMINATION OF WINTER WHEAT

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Mycotoxin contamination is one of the most important quality defects of cereal grains. Since it may cause serious negative health effects, essential to know that how technologic processes influence its occurrence in milling products. The possibilities of reduction in toxin contamination of winter wheat grains by dry (brushing, hulling and airblow) and wet (washing and ultrasonic) surface cleaning methods were evaluated. We found that all the examined cleaning methods decreased the DON and F-2 content of grain samples by more than 50%. Hulling was the most effective method for both toxins, resulted more than 70% decrease. Dry surface cleaning methods were more effective for decreasing DON content, while we have found less difference between the different methods in the reduction of F-2 content.

SUPEROXIDE DISMUTASE ACTIVITY IN THE FRESHWATER CRUSTACEAN *DAPHNIA MAGNA* EXPOSED TO Pb(II)

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The aim of this work was the study of the toxic action of 2-hydroxyethyl-iminodiacetic Pb(II), [Pb – (HEIDA)] on the freshwater index-organism *Daphnia magna*. The results obtained from the toxicity experiments have been processed through the Trevors program, in the environment of BASIC, in order to assess the toxicity of the Pb(II) complex, expressed as EC50-48h. Based on the final results, it was found, that the Pb(II) complex had an EC50-48h value of 4.46 mg/L, leading to the conclusion that it is toxic enough to *Daphnia magna*.

In order to confirm that all experimental procedures were carried out properly, a reference experiment was conducted, using potassium dichromate as a toxic substance. The toxicity of potassium dichromate, was found to be within the acceptable limits, issued by ISO 6341, i.e. 0.85 mg/L (ppm).

Following determination of the EC50-48h of the Pb(II) complex, the study of its influence on the activity of the antioxidant enzyme Superoxide Dismutase of Copper - Zinc (Cu,Zn- SOD), isolated properly from the organism, was conducted. From the results of this study, it was found that the Pb(II) complex has practically no influence on the enzyme activity.

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STUDY OF ALUMINUM BINARY SYSTEMS WITH PHOSPHONATE SUBSTRATES AND THEIR RELEVANCE TO NEURODEGENERATION

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The interest to delineate the interactions between aluminum and phosphonate substrates and their relevance to Alzheimer's Disease, led to the investigation of the pH-specific synthetic chemistry of the binary Al(III)-[N-(phosphonomethyl)iminodiacetic acid] (Al-NTAP) and Al(III)-[nitrilo-tris(methylene-phosphonic acid)] (Al-NTA3P) systems, in correlation with solution speciation studies. Investigation of the binary Al(III)-NTAP system afforded two new species $(\text{CH}_6\text{N}_3)_4 [\text{Al}_2(\text{C}_5\text{H}_6\text{NPO}_7)_2 (\text{OH})_2] \cdot 8\text{H}_2\text{O}$ (1) and $(\text{NH}_4)_2 [\text{Al}_2(\text{C}_5\text{H}_6\text{NPO}_7)_2 (\text{H}_2\text{O})_2] 4\text{H}_2\text{O}$ (2). A third compound emerged from the binary system of Al(III) with NTA3P, $\text{K}_8[\text{Al}_2(\text{C}_3\text{H}_6\text{NP}_3\text{O}_9)_2 (\text{OH})_2] \cdot 20\text{H}_2\text{O}$ (3). Complexes 1, 2 and 3 were characterized by elemental analysis, FT-IR, ^{13}C -, ^{31}P -, ^1H -NMR, and X-ray crystallography. The structures of 1, 2 and 3 reveal the presence of dinuclear complexes of octahedral Al(III). Each Al(III) center is bound to a fully deprotonated phosphonate ligand, water and hydroxo moieties. The species emerging in solution from the dissolution of 1-3 reflect the aqueous speciation of the respective systems and suggest chemical reactivities consistent with the involvement of biotoxic Al(III) in neurodegenerative diseases.

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INCIDENCE OF AFLATOXINS AND FUMONISINS IN CEREAL FOOD FROM SERBIAN MARKET

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Cereal food have important role in traditional Serbian nutrition, but it is also very attractive in modern nutrition, as so-called `healthy food`. Cereals are possible sources of mycotoxins, but there is not enough information about their presence in food produced in Serbia. To investigate aflatoxins and fumonisins incidence, different cereal foods were analyzed by enzymatic immunoaffinity methods. The used methods appeared to be rapid and reproducible, with recovery of 94.3% for aflatoxins and 98.0% for total fumonisins. In 33.3% samples, content of aflatoxins was over the limit of detection, but in all samples content was lower than maximum allowed by Serbian regulations. In four out of five analyzed corn food samples, content of fumonisins was detectable, but lower than maximum regulated in European Union. Results showed the necessity of such tests. The further examinations of cereal food mycotoxin contamination are proposed.

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LIPOLYTICAL CHANGES IN DACIA SAUSAGE, A ROMANIAN DRY CURED SAUSAGE

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Three batches of Dacia sausage were produced, one without starter culture (sausage A), one with starter culture consisting of *Lactobacillus sakei* and *Staphylococcus equorum* (sausage B), and one with starter culture consisting of *Lactobacillus sakei*, *Staphylococcus equorum* and *Lactobacillus acidophilus* (sausage C). Samples from each batch of sausages were taken at 0 days (mix before stuffing), and after 2, 4, 7, 14, 21 and 28 days of ripening. Lipolysis was observed during ripening by the increase in total free fatty acids levels, peroxide value and the acidity of the fat, in the non started sausage and the two started sausages. Lipolytic activities were detected in all batches, irrespective of the presence of the starter culture. At the end of ripening, no significant differences associated with the use of starter cultures were observed..

TECHNOLOGICAL RESEARCH ON OBTAINING A NEW PRODUCT: YOGHURT WITH ADDED WALNUTS AND STRAWBERRIES JAM

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The main purpose of the study was to determine an optimal technological variant for obtaining a new product, yoghurt with added walnuts and strawberries jam. Designing the product derived from several considerations: diversification of yoghurts on the Romanian market, adapting the nutrients of yoghurt to the needs of some consumers, by improving milk fat with vegetal fat from walnuts, enriching the yoghurt with antioxidants from strawberry jam.

