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BOOK OF ABSTRACTS

CHEMISTRY AND APPLICATION FIELDS

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PL 1. RECENT TRENDS ON FABRICATION OF SOFT PARTICLES

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Needs from medical and cosmetic areas have led to the design of novel nanosized emulsions and solid-in-oil dispersions of proteins. Here, we describe the production of those emulsions and dispersions using high-energy methodologies such as high-pressure homogenization or ultrasound. Recent work has resulted in new mechanistic insights related to the formation of protein emulsions and dispersions. The production method and composition of these formulations can determine major parameters such as size, stability, and functionality, and therefore their final application. Aqueous nanoemulsions of proteins can be used for drug delivery, while solid-in-oil dispersions are often used in transdermal applications. (Trends in Biotechnology, June 2016, Vol. 34, No. 6). Specific data will be show on the design liposomal formulations for rheumatoid arthritis. (Nanomedicine: Nanotechnology, Biology, and Medicine, 12 (2016) 1113–1126)

Keywords: soft particles, liposomes, nanomedicine

PL 2. DIFFERENT APPROACHES AND NANO-DESIGN CONSIDERATION IN SYNTHESIS OF NANOPARTICLES FOR MEDICAL AND PHARMACEUTICAL APPLICATIONS

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Because of their unique physicochemical and optoelectronic properties, nanoparticles are of particular interest for a number of applications ranging from as catalysts, chemical sensors, electronic components, medical diagnostic imaging, pharmaceutical products, and medical treatment protocols. For example, metallic nanoparticles of noble metals such as gold, silver, platinum, and palladium have been widely used in products ranging from cosmetic to medical and pharmaceuticals. Top down approaches usually start with the bulk material that will be "cut away"; Bottom up techniques assume assembling it from atom-by- atom, molecule-by-molecule or cluster by cluster. Physical techniques are top down methods and include: laser ablation, lithography, vapor deposition, thermal decomposition. Chemical and biological approaches use techniques such as: chemical reduction, electrochemistry, colloidal route and biological route (biosynthesis using bacteria, viruses, fungi, plants). In many cases, superiority of biological route was proved, because the synthesis can be carried out at ambient temperature and pressure, is clean, non-toxic and environment-friendly, allowing to obtain nanoparticles with a wide range of size and shapes. On the other hand, "green synthesis" of nanoparticles involves either intracellular or extracellular mechanism. The factors affecting biological synthesis of metal nanoparticles are: pH, reactant concentration, reaction time and reaction temperature. We will present our recent work [1] regarding different synthesis methods for nanoselenium production and characterization, to be used in medical applications. An appropriate formulation for better selenium bioavailability was developed.

Keywords: nanoparticles, synthesis, selenium, medical applications

References:**[1]** Simona Cavalu, Jószef Prokisch, Vasile Laslo, Simona Vicas , Preparation, Structural Characterisation and Release Study of Novel Hybrid Microspheres Entrapping Nano-Selenium, Produced by Green Synthesis**, IET Nanobiotechnology** 2016 (in press) doi: DOI: 10.1049/iet-nbt.2016.0107**.**

PL 3. NEW DIRECTION OF THE HUNGARIAN LIVESTOCK SECTOR: THE DAIRY BUFFALOES

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Buffalo species have been kept and used on the warmer parts of Asia, Africa and Europe for thousands of years, where they were the draught-animals of the moor-lands and rice fields.[1] In Hungary, the buffalo (domestic buffalo, water buffalo) has been around for centuries, currently classified among the indigenous species. The 'buffalo' as a common name refers to domestic water buffalo.[2] In historical Hungary buffalo breeding was a common practice, especially in Transylvania, where approximately 80 % of the Carpathian Basin stock was kept. Today according to current data there are 6220 animals in the buffalo stock, 73% of which is female.[3] The domestic buffalo breeding and keeping can have a number of advantages: grassland utilization, the maintenance of eutrophic wetlands, landscape features, tourist attraction, gene preservation role, if the conditions are suitable then their meat can be sold as organic product.[4] New animal production sector appeared in the Hungarian agriculture: the dairy buffaloes. In Italy a dairy type Mediterranean buffalo breed was selected with larger body capacity and a significantly higher milk production. This milk is the basis of the famous Italian buffalo mozzarella. Buffalo milk production is not typical in Hungary, the animals are seldom milked. A Hungarian-Italian joint venture imported Italian dairy buffaloes to Hungary and begin to produce milk and cheese. Recent study is about the start of the buffalo farm and the supply chain which was built up.