There have been manufactured two variants of product and a blank sample. The analyses regarded physico-chemical properties (total solids, acidity, minerals content, fat content, viscosity), sensorial properties and stability. The obtained data were statistically analysed.

All the analysed parameters accomplished to the limits stipulated by standards.

STUDY OF METAL MIGRATION FROM PACKAGING IN BEER DURING STORAGE

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The factors of the main influence are: the type and quality of cans, the type and thickness of protective can coating, pH of the beer, the length of contact between the can and the beer, storage temperature. On the other hand, primary packaging material could influence beer quality, aroma and flavour stability, which has been the subject of previous researches. Although it is well known that dissolved oxygen concentration has decisive influence on beer stability, primary packaging material can facilitate various processes with negative influence on colloidal and/or flavour stability of beer. The purpose of this work was to determine migration of different metals from can to beer and aroma compound changes in canned beer during storage. Results of our previous research showed that at the end of storage time in nonpasteurized canned beer samples, more expressive can corrosion and aluminium migration were observed compared to pasteurized samples.

THE EFFECT OF TEMPERATURE ON SOLUBLE DIETARY FIBER FRACTION IN CEREALS

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Dietary fiber (DF) consists of a mixture of components with a varying degree of solubility. Wheat and barley contain substantial amounts of both soluble and insoluble DF. Most of food processes are essentially based on heating for a certain time. Thermal processing of plant tissues alters the physical and chemical properties of cell wall, and modifies fiber solubilization, which modifies the water extract viscosity (WEV). The study had in view the effect of temperature on WEV of wheat and barley flours. Thermal treatment at 100°C produced an increase of WEVs, suggesting a conversion of the insoluble DF into soluble DF. The increasing of relative viscosity values of water extracts was up to 21.8% for wheat, when heating at 100°C for 10 minutes, and up to 29.5% for barley, when heating at 100°C for 15 minutes. Determinations of WEVs at different time intervals after extract separation showed that heating the wheat and barley flours at 100°C for 15 minutes deactivated the endogenous hydrolytic enzymes.

WATER EXTRACT VISCOSITIES CORRELATED WITH SOLUBLE DIETARY FIBER MOLECULAR WEIGHT IN CEREALS

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Dietary fiber (DF) is a group of food components that pass undigested through the stomach and small intestine and reach the large intestine virtually unchanged. Although poor in caloric or nutritional value, food fiber has significant health benefits. Whole grain cereals are some of the best sources of DF, along with beans, fruits, vegetables and nuts. Cereals contain substantial amounts of both soluble and insoluble DF. Almost all water-soluble polysaccharides produce viscous solutions. The viscous properties of DF are determined by several factors, including their chemical composition, molecular size, and composition of the extraction media. The study had in view the correlation between water extract viscosities and molecular weight of soluble DF in some whole grain cereals. There is a good correlation between the obtained water extracts viscosities and the average molecular weights of soluble DFs from barley, triticale, oat and wheat. The obtained value of the regression coefficient was $r = 0.917$.

EVALUATION OF WHEAT QUALITY USING MODERN METHODS

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Cereal gradation constitutes in fact an identification and separation of cereals in accordance of appearance and physical or taking into consideration of one of specific characteristics of them (chemical or technological). This new system gave the opportunity to establish the real quality of stored cereals. The most important operation in gradation process is to obtain a representative sample. The aim of this paper was to establish the real quality of wheat species cultivated in the Suceava County. Also, it was made determination of technological properties through Alveograph curves, in order to make recommendation for different usages. It was evaluated four wheat species (Dropia, Flamura 85, Fundulea 4, Local type named SV 1). The most qualitative were Dropia and Falmura 85 which had very good rheological properties and could provide superior flours. Fundulea 4 belongs to A2 class with rheological properties and could provide good flours. The local type SV1 was the worst species analyzed and the flour obtained could be used only to make biscuits, cakes or liquid dough's.

EVALUATION OF CEREAL CULTIVAR IMPACT ON BREAD QUALITY

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Technological behavior of flours is the result of complex interactions which should be analyzed through specific quality parameters: protein content, wet gluten, Zeleny index, Falling Number, extensibility and resistance. Many times, reality shows us that the consecrate values for classical quality parameters of flours, didn't assure an optimal technological behavior. The wheat quality is genetically influences by soil, climate, technological parameters, pest and disease attack.

The aim of this paper was to establish which are the influences of cereals cultivar on technological behavior of flours and, also, on bread quality. In order to obtain some available data it was used two wheat types from two different habitat of Romania (South West - Oltenia County and North East -Moldavia County). It was establish that the wheat result from North East had better qualitative parameters and the obtained bread were most qualitative.

EVALUATING ANTIOXIDANT CAPACITY AND BIOLOGICALLY ACTIVE CAPACITY FROM SAVORY

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The study is to determine the content of flavonoids, polyphenolcarboxylic acids, total polyphenols and antioxidant capacity of dried savory used in food. Investigations were performed on extracts obtained from hot and cold water solutions, methanol, ethanol and various mixtures of solvents. Data analysis shows that bioactive substances are well represented in the savory, which may explain the remarkable antioxidant capacity observed and the interest of introducing this particular plant when creating foods with biological potential.

In recent years, antioxidant substances from plants are of interest to researchers, producers and consumers. Good sources of antioxidants are fresh fruit and vegetables, whole grains, due to the intake of vitamins, bioflavonoids, and components with antiradical potential. Many spices are the sources of phenolic compounds with an antioxidant capacity superior to that of fruit and cereals. They also have been recognized as having digestive stimulant action, carminative action, antimicrobial, anti-inflammatory, anti-mutagenic, anti-carcinogenic potential etc. Numerous studies have been published on the antioxidant capacity and the phenolic constituents of spices.

The purpose of the study is to assess the antioxidant capacity and phenolic compounds present in savory using different extraction methods described in literature.

The choice of raw materials to obtain spices should be given special attention in its chemical compounds content which leads to a high antioxidant potential. Thus, it is possible to increase dietary intake of antioxidants with beneficial health effects.

EXPERIMENTAL STUDIES CONCERNING OBTAINING SOME WINE COOLER PRODUCTS

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Wine coolers are drinks that can be easily prepared in short time and effortless, accessible and easily distributed, bought everywhere. This study is about the wine cooler obtainment on laboratory scale with red wine and orange juice. The achieved products have sensorial and physic-chemical properties that are specifically related, with two components of blend. The last years, consumers have shown a preference for low-calories beverages, low-alcohol content, freshness beverages, considered more adequate that prepares wines, as we talk about rapid and light meals. In the same time we must not forget the hygienic and nutritional performances and, also, a temperate (controlled) processing. Wine cooler drinks have a small alcohol percentage, nutritional, strengthening prepared with wine, fruit-juice, vegetable-juice, and natural flavored extracts. Wine is regularly common-wine, usually from new harvest or maybe concentrated wort, partially fermented. Common wine is used 50% per total product. Cooler wine means low content alcohol drinks (5-6%) made with wine and aromatic fruit juice. Usually there are used: common white wines, light pink and red wines, concentrated wort, aromatic herbs extracts, wines synthetic attar and synthesis flavors, citric acid for acidity amelioration, soft water.

After these experiments we may conclude:

- the achieved products have sensorial and physic-chemical properties that are specifically related, with two components of blend;
- sensorial qualities of products are: freshness, fructosity, pleasant and harmonious taste, these outlines the properties for new products that are agreed by consumers; besides, orange juice is characterized by high content of vitamin C (50-150 mg/100 g juice), mineral salts, acids, oligoelements.

PHYSICO-CHEMICAL CHARACTERIZATION OF SOME FRUITS JUICES FROM ROMANIAN HYPERMARKET FRUITS

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Wine coolers are drinks that can be easily prepared in short time and effortless, accessible and easily distributed, bought everywhere. This study is about the wine cooler obtainment on laboratory scale with red wine and orange juice. The achieved products have sensorial and physic-chemical properties that are specifically related, with two components of blend. The last years, consumers have shown a preference for low-calories beverages, low-alcohol content, freshness beverages, considered more adequate that prepares wines, as we talk about rapid and light meals. In the same time we must not forget the hygienic and nutritional performances and, also, a temperate (controlled) processing. Wine cooler drinks have a small alcohol percentage, nutritional, strengthening prepared with wine, fruit-juice, vegetable-juice, and natural flavored extracts. Wine is regularly common-wine, usually from new harvest or maybe concentrated wort, partially fermented. Common wine is used 50% per total product. Cooler wine means low content alcohol drinks (5-6%) made with wine and aromatic fruit juice. Usually there are used: common white wines, light pink and red wines, concentrated wort, aromatic herbs extracts, wines synthetic attar and synthesis flavors, citric acid for acidity amelioration, soft water.

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BARLEY GRAIN INFECTION WITH *FUSARIUM* SP.

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Fusarium head blight (FHB) is common disease of cereals all over the world and one of the most important barley diseases in Croatia. *Fusarium* species reduce yield quantity and quality including grain contamination with mycotoxins. The aim of our research was to determine incidence of *Fusarium* sp. on barley and determination of dominant species. In 2009 and 2010 barley grains grown in Croatia on four and five locations, respectively, were infected with *Fusarium* species. In both years all researched genotypes were infected with different *Fusarium* sp. Incidence of *Fusarium* infection varied depending on genotype susceptibility, location and year. In 2009 percentage of infected grains was between 1 (cv. Oliver, location Osijek) and 27 (cv. Sladoran, location Tovarnik). The vegetation period 2010 was favourable for FHB development. Percentage of diseased grains were higher and varied between 4 (cv. Gordon, location Osijek) and 50 (cv. Osk.6.115/1-07, location Nova Gradiška). In both years the most frequent species was *Fusarium graminearum* followed by *F. verticillioides*, *F. subglutinans*, *F. poae* etc.

EFFECT OF HEATING ON RHEOLOGICAL CHARACTERISTICS OF SOME ROMANIAN EDIBLE VEGETABLE OILS

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The temperature – dependent rheological behavior of some Romanian vegetable cooking oils (sunflower, corn, rapeseed, grape pips and pumpkin) was evaluated. Rheological properties were analyzed with changes of temperature and shear rate. Curves of flow were established with up and down cycles of shear rate at different temperatures (5, 10, 15, 20, 25, 30, 40, 50, 60 and 70°C). For all studied oils, the rheological behavior remained Newtonian on the entire domains of shear rates used and all studied temperatures. As is expected, the viscosity decreases with increasing of temperature, following an Arrhenius' dependence. For this non-linear dependence the energy of activation for viscosity (E_a) was determined both by linearization of the Arrhenius type dependence and by non-linear regression. For all studied edible vegetable oils, absolute average deviation (AAD) was calculated both for rheograms and for Arrhenius' dependence.

DETERMINATION BY DSC ANALYSIS OF THE INFLUENCE OF PH ON MEAT PROTEINS

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In this paper the goal is, to measure meat proteins stability, as a function of an environmental perturbant. Thus, protein stability is monitored with pH and temperature of the environment variables. Several bonds which exist in the native protein decrease with decreasing pH, which leads to a decrease in the conformational stability of the protein. Differential scanning calorimetry (DSC) can provide all the thermodynamic parameters that specify the stability of the protein as a function of temperature.

EVOLUTION OF POLYPHENOLS DURING THE MACERATION OF THE RED GRAPES

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The Cabernet Sauvignon grapes from Dealu Mare vineyard may accumulate great quantities of phenols compounds, which assure wines with high chromatic indices and a harmonious chemical composition. In this study the influence of several parameters on maceration fermentation was monitored. It was observed that the addition of SO₂, enzymatic preparation Vinoxym®Vintage FCE and also the maceration equipment have a high influence on the final phenolic composition and on the chromatic characteristics of wines.