Keywords: dairy buffalo, milk production, farm management, supply chain

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OP 1. LUMINESCENT LIQUID CRYSTALS BASED ON TRANSITION METAL COMPLEXES

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Most of the best performing phosphorescent emitters in electroluminescent devices are based on d6, d8 and d10 transition metal complexes. Suitable functionalization of the ligands enables in the complexes high tuneability of the emission energy and phosphorescence quantum efficiencies.[1] Moreover, the energy and electron transfer processes of transition metal complexes are sensitive also to molecular environment and dynamics. Thus, the assembling of individual functional molecules into ordered and dynamic suprastructures, as are liquid crystals, aims to transform discrete molecular properties into collective ones and can induce simultaneously novel and synergistic property combinations in the final material.

In this context, structural modifications of the ligands in order to introduce liquid crystalline properties in phosphorescent Ir(III) and Cu(I) complexes can represent an alternative appealing strategy for adding the advantages of 2D ordered soft materials (responsiveness and self-healing, ease of processing) to the properties of phosphorescent, heteroligand, charged complexes and to improve the photophysical properties of the final materials.[2]

Herein the synthesis and characterization of several liquid crystalline Ir(III) and Cu(I) complexes will be presented and their photophysical properties will be discussed based on their soft, dynamic supramolecular arrangements.

Aknowledgements: This work is dedicated to the 150th anniversary of the Romanian Academy

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OP 2. TRANS-RESVERATROL CONTENT IN GRAPE CANE AND ROOT OF DIFFERENT SCION-ROOTSTOCK COMBINATIONS

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The objective of this study was to evaluate the trans-resveratrol content of the canes and roots of two *V.vinifera* L. varieties grafted on five different rootstocks and investigate the impact of the scion-rootstock interaction in this context. Resveratrol is naturally produced by plant as self-defense agent in response to biotic or abiotic stress or it can be synthetized constitutively without elicitors, so it can be phytoalexin and also phytoanticipient (1). In the past decade resveratrol, one of the stilbene molecule of grape, has been intensively studied and has shown its various promising bioactivities (4). Resveratrol has been detected in several grape organs, but the highest concentrations occur in cane and in root (2,3). Grafts used in viticulture have genetically different root and shoot system. The trans-resveratrol content of *Vitis vinifera* cv. Cabernet Sauvignon and cv. Italian Riesling grafted on five rootstocks was analysed from matured cane and root.HPLC-DAD method was used to determine the trans-resveratrol content of the ethanolic extracts of grape canes and roots. Trans-resveratrol content of the roots ranged from 46.4 to 219.1 mg/kg fresh weight. In case of canes, these values ranged from 6.7 to 207.9 mg/kg fresh weight, and we observed significant differences between scion-rootstock combinations ($p<0.05$) under same cropping conditions. The trans-resveratrol content of grape canes and roots highly depends on the genotypes. Grape rootstocks have minor effect on that, even in the roots, comparing to the scions and their influence is not constant with different scions. This may be due to the scion-rootstock interaction.

Keywords: stilbene, vine, Vitis, plant organs

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OP 3. RESEARCHES CONCERNING STOPPING THE EXTINCTION OF INVASIVE SPECIES OF PLANTS FROM MUREȘ FLOODPLAIN NATURAL PARK

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Invasive species of plants replace the local species degrading in this way the natural habitates and agroecosystems. The spreading of these species prevents the use of the lands as pasture, grassland or arable, leading to economical damage. The studied invasive plants in Mureș Foodplain Natural Park are *Amorpha fruticosa* [1] (dwarf acacia), *Acer negundo* (black maple tree) [2] and *Fallopia japonica* (falopia). The species multiplicate quickly and is very hard to eliminate [1],[3].

In the present work we propose a strategy for halting the expansion of invasive plant species in Mureș Floodplain Natural Park.

Key words: invasive species, *Amorpha fruticosa*, *Acer negundo*, *Fallopia japonica*.

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Acknowlwdgement

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OP 4. NEW INSIGHTS INTO VOLATILE ORGANIC COMPOUNDS EMISSIONS AND CLIMATE CHANGE

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The concentration of carbon dioxide in the atmosphere is increasing dramatically in the last twenty years. The influence of those increase over the plants grow could be beneficially (the increasing in biomass). But in the same time the global temperature is increasing with 0.6 degree which could become a stress factor for different plant species. Even more, the climate change which could determine extreme temperatures, flooding, and drought and insects migration. As a response of those stressors, plant species develop different defense strategies. One of them is the emission of different secondary metabolites. As a result, plants emit in atmosphere different volatile organic compounds as alcohols, aldehydes, ketones, mono-, homo- and sesquiterpenes which contribute at secondary aerosols formation. Our studies have been shown that emission rate of some compounds (as green leaf volatiles or terpenes) are scaling up with the strength of the stress while others are only a stress markers.

OP 5. SAVING RESOURCES THROUGH CIRCULAR ECONOMY. WASTE RECYCLING IN ROMANIA AND IN WEST REGION OF ROMANIA

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Rethink, redesign, reduce, reuse, recycle, recover the waste through a circular economy is generating a valuable chain between raw material producer and consumer. It should be maximised the resources value through innovation and research in order to decrease the resource depletion[3].

In order to put in practice this concept a numerous set of measures need to be adopted alongside the whole cycle: the production has to be reshaped beginning with product design, consumption behaviour, prolong product life and after life actions in order to reintegrate materials into another economical loop, to waste management and the market for secondary raw materials that need new quality requirements in order to be easily accepted by economic environment.

Specific actions will be taken in: water reusing standards, food acceptability quality standards. Plastics recycling, critical raw materials, construction and demolition wastes, biomass and bio-based products, fertilizers, industrial and mining wastes, public procurements.

In Romania 2014 just 7,1 % of wastes are recycled[4] and the target is for recycling 65% of municipal waste by 2020 and 75% of packaging waste by 2030. A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030[1,2,5].

The major benefits resulted from circular economy: boost global competitiveness, determine a sustainable economic growth, promote innovation, create new job opportunities[3].

Keywords: resources, environment, circular economy, waste

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OP 6. EMBEDDED SENSOR ENABLED BY PHOTONIC CRYSTALS

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Currently, fiber optic (FO) based systems are playing a major role in communications, but the particular qualities they posses also makes them a very attractive candidate for both sensing[1-3] and entry-level processing information. One other significant development was the discovery of photonic crystals (PCs)[4-6]. These are regular (dielectric modulated) structures, with a periodicity comparable or lower than that of the input wavelength. They exhibit very strong interaction with light, and present peculiar characteristics (light interacting with PCs in ways completely different from what is knows from classical optics), including inhibition of light transmission (through a PC), and photonic band gap (PBG) formation. Such phenomena can and should be used in modern information transmission and processing systems, as well as in sensory devices.

In this paper we will show that embedding PC structures into standard monomode FOs allows for highly sensitive detection of mechanical deformations. The paper starts by reviewing some of the characteristics of FOs and PCs. The simulation results will reveal the variations of both transversal electric (TE) and magnetic (TM) components of the electromagnetic field. These show variations both in amplitude and in phase, and have been obtained using EMExplorer (a CAD tool for electromagnetic field computation).

Keywords: Sensors, Fiber Optics, Photonic Crystals

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OP 7. A NEW FUNCIONAL FOOD FOR WIGHT MANAGEMENTUL

Dana RADU

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The alarmingly increasing rate of obesity and associated morbidity, led to an increasing interest and market demand for functional food to manage weight issues. Different other solutions failed to succeed, having side effects, being difficult to adapt to nowadays pace of living, or lacking the sensory attractiveness.

A new functional food with low caloric value, providing a satiating effect for a prolonged period of time, was developed. The dry functional food composition includes carbohydrates, proteins, fats, vitamins, minerals and antioxidants from flax seeds, which mixed with warm water, generates a balanced savory meal. Simultaneously, it addresses obesity associated pathology through omega 3 fatty acids, antioxidants, phytosterols and dietary fiber content. The new food product contains no synthetic preservatives, colorants, flavors, sweeteners or thickening agents, nor gluten, being useful for celiac disease patients. It is inexpensive and easy to manufacture from natural ingredients through sustainable already established technology.