ANTIOXIDANT ACTIVITY OF SOME FRESH VEGETABLES AND FRUITS JUICES

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This paper presents the determination of some vegetables and fruits juices antioxidant activity, using the free radical 2,2- diphenyl- 1-picrylhydrazyl (DPPH) method, and correlation of the results with the C vitamin concentration in the sample. It was determined, by the iodometric method, the vitamin C concentration both in the raw materials (apple, beetroot, red cabbage, tomatoes and pink grapefruit) and in the juices obtained from this. It was observed that vitamin C concentration in the juices are higher than in the raw materials, the richest in ascorbic acid being the pink grapefruit juice (81,612 mg/100ml), followed by the beetroot juice (68.014 mg/100ml). The lowest vitamin C concentration was found in the apple juice (20,401 mg/100ml). Analysing the obtained results it was conclude that between antioxidant activity and juices vitamin C concentration exists a direct correlation.

DETERMINATION OF SOME OF THE QUALITY PARAMETERS FOR HONEY PRODUCED IN TIMIS COUNTY AND COMMERCIALIZED IN THE LOCAL MARKET

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Researches were made to establish the quality of honeys produced in Timis county and soled on the local market in 2010. 19 samples from four different assortments (polyfloral, acacia, lime and rape), were analyzed. The analyzed parameters were: water content, free acidity and hydroxymethylfurfurol. The obtained results emphasized that the average values of physico-chemical parameters studied were below National or European maximum permitted level.

PROBIOTICS VERSUS ANTIBIOTICS IN THE TREATMENT OF HEPATIC ENCEPHALOPATHY IN CIRRHOTIC PATIENTS

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The aim was assessment of efficiency of probiotic treatment versus oral antibiotics on hepatic encephalopathy in patients with nonalcoholic liver cirrhosis. Main results: The group with probiotics provided by natural yoghurt supplement had a significant reduction of time necessary to complete number connection test(NCT)-B from baseline mean time=315,08±22,78 seconds to final mean time=294,4±18,1seconds($p<0,01$).The second group who receive oral antibiotics also showed a significant reduction mean time necessary to complete NCT-B: from baseline 312,6±22,44 seconds to 292±20,56 seconds($p<0,01$). There was no significant statistically difference between the group with probiotic treatment versus the group with antibiotics: 294,4±18,1 sec versus 292±20,56 sec ($p=0,6633$).NCT-A for the both groups was under the cut-off value(78 sec): 51,44±7,32 versus 51,4±6,92($p=0,9842$). Conclusions: We noted a significant improvement of psychometric tests in patients receiving probiotics comparable to those with oral antibiotics with mitigation of neurocognitive dysfunction.

THE LINEARITY ASSUMPTION FOR SOIL AND PLANTS CONCENTRATION OF NATURAL RADIONUCLIDES

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The radionuclides released into the environment can give rise to human exposure by the transport through the atmosphere, aquatic systems or through soil sub-compartments. The exposure may result from direct inhalation of contaminated air or ingestion of contaminated water, or from a less direct pathway, the ingestion of contaminated food products. The linearity of assumption for soil and plants or fruits concentrations is usually a good approximation for use in food-chain models. To verify this assumption, different samples of plants and substrate were collected from a zone located at 20 km from the dump of the waste rock of the mine EM, Caras-Severin Country, Romania. In all of the samples, the activity concentration of ²²⁶Ra, U_{nat} and ²³²Th were determined. The results indicate that the linearity assumption can be considered valid when the range of concentrations taken into account is large.

**PRELIMINARY RESEARCH CONCERNING THE
DISTRIBUTION OF COPPER IN THE SOIL AND
VEGETABLES IN HISTORICAL ANTHROPIC
POLLUTION
(CARAS-SEVERIN COUNTY, ROMANIA)**

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The authors present data concerning the distribution of copper in the soil and in carrots and persil in both two areas of the Caras-Severin County (Ruschița and Moldova Nouă) known as historical anthropic pollution areas, and in two unpolluted areas (Borlova and Golet), considered reference (control) areas. Based on these data, we established a correlation concerning the transfer of this macroelement from the soil into the vegetables. Results of soil, carrot, and persil sample analysis in the areas with historical anthropic pollution show high concentrations of copper both in the soil and vegetables, in some cases possibly toxic, compared to the concentrations of the two control areas (Borlova and Golet).

SEPARATING AND IDENTIFYING PESTICIDES IN MILK THROUGH THIN LAYER CHROMATOGRAPHY AND MASS SPECTROMETRY

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We separated several pesticides (imidacloprid, deltametrin, bifentrin, fenilbutation oxide, captan prepaquizofos, benflutamid, amitraz, hexachlor benzene, metachlor 960, triflurex 400, stamp) on chromatographic plates with diatomitic earth modified chemically C-8, using as a mobile phase a mixture of methanol and water in different ratios. Identifying pesticides was done through UV light examination at 254 nm. The pesticide amitraz was added to the milk and we extracted it 24 h later with methylene hexane-chloride (1:1, v/v) and the extract was applied on the plates together with the standards. Identification was done with the standards and through mass spectrometry.

SEPARATING AND IDENTIFYING PESTICIDES IN MILK THROUGH THIN LAYER CHROMATOGRAPHY AND MASS SPECTROMETRY

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In this paper we experimented two package systems: the normal atmosphere packing and the active atmosphere packing in the presence of ethanol generator. As a pastry product we chose the gingerbread. The role of these packagings is to improve the preservation and the microbiological security of the food stuff. In the case of active packing the package atmosphere was changed by placing the ethanol generator bags in the package. As a package material we chose the polypropylene foil which was determined from the point of view of its water vapors and gases permeability the heavy metals global migration and the heavy metals ceding (Cu and Cd). The gingerbread was analyzed from the physico-chemical and microbiological point of view.

The conclusions drawn from the experiments regarding the active packing of the gingerbread in the ethanol generator system prolongues a lot the shelf life from the microbiological point of view in comparison with the witness sample and the polypropylene foils are from the indicators point of view proper according to the laws regarding the materials that come in contact with the foodstuff.