Keywords: functional food, obesity and associated morbidity, omega 3 fatty acids, dietary fiber.

OP 8. CHROMATOGRAPHIC ANALYSIS OF SOME FOOD PRODUCTS

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Milk and dairy products are important nutrient sources and are considered primary sources of biological calcium, which is required for bone mass formation. Free fatty acids from dairy products exhibited also nutritional and health effects and can help to reduce body fat.[1] In these dairy products, ingredients that are not specified on the label or are not allowed are frequently found. Therefore, it is important to ensure fair competition between worldwide companies and protect consumers against fraud.

In the present work we focused to investigate the fatty acid composition and volatile compound profiles of the Italian (e.g. Parmiggiano Reggiano) and Portuguese cheese (e.g. Queijo de Serpa, Queijo de São Jorge) samples by using chromatografic methods (GC-MS) and Raman spectroscopy.

More development is required to create efficient, reliable and robust methods that can determine the quality of dairy products by using modern instrumentation that should be applicable for a wide range of sample types.

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P1. INTRODUCING ION MOBILITY MASS SPECTROMETRY IN BRAIN GANGLIOSIDE RESEARCH

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The progress of ion mobility spectrometry (IMS), together with its association to mass spectrometry (MS), opened new directions for the identification of various metabolites in complex biological matrices. However, glycolipidomics of human brain by IMS MS represents an area untouched up to now, because of the difficulties encountered in brain sampling, analyte extraction and IMS MS method optimization [1,2]. In this study, IMS MS was introduced in human brain ganglioside (GG) research. The efficiency of the method in clinical glycolipidomics was demonstrated on a highly complex mixture extracted from a normal fetal frontal lobe (FL37). By this approach, a remarkably rich molecular ion pattern, proving the presence of a large number of glycoforms and an unpredicted diversity of the ceramide chains were discovered. Moreover, the results showed for the first time the occurrence in human brain of GGs with a much higher degree of sialylation than previously reported. By IMS MS the entire series starting from mono- up to octasialylated GGs was detected in FL37. These findings substantiate early clinical reports on the direct correlation between GG sialylation degree and brain developmental stage. By IMS CID MS/MS, applied here for the first time to gangliosides, a novel, tetrasialylated *O*-GalNAc modified species, with potential biomarker role in brain development was structurally characterized. Under variable collision energy, a high number of sequence ions was generated for the investigated GalNAc-GQ1(d18:1/18:0) species. Several fragment ions documented the presence of the tetrasialo element attached to the inner Gal, indicating that GalNAc-GQ1(d18:1/18:0) belongs to the *d* series.

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P 2. THE INFLUENCE OF DROUGHT ON TIMIS COUNTY FOREST

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The objective of this study is to follow the quality condition of forests in Timis County. For this, we discuss the profile of forests in Timis County, with particular emphasis on the topography, climate characterization and natural resources of the area. As well we have been shown the condition forest land in Timis County and how the drought could influence the different physiologic parameters of trees. To go more inside of different stress metabolic activities, the prolong drought has been studied for plants of *Betula verrucosa*. It has been demonstrated that drought determined high emission of green leaf volatiles and isoprene. Assimilation rate and stomatal conductance decrease with the days of drought.

P 3. THERMOCHEMICAL DATA OBTAINED BY QUANTUM CHEMICAL CALCULATION FOR IDENTIFICATION BY DIFFERENTIAL MASS SPECTROMETRY OF SOME BIOLOGICALLY ACTIVE COMPOUNDS FROM LAVENDER OIL

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The assignment of correct structures for isomers with similar mass spectra (e.g., natural compounds from lavender essential oil) is not always successful when spectral libraries alone are employed or when the compounds are not present in spectral libraries.[1] In the recent years, new quantitative structure-fragmentation relationships (QSFR) techniques have been developed for the processing of mass spectra. It has been used several ion intensities and their heat of formation ($\Delta_f H$) to establish structures of isomers with similar mass spectra, such as diastereoisomers and positional isomers.[2] The above-mentioned applications need reliable hiamin-chemical values for all possible structures (neutrals, radicals or ions) involved in chemical structure identification (CSI). So, the spectral library was replaced with a database containing the ionic or the fragmentation enthalpies obtained by quantum chemical calculation (QCC).[1] The geometries of the molecules, ions and radicals were optimized with the force field MM+ and re-optimized with the semi-empirical method RM1 using the RHF operators for molecules or ions and UHF for radicals or radical ions.[1] Two different formation enthalpies were used for the database: the $\Delta_f H$ (relative) obtained with Eqn. (1), and the enthalpy of the molecule fragmentation ($\square_f H$ (M frag)) obtained with Eqn. (2).

$$\Delta_f H \text{ (relative)} = \Delta_f H \text{ (ion)} - \Delta_f H \text{ (molecule)} \quad (1)$$

$$\Delta_f H \text{ (M frag)} = \Delta_f H \text{ (ion)} + \Sigma\Delta_f H \text{ (fragments)} - \Delta_f H \text{ (molecule)} \quad (2)$$

Keywords: QSFR, quantum chemical calculation, differential mass spectrometry, lavender essential oil

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P 4. STUDY REGARDING THE INFLUENCE OF WATER ON PRESERVATION OF COURGETTES BY LACTIC FERMENTATION

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According to this study we analised the influence of water hardness on the fermenting process as well as the initial Ph of the saline solution; also we monitored the organoleptic properties of the final product. For courgettes pickling there were used saline solutions with a 20g/l (2%) concentration. The initial Ph solution was measured. The Ion Hydrogen concentration (Ph) of the initial solutions varied between 5.8 and 8 for the different types of water used. The jars which contained conserved courgettes were deposited in light absent storage spaces with a temperature ranged in between 18 and 22^0C during a 7 day period, followed by 3 weeks at 15-18^0C. After four weeks from initial fermentation the chemical parameters which influence the ongoing process of fermentation were analyzed: the total acidity expressed in Lactic Acid and the Vitamin C concentration from the saline solution. The results were obtained by using the spectrophotometric method (AOAC 32.034) for the Lactic Acid; the Vitamin C was measured with the Standard Method SR ISO 6557-2:2008. And the Ph meter gave the Hydrogen Ion concentration. The first measurements were taken from the Black Zucchini; we noticed a drop in the Ph level with values between 4.1 – 4.7. The total acidity expressed in Lactic Acid (%) presented values between 0.59 – 0.75; the salt contained in the saline solution had a value of 2%. The fermentation process occured normally for all the experimental samples.

Keywords: water hardness, courgettes, preservation, fermentation

P 5. QUALITY IMPROVING OF WHOLE WHEAT BREAD BY USING XYLANASE

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The increasing amount of fiber on wheat flour brings some deleterious effects on dough structure, such as the increasing of dough stickiness and fermentation tolerance decreasing. Also it has a negative influence against other properties of dough such as handling and rising properties. Fiber addition usually causes a decrease in bread volume and breadcrumb loses its elasticity. So, we had investigated if the xylanase addition could counteract those deleterious effects. Positive action of xylanase in dough could be explained by diminution of insoluble xylans content and by fact that the liberated water from hydrolyzed xylanase become available to gluten formation.

By adding xylanase, the stickiness of dough was not increased and dough had a better mixing and fermentation tolerance in comparison with control dough (without xylanase). Excepting P6 sample (15 g enzyme preparation/100 kg flour), all samples with xylanase had better characteristics than control sample without xylanase. The maximum bread volume increase (17.9%) appears for P4 sample (13 g enzyme preparation/100 kg flour). P4 sample also had the best crumb porosity. The optimum dose of enzyme preparation could be considered 10g enzyme preparation/100kg whole wheat flour (P1 sample) for economical reasons and moreover, the corresponding volume increase and crumb porosity was comparable with maximum volume increase and crumb porosity corresponding to P4 sample.