INFLUENCE OF POST - MORTEM TREATMENT WITH PROTEOLYTIC ENZYMES ON TENDERNESS OF BEEF MUSCLE

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The treatment with proteolytic enzymes is one of the popular methods to increase meat tenderization. The aim of this study was to evaluate the enzymatic tenderization with some tropical plant enzymes derived from papaya and pineapple: papain and bromelain. Researches had been conducted on adult beef meat after 24 hours of slaughter. Proteolytic enzymes were added in different concentrations in the injection brine and then beef cuts were injected with a specific percentage of brine (10% v/w). Effects generated by injecting samples of adult beef with papain (2 mg/100g meat), bromelain (2 mg/100g meat) and a mixture of papain and bromelain (mixture ratio 1:1, enzyme added 2 mg enzyme/ 100g meat) were revealed after 24 - 48 hours of storage at 40C. Experimental data indicate that proteolytic enzymes weaken beef meat structure producing improvement of functional properties of adult beef. Papain and bromelain attacked connective tissue and myofibril proteins producing increase of hydroxiprolin and free amino acids content in boiled beef cuts. A significant increase in tenderness by rigidity index measurement was observed in the samples treated with papain as compared with the samples tenderized with bromelain, papain in association with bromelain and the control.

INFLUENCE OF VACUUM PACKAGING ON QUALITY OF BEEF MUSCLE AFTER DIFFERENT TENDERIZATION METHODS

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The quality of meat products is a major problem that currently concern all policy makers involved. Obtaining meat products able to attract an as large as possible number of consumers called for approaches to the scientific research in the meat industry. Since natural aging is a long-term process, artificial aging is recommended to be widely used in the meat industry and catering. Thus, in the present study were tested two methods of artificial tenderization of meat: enzymatic tenderization with proteolytic enzymes extracted from plants (papain from papaya and bromelain from pineapple) and chemical tenderization with CaCl₂ and NaCl. To increase storage period of the products obtained was applied conservation through vacuum packaging. The objective of this study was to investigate the effects of injection with 0.4 M sodium chloride, 0.2 M calcium chloride, 1 mg papain/100g, 1.5 mg papain/100g, 2 mg papain/100g, 1 mg bromelain/100g, 1.5 mg bromelain/100g, 2 mg bromelain/100g on adult beef at 24 hours post slaughter; the percentage of brine injected was 10%(v/w). After injecting, meat pieces were vacuum packed and stored at refrigeration temperature 4°C. In this experiment, the influence of thermal treatment applied to beef meats artificial tenderized was evaluated by monitoring storage losses, monitoring losses at thermal treatment (boiling and grilling), assessing changes in texture by determining the compressive strength and sensory analysis of the beef samples. During storage and artificial tenderization of the samples vacuum packed, were noted for all indicators followed variations indicating the proteolysis process development, which signifies an improvement in meat tenderness. Sensory analysis of the samples showed improving in meat tenderness with the reducing of meat juiciness due to large juice losses during storage and thermal treatment.

THE USE OF COMMERCIAL ENZYMES IN WHITE GRAPE MUST CLARIFICATION

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Two enzyme preparations were used in order to clarify the must obtained from white grapes, Muscat Ottonel variety. Clarification process of grape must was influenced by several factors such as must fraction (free run must and pressing must), type of enzyme preparations used (grapes maceration enzymes and clarification enzymes), the way of adding enzyme preparation and enzyme dosage used. Clarification of must can be achieved both through use of maceration enzymes and clarification those, but the dynamics of this process was different.

MODELING TEMPERATURE DEPENDENCE OF HONEY VISCOSITY WITH ARRHENIUS MODEL

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The rheological behavior of some unprocessed Romanian honeys (polyfloral, mint, acacia, lime, mildew) from Hunedoara County was investigated for the applicability of the Arrhenius model. The water content of these types of honey was between 15.6 to 18.5%. The viscosity of the honeys was obtained over a range of temperatures from 20° to 50°C. The temperature increased in increments of 2.5°C. All the honeys exhibited Newtonian behavior with viscosity reducing as the temperature was increased. The honeys with high moisture were of lower viscosity, a good linear correlation ($R^2 = 0.9651$) being obtained between $\log\eta$ and the water content. The activation energy from Arrhenius model was obtained both by classical linearization and by non-linear regression. Averaged correlation coefficient (R^2) was 0.9987 ± 0.0018 for linear regression and 0.9996 ± 0.0003 for non-linear regression. By classical linearization, the activation energy for the studied honeys was in the domain of 82.7 – 90.9 kJ · mol⁻¹, and by non-linear regression was in the domain of 86.2 – 96.2 kJ · mol⁻¹.

TECHNOLOGICAL EFFECTS OF SOME XYLANOLYTIC PREPARATION ON BLACK FLOUR

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Arabinoxylans (AX) represent only to 1.5 to 2.5% from wheat flour weight but they play an important role in breadmaking. The xylanases are generally used, to convert the unfavorable water unextractable arabinoxylans (WUAX) in water extractable arabinoxylans (WEAX) with positive effects on bread quality. A large number of endoxylanases which increases or decreases the viscosity of aqueous phase from dough and convert the WUAX to WEAX with different rates are available. The aim of this study is to investigate if any correlation could be established between the solubilisation of AX and viscosity changes induced by xylanases on the one hand and the changes of bread characteristics on the other hand. The changes of porosity and elasticity of bread crumb made from black flours are strongly correlated with the viscosity changes of flour extracts ($R^2 = 0.9967$) while the specific volume of breads is well correlated with AX solubilisation ($R^2 = 0.6784$).

EFFECTS OF DIETARY ALPHA-TOCOPHERYL ACETATE ON ALPHA-TOCOPHEROL CONTENT OF NOVEL OMEGA-3-ENHANCED FARMED RAINBOW TROUT (*ONCORHYNCHUS MYKISS*) FILLETS

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A trout diet was supplemented with 0, 8.5, or 15 g/100 g of flaxseed oil (FO). To prevent lipid oxidation of fillets, FO-supplemented diets were also enhanced with 0, 400, and 900 mg/kg of alpha-tocopheryl acetate (α -TA). α -tocopherol content of fillets were determined following fish harvest on days 0, 30, 60, 90, and 120. FO supplementation resulted in increased ($P<0.05$) concentration of omega-3 fatty acid (ω 3 FA) in fillets, mainly due almost two-fold increase ($P<0.05$) of α -linolenic acid, while docosahexaenoic and eicopentaenoic acids slightly decreased ($P<0.05$). The highest ($P<0.05$) α -tocopherol content in fillets was determined when supplementing trout with 900 mg/kg of α -TA at day 120. Our results indicate that regardless of FO level in trout diet, 900 mg/kg of α -TA can prevent lipid deterioration of fillets.