Keywords: whole wheat flour, xylanase, bread quality

P 6. NON-ISOTHERMAL DECOMPOSITION KINETICS OF OXO-DIPEROXO-MOLYBDENUM(VI)- POTASSIUM OXALATE

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Abstract: The thermal decomposition of the $K_2[MoO(O_2)_2(C_2O_4)]$ compound, was investigated using simultaneous thermal analysis TG/DTG/DTA, in static air atmosphere at four different heating rates (β= 2,4, 8 and 10 $K.min^{-1}$). In the 35 – 500^0C range, the investigated compound presented three main mass-loss processes due to the peroxo groups and oxalic ligand decomposition. The first decomposition stage (165 – 250^0C temperature range), due to the elimination of one oxygen molecule by the breaking of the peroxo groups, was characterized by evaluation of the most probable mechanism and the values of the afferent kinetic parameters using Netzsch Thermokinetics Software module. The kinetic analysis was performed by isoconversional (model-free) methods and "Multivariate Non-linear Regression" program was applied. The activation energy values, obtained using the isoconversional Friedman (FR)[1] and Flynn-Wall-Ozawa (OFW) methods[2,3], showed a dependence on conversion degree. In this temperature range the decomposition process that occurs is a complex one. From the tested mechanism types, only those consisting of three successive decomposition steps exhibit the best F-test Fit-Quality for TG curves. In addition, it was also used the criterion, according to which the most probable mechanism corresponds to the best agreement (relative errors e ≤ 10%) between (E_{FR}) and (E_{iso}) values. According to this criterion, the most probable mechanism for the first decomposition stage is $A \xrightarrow{1} B \xrightarrow{2} C \xrightarrow{3} D$, ; step 1: Bna –Prout-Tompkins, n order, autocatalytic; step 2: Fn – Reaction order model, n reaction order; step 3: Fn – Reaction order model, n reaction order.

Keywords: oxo-diperoxo-molybdenum(VI)-potassium oxalate, decomposition mechanism, non-isothermal kinetics parameters

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P 7. THE STUDY OF THE ANTIOXIDANT ADDITION INFLUENCE ON FATS THERMO-OXIDATIVE STABILITY BY USING TG/DTG/DTA DATA

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The TG/DTG/DTA data are useful to investigation the thermo-stability of the alimentary fats by determining the induction period of oxidation (T_{onse}) and by evaluating the degradation behavior, under dynamic conditions, of the lipid systems[1]. Thermo-analytic curves are also valuable for the study of the influence of antioxidants addition on the fats decomposition in the presence of the oxidative atmosphere at high temperature[2,3]. The natural antioxidants are an interesting alternative to improve the thermo-oxidative stability of the vegetable and animal fats[4].

In this paper we present the influence of an alcoholic extract addition (plant antioxidant mixture) on the thermo-stability, in oxidative conditions, of some high-oleic sunflower oil and pork fat samples, in the 36-800°C temperature range.

The addition of antioxidant mixture (0.5 Ml /kg fat) significantly improved the T_{onset} values corresponding to the first decomposition stage of the investigated samples. The obtained results show the great efficiency of the natural antioxidant addition on thermo-oxidative stability of the fats.

Keywords: TG/DTG/DTA, antioxidant addition, thermo-oxidative stability, vegetable and animal fats

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P 8. EXPERIMENTAL RESEARCH ON THE CONTENT OF THIAMINE, RIBOFLAVIN AND PYRIDOXINE OF THE *FAMILY PAPILIONACEAE* PLANTS UNDER THE INFLUENCE OF FERTILIZER WITH MICROELEMENTS

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This paperwork presents the experimental results obtained by using soluble chemical fertilizers that contain microelements on a pea culture. Fertilizers are mineral or organic substances applied on the soil or on the plants and are intended to replenish the necessary of nutritional substances of the plants in order to obtain horticultural products (vegetables) with a high content of hydrosoluble vitamins (B_1, B_2 and B_6) and to improve the growth and development conditions of the plants[1]. Experiments aimed the following scientifically objectives: pea crop foundation Kelvedon variety variety, appliance of some complex chemical fertilizers with microelements during vegetation period, in order to stimulate and increase content of hydrosoluble vitamins B_1, B_2 and B_6 from peas, extraction, identification and dosing hydrosoluble vitamins B_1, B_2 and B_6 from peas through hiami-chemical methods[2]. Experimental results for quantitative determination of B_1, B_2 and B_6 vitamins from raw peas (Kelvedon variety), by means of chemical methods, are showed in Table 1.

Table 1. Content of vitamins B_1, B_2 and B_6 from peas (Kelvedon variety) obtained as part of fertilized experimental plots (2013-2015)

Experimental plot (variant)	Thiamin hydrochlorate mg/100 r.s. (method 1)			Thiamin hydrochlorate mg/100 g r.s. (method 2)			Riboflavin phosphate mg/100 g r.s.			Pyridoxine hydrochlorate mg/100 g r.s.		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
1 – control	0,46	0,47	0,45	0,33	0,32	0,30	0,12	0,12	0,09	0,15	0,14	0,15
2	0,63	0,60	0,62	0,48	0,41	0,44	0,16	0,16	0,14	0,24	0,27	0,26
3	0,59	0,62	0,57	0,51	0,54	0,52	0,15	0,17	0,15	0,42	0,42	0,41
4	0,54	0,55	0,53	0,42	0,43	0,42	0,14	0,15	0,16	0,30	0,34	0,32
5	0,54	0,59	0,61	0,45	0,49	0,48	0,18	0,16	0,18	0,39	0,38	0,41
6	0,65	0,65	0,64	0,57	0,58	0,59	0,19	0,18	0,19	0,51	0,53	0,54

For 2014, by applying Ferticare I fertilizer, in peas can be observed an increasing of hiamine quantity for 1,2-1,5 times, riboflavin quantity for 1,3-1,5 times and pyridoxine quantity for 2,5-3,5 times. In 2015, by using Ferticare I fertilizer with a dose of 180 kg/ha in three different moments, can be noticed a significant increase of vitamin B_6 quantity in peas, for 3,6 times higher than the witness.

Keywords: hidrosoluble vitamins, experimental parcels, fertilisers with microelements

P 9. CASE STUDY ON THE EATING BEHAVIOR OF STUDENTS

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The purpose of this paper is to analyze real student diet compared with the diet recommended by nutritionists. Following this analysis were determined deviation for energy, deviation for macronutrients (carbohydrates, lipids, proteins), deviation proportion of energy brought by macronutrients and deviation of energy distribution on the three main meals per day (breakfast, lunch and dinner) .

Results on a sample of 10 students (5 men and 5 women) indicates certain patterns of inappropriate eating behavior but that is modifiable and represent the premise to correct deviations within the limits recommended by nutritionists.

Keywords: healthy diet, eating behavior, diet actual, diet recommended.

P 10. Analysis of anthocyanidins in *Crataegus monogyna* and *Rosa canina* ethanolic extracts

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The present work aimed to determine the qualitative and quantitative composition of anthocyanidins in plant extracts obtained from Crataegus *monogyna* (Hawthorn) and *Rosa canina* (Wild rose) species.

The qualitative analysis were performed by thin-layer chromatography, meanwhile for the quantitative analysis of anthocyanidins, the spectrophotometric method was used. For extraction of the fresh plantmaterial absolute ethanol or ethyl alcohol 96% were used.

The analyses revealed that the highest content of anthocyanidins (106,9 mg / 100 g fresh plant material) was obtained for Wild rose extracted in 96% ethanol, and the lowest content of anthocyanidins was determined for 100% ethanolic extract of *Crataegus monogyna* (19.3 mg /100 g fresh plant material).

Keywords: poliphenols, anthocyanidins, spectrophotometric method, ethanolic extracts

P 11. CURRENT STATE REGARDING THE FAT FOOD FORTIFICATION WITH SPICE HERBS EXTRACTS

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One important trend that should be followed in food technology is that of determine the lipid oxidation reaction mechanism. Each nationality has specific dishes involving baking or frying the raw materials. During this processes the fat presented suffer an oxidation reaction, resulting toxic products as acrolein, and also the alteration of the sensorial properties of the products.

One possible alternative to delay the fat oxidation is the use of herbal extracts. A second positive effect of using the plant extracts is the improvement of the sensorial properties of the fats. The researches made till now are focused principally in studying the thermal behaviour of liquid fats (oils) and milk butter and the influence of different extracts added.