EFFECTS OF DIETARY ALPHA-TOCOPHERYL ACETATE ON LIPID OXIDATION FARMED RAINBOW TROUT (*ONCORHYNCHUS MYKISS*) FILLETS

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A trout diet was supplemented with 0, 8.5, or 15 g/100 g of flaxseed oil (FO). To prevent lipid oxidation of fillets, FO-supplemented diets were also enhanced with 0, 400, and 900 mg/kg of alpha-tocopheryl acetate (α -TA). Total fat, moisture content, and lipid oxidation of fillets were determined following fish harvest on days 0, 30, 60, 90, and 120. Regardless of supplementing trout diets with FO or α -TA, no ($P>0.05$) difference of the total fat in fillets was measured. The effect of retarding lipid oxidation in fillets was recorded after supplementing trout with α -TA for 60 days. Our results indicate that regardless of FO level in trout diet, 900 mg/kg of α -TA can prevent lipid deterioration of fillets. However, to achieve more pronounced antioxidant effect in the ω -3- enhanced trout fillets, a synergetic effect of antioxidants and anaerobic packaging with α -TA supplementation should be investigated.

POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) IN SMOKED FISH FROM THREE SMOKE-HOUSES IN BRASOV COUNTY

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Fifteen samples of smoked fish were analysed for BaP and other polycyclic aromatic hydrocarbons (PAHs). The high resolution gas chromatography–mass spectrometry (HRGC–MS) method employed was elaborated and validated for the control programme. The method complies with the criteria for official control according to Commission Regulation (EC) No 333/2007. Six samples of smoked fish had BaP levels exceeding 5.0 µg/kg, the concentrations ranging from 0,6 to 8.4 µg/kg. These samples were produced by traditional smoking, where the food is directly exposed to hot smoke from a burning log fire. Samples of fish smoked by indirect technique, using smoke from an external smoke generator, all had BaP levels below the limit of quantification, i.e., 0.3 µg/kg.

INVESTIGATIONS ON WASTEWATERS AT POTATO PROCESSING AND STARCH RECOVERY AND CHARACTERISATION

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In this paper, a solution for the recovery of starch in wastewaters resulted at potato washing for chips, snacks or fries production is proposed. The water obtained at washing after peeling and cutting into slices are analysed and a large quantity of organic compounds (around 5458 mg KMnO₄), starch (1.66%) and protein (0.7%) is found. No pathogenic microorganisms as *Salmonella*, pathogenic staphylococci or *Bacillus cereus* are found and the number of coliform bacteria is low. Starch is recovered after protein precipitation at pH 4.5-5 and filtering on sieves with different mesh size (from 1000 µm to 150 µm), followed by washing and retention of starch granules on sieves with 30 µm mesh size. Starch obtained has physical-chemical characteristics (9.36% water, 88.85% starch, 0.080% total ash, 0.79% reducing sugar) and functional properties (Water Holding Capacity WHC at 30°C 2.27%, WHC at 60°C 16.23%, WHC at 80°C 35.33%, WHC at 90°C 99.5%) very near to those of the commercial starch.

QUALITY CONTROL OF RAW COW MILK FROM GALATI COUNTY

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Due to the importance of milk in the human diet, it is essential to increase milk production and to improve its quality. In order to obtain a complex image of milk quality in Galati county there was made a study based on analyzing raw milk, from January until December 2010, taking into account the influences of animals feeding and conditions of transport and storage (including summer period, when the milk production is maximum, and autumn period, when milk production decreases).

To determine the quality and safety of raw milk in Galati county there have been concerned: determinations of physical and chemical characteristics (density, protein content, lactose content, fat content, freezing point) and determinations of microbiological characteristics (total number of mesophylic germs (NTG) and number of somatic cells (NCS)).

DETERMINATION OF ANTIOXIDANT CAPACITY FOR SOME PRODUCTS BASED ON WINE AND MEDICINAL PLANTS

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The aim of this study is to find new natural remedies useful for body against oxidative stress (which induces dysfunction at the cellular level, various ailments in the human body). Its have been investigated as a antioxidant potential or containing compounds with properties to capture the free radicals excess, various medicinal plants: hawthorn (*Crataegus oxyacantha L.*), melissa (*Melissa officinalis L.*) and garlic (*Allium sativum L.*), used for maceration in wine to obtain some oenoterapic products.

The results obtained from physicochemical analysis (UV–VIS spectrophotometry, HPLC, gas chromatography with mass spectrometry) and biochemical analysis have confirmed remarkable antioxidant potential for all studied plants, because its have a high content in compounds that can capture free radicals.

The balance between oxidant action of the free radicals and the level of antioxidants it is essential for life and characterize the resistance capacity of human body, because the antioxidants neutralizing free radicals.

MEMBRANE BIOREACTOR CONCEPT WITH POTENTIAL USE IN FOOD BIOTECHNOLOGY

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Proposed membrane bioreactor is in line with the recent biotechnological developments through a series of specific characteristics: continuous flow operation, allows high pressure variations due to component geometry is modular, it can be adapted for large productions. Conditions of energy use is much lower due to pressure generated by the accumulation of gases produced by microorganisms.

OPPORTUNITIES TO USE OF SELF PRESSURIZED MEMBRANE BIOREACTORS IN FOOD INDUSTRY

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The effect of self pressurization due to the accumulation of gas produced by specific microorganisms can be used as the driving force for hydraulic and separation processes. This paper aims to explore more possibilities for using these types of bioreactors to improve some processes and also to minimize energy consumption.

STUDY OF THE APPLE PARAMETERS' VARIATION DURING REFRIGERATION STORAGE

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The study purpose was to observe the evolution of chemical and physical parameters variation during apple refrigeration storage such as weight losses, core temperature and dry matter for 24 days considering that the determinations were made with a three day frequency. For the experiment were chosen three apples varieties: Golden Delicious, Jonathan and Starkrimson. The apples were stored in three variants (bulk and packed in LDPE foil and ordinary paper) in a professional refrigerator.

As a result of these determinations the lower core temperature (2°C) was registered for bulk Golden Delicious apple in the 19th day of refrigeration and the highest is attributed to Jonathan paper packed (5.8°C) in the 4th day of storage. The dry mater increasing is higher for the Strakrimson variation most in the bulk case (with 50.74% bigger than before the storage). The bigger weight loss (10 g) was registered for Jonathan apple paper packed.

INVESTIGATION ON MECHANICAL AND TEXTURAL PROPERTIES OF APPLES DURING REFRIGERATION STORAGE

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In this study there were analyzed three different varieties of apple Golden Delicious, Jonathan and Starkrimson, which were stored by refrigeration in three variants (bulk, packed in LDPE foil and ordinary paper) in a professional refrigerator for 24 days. The penetration tests were lead to determine the mechanical properties including penetration force and the textural one as microstructure.

The determinations were unrolled with a 7 days frequency. The values for penetration force associated with the sensorial attribute – firmness, applied to apple varieties range from 20.49 N for bulk Jonathan in the 7th day of refrigeration storage to 69.54 N for Starkrimson LDPE foil packed at the 14th day.

In case of textural modifications there were some sensitive differences between the three varieties, but the most affected structure was those for Starkrimson and even at the bulk storage there weren't quality deficiency, the packed apples were less influenced by refrigeration.

THE TRACEABILITY OF COPPER AND ZINC IN SOME VEGETABLES FROM OLD MINER ACTIVITY AREA IN BAIJA MARE, NW ROMANIA

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The study follows the assessment of Cu and Zn concentrations in the some vegetables and soil in the main districts of Baia Mare, historic anthropic polluted area. These elements were analyzed by atomic inductively coupled plasma atomic emission spectrometry (ICP-AES). Copper content in soil varied between 6.5 and 2968 mg·kg⁻¹ (normal value 20 mg·kg⁻¹), while zinc content in soil ranged between 58 and 3791 mg kg⁻¹ (normal value 100 mg·kg⁻¹). In plant, copper concentration varied between 0.35 and 33.6 mg kg⁻¹, and zinc concentration between 2.3 and 199 mg kg⁻¹. The paper discusses the transfer of metal ions (Cu and Zn) from contaminated soils to plants in terms of transfer factors (TF). The knowledge of these transfer factors for a given element should enable for prediction, whether a given soil is suitable for the cultivation of plants for consumption purposes.

RESEARCH ON IMPROVING THE QUALITY OF FLOUR PASTAS OBTAINED FROM FLOUR FROM SOFT GRAIN OF A LOWER QUALITY

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The researches on improving the flour pasta's quality obtained from soft wheat of low quality, were made experiments, using a flour with small qualitative and quantitative indices of gluten, to manufacture high-quality pasta. To improve the finished product quality, was proceeded to the addition, in the technological process, of ascorbic acid and vital gluten in different doses.

PHYSICO-CHEMICAL, MICROBIOLOGICAL AND SENSORY CHARACTERISTICS OF A FERMENTED DAIRY PRODUCT CONTAINING BREWER'S YEAST

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In the pilot station of the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania aliquots of 2 L fat 1.8% (w/w) skimmed, pasteurized milk, cooled at 30°C, was inoculated with a complex mixture of microorganisms formed by: a lactic culture, kefir-yeast culture and brewer's yeasts sampled from the secondary fermentation of beer. The ratio between milk: lactic culture: kefir-yeast culture: brewer yeast was 2000:2:4:1. After inoculation the product was incubated at 29-30°C for 12 hr, pre-cooled at 18-20°C for 1hr, cooled again at 4-6°C for 10 hr.

Physico-chemical analyses were performed using following methods: titratable acidity- STAS 9532-87, pH- STAS 8201-82, fat content- STAS 6352/2-87, Dry Matter content- AOAC 925.23, reducing sugars- STAS-10902-77, ascorbic acid and nicotinic acid contents-HPLC analysis [2]. *Saccharomyces ssp.* yeasts were enumerated in WLN medium and *Lactococcus ssp.* bacteria were counted in M17 medium [1], both selective medium for those microbial species. Sensory analysis was performed according SR 6345/95.

Table 1. Physicochemical, microbiological and sensory characterization for a dairy product containing brewer's yeasts

Characteristics	Value	Microbiological characteristics	Value, ufc/ml
pH	4.34	<i>Saccharomyces ssp.</i>	5x10 ⁴
Titratable acidity, °T	114	<i>Lactococcus ssp.</i>	1.8x10 ⁶
Total dry matter content, %	12.2	Sensory description	
Fat content, %	1.8	Consistent curd without gas bubbles, with an easy removal of whey Specific odor for lactic fermentation Pleasant taste, slightly sour, foreign tasteless (bitter, rancid, mold etc.)	
Reducing sugars, %	3.75		
Ascorbic acid, mg/100g	3.9		
Nicotinic acid, mg/100g	2.38		

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ALTERNARIA ALTERNATA PREVALENCE IN WHEAT FROM TRANSYLVANIA

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The genus *Alternaria* is widely distributed in soil and on aerial plant surfaces, and many species are pathogenic to plants. Species can often grow at low temperature and may be associated with extensive spoilage of fruit and vegetables during refrigerated transport and storage. *Alternaria alternata* is ubiquitous and is abundant in the airspora, especially during ripening and harvesting of cereal crops. *A. alternata* alone or with other fungi, e.g., *Alternaria triticina*, can cause a conspicuous black or brown discoloration of wheat kernels called black-point disease. This can result in decreased quality and yield of grain. Because of the pathogenicity exhibited by many *Alternaria spp.*, various workers have investigated the toxicity of crude preparations of cultures and infected substrates. Many isolates have been shown to be lethal to chickens, rats, and mice. The most important secondary metabolites of known mammalian toxicity produced by *A. alternata* are the dibenzo-*a*-pyrones altenuene (AE), altemariol (AOH), alternariol monomethyl ether (AME), and a derivative of tetramic acid, tenuazonic acid (TZA). *A. alternata* has been demonstrated to produce some or all of these mycotoxins in various concentrations on tomatoes, sorghum, and pecans.

To determine the fungal load of wheat seed has been used crop nutrient media, using as substrate with chloranfenicol Sabouraud environment. Seeds taken from the sample, were placed in Petri dish with agarose gel with tweezers sterilized in advance. Coated plates were incubated at 25°C for 5 days, after which they were subjected to macroscopic (Fig.1) and microscopic examination (Fig.2).



Figure 1. Colonies of *Alternaria alternata* on Sabouraud medium(original)



Figure 2. Conidia of *Alternaria alternata* Sabouraud medium on the microscopic field (original)

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THE EFFECT OF PH AND THERMAL TREATMENT ON SOME FUNCTIONAL PROPERTIES OF WHEY PROTEINS HYDROLYSATES AS MEASURED BY FLUORESCENCE SPECTROSCOPY

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Milk protein represents an important source of amino acids and peptides in the human diet. In recent years, whey has gained immense recognition as a protein source in functional foods, infant formulas, and bakery products.

The objectives of this study were to investigate some functional properties of whey protein hydrolysates obtained with chymotrypsin as a function of pH and thermal treatment. The extent of hydrolysis and conformational changes induced by pH and temperature were monitored using intrinsic fluorescence intensity and anisotropy.

ESTIMATION OF DPPH (2,2-DIPHENYL-1-PICRYLHYDRAZYL) RADICAL SCAVENGING ACTIVITY AND TOTAL REDUCING POWER OF GRAPE-BASED BEVERAGES

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Recent studies have shown that grapes and wines represent sources of antioxidants. But there are not enough facts to create a complex frame about grape juice and wine upon the whole, these categories being as a rule examine separately.

In this work was done a research on the antioxidant potential of grape-based beverages: grape juices and grape musts, wines. These parameters were studied by two methods: spectrophotometric methods using DPPH' radical and spectrophotometric method with potassium ferricyanide.

By analyzing the results, we found that the most pronounced scavenging activity is possessed by red wines; the average reduction was 93.2% of DPPH free radicals, with a maximum of 108% (blended homemade red wine) and a minimum of 51.7% (Pinot Franc). A high correlation has been demonstrated between the spectrophotometric method of the DPPH radical-scavenging activity and spectrophotometric reducing power determination with potassium ferricyanide - $r^2 = 0.980$ (98% dispersion).

THE EVOLUTION OF WINES DURING THEIR MATURATION IN THE VITICULTURAL CENTRE OF JIDVEI – TARNAVE VINEYARD

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Tarnave vineyard, the largest one in Transilvania is part of the wine growing region of the Transylvanian Plateau. It is located in the hydrographic basin of the two Tarnava rivers (Tarnava Mare and Tarnava Mica).

The viticultural centre of Jidvei, one of the largest centres of the Tarnava vineyard is situated along the road between two small towns Tarnaveni and Blaj and the natural environment proves to be particularly favourable for viticulture.

The study pursue the evolution of quality white wines with designation of origin of the types DOC – CMD, DOC – CIB of the Feteasca regala, Riesling Italian and Muscat Ottonel varieties in the viticultural centre of Jidvei, Tarnave vineyard, during their maturation.

Determinations and findings were made during the years 2009 – 2010 and they focused on determining the sensory and physical – chemical analyses by methods existing in the specific state standards and by the methodology in this particular domain.

ANTHOCYANINS COMPOSITION, TOTAL PHENOLICS AND ANTIOXIDANT ACTIVITIES OF SOME FRUITS EXTRACTS FROM *PRUNUS* GENUS

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The alcoholic extracts of five fruits from *Prunus* genus were analyzed for anthocyanins composition, anthocyanins content, total phenolics, and antioxidant capacity. Extraction of the pigments was carried out with acidified methanol in ultrasonic conditions, 60 minutes at 25°C and 59 kHz. The extracts of sweet cherry (*Prunus avium L.*), sour cherry (*Prunus cerasus L.*), plum (*Prunus domestica L.*), cherry plum (*Prunus Cerasifera L.*) and blackthorn (*Prunus spinosa L.*) have been analyzed by high-performance liquid chromatography (HPLC) using a Dionex Ultimate 3000 apparatus equipped with photodiode array detector and a C18 reversed-phase column for anthocyanins separation. The amount of monomeric anthocyanins was determined by using the pH differential method and the total phenolics content was quantified by using the Folin-Ciocalteu method. Evaluation of antioxidant activities of extracts was performed by using FRAP, ABTS and DPPH assays. The antioxidant activities of the extracts were correlated with their anthocyanins and total phenolics content. A significant level of anthocyanins (2970 mg/l) and total phenolics (6766 mg GAE/l) contents have been obtained for cherry plum extract which also exhibits the best antioxidant activity.

CLIMATE CONDITIONS FOR YEARS 2009 AND 2010

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The study refers to tracking the influence of environmental conditions (global radiation, temperature, humidity and precipitations) on vines and grapes over the years 2009 and 2010, in Jidvei center wine from vineyard Târnavă.

Vine is a plant with the growth and fructification which, during its evolution, has adapted to environmental conditions. Climatic factors, through their actions have a decisive importance on the culture of the vine.

For monitoring the environmental conditions, in Jidvei center vineyard, in 2001 to purchase a system AGROEXPERT which consists in a number of 9 measuring meteorological and transmission stations (air temperature, soil temperature at 10, 20 and 30 cm deep, atmospheric humidity, precipitation, humidity on the leaves) in different growing areas. Calculate the incubation periods of diseases, suggests the best moment to start applying control measures and not least record all data on climate and comparative studies between different years.