Studies made on the corn oil showed that by adding black cumin seed oil and coriander seed oil, the quantity of polyunsaturated fatty acids decreased and the monounsaturated level increase[1]. As it is known some natural fats could cause allergic reaction due to the presence of protein trace. This probleme could be solved by adding plant extracts which contain phenolic compounds. It was show that this antioxidants form with the proteins insoluble complexes[2]. Adding essential oil of *Nigella sativa* L. in milk butter proved to have an important antibacterial and antioxidant effect on the product[3]. The stabilisation of the butter in refrigeration condition and also the improvement of the sensorial characteristics could be obtained by adding ethanol extracts from *Moringa oleifera*[4].

New research could consider as principal object of study different solid fats and their oxidative behaviour in presence of extracts and essential herbal oils.

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P 12. CALCIUM SPECTROPHOTOMETRIC DETERMINATION FROM FLAX-COTTON FABRICS AFTER BIOSCOURING TREATMENT

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The fabrics made from cellulosic and lignocellulosic fibers present in their native structure organic compounds which need to be removed for better properties. In this process known as a pre-treatment, different minerals, organic acids, waxes, and pectin, etc. are eliminated. For this purpose, it can be use a classical method-scouring (NaOH solution and high temperature) or a new method-bioscouring (enzymatic type). The pectin is a heteropolysaccharide, the base unit being represented by the D-galacturonic acid. The galacturonic acid chains are linked through Ca^{2+} bridges. During the bioscouring process, in presence of a pectinolytic product, the pectin is hydrolyzed, releasing the Ca^{2+} ions.

The method used to determine the efficiency of the bioscouring process was based on the measuring of the color strength (K/S) of treated samples flax-cotton fabric stained by alizarin dye[1, 2]. The K/S ratio was calculated from the reflectance value measured by Datacolor 500 spectrophotometer at the maximum absorption wavelength of 540 nm. Alizarin has the capacity to form salts in the presence of Ca^{2+} and as a direct result of this reaction lower values for K/S ratio are obtained due to the removing of the Ca^{2+} ions from the system. The amount of calcium removed from the samples treated with different quantities of pectinolytic product and different reaction time was calculated by considering the untreated fabric (washed only with hot water) as a control (which was considered to have the higher quantity of calcium).

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P 13. NUTRITIONAL EVALUATION OF THE STUDENT MENUS SERVED AT THE „AUREL VLAICU" UNIVERSITY CANTEEN

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This work aims at evaluating the main nutrients and energy value of the menus served at the university canteen and to assess whether they are adequate for the students.

Good nutrition is important for healthy and development of students and can reduce the risk of health problems in later years, healthy students are better learners and schools can directly influence students health. [2]

A full menu was taken, for 10 day of evaluation, from each of them: first course, second course and dessert. The food was recorded by weight using a digital scale. For assessing the nutritional input in the directly managed dining rooms, we took information on the menu, how it was prepared, the ingredients used and the proportion of each of these in each dish, the amount of oil and salt added. Hence we calculate the proportion of each ingredient and the energetic value, using food composition data bases.[1,3]

Table 1. Average real ratio for student menus and recommended ratio for a balanced diet

Ratio	Protein	Lipid	Carbohydrate	Energy [kcal]
Average real ratio [kcal]	192,4	450,8	534,5	1177,7
Real percentage ratio [%]	16,3	38,2	45,4	100
Recommended ratio[1] [%]	***14***	***30***	***56***	***100***

In conclusion we can say that the energy value of the menu is adequate, the percentage content of proteins is close to optimal, slightly high for the lipids and somewhat smaller for carbohydrate. Taking into account the dietary recommendations we suggest a slight reduction of food with high fat content, especially for the main course and replacing them with foods rich in simple sugars like fresh fruits, fruit salad, dried or canned fruits, fruits or vegetable nectars.

Keywords: student menus, nutritional evaluation, energy value.

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P 14. DETERMINATION OF ATMOSPHERIC POLLUTANTS IN ARAD CITY

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Volatile organic compounds (VOCs) are estimated to be one of the main source of urban pollutants emitted by the traffic activity. The main anthropogenic urban VOCs are aromatic compounds, aldehydes, esters, ketones, oxygenated compounds, and isoprene. During six months in 2015-2016 we evaluated the emission of aromatic compounds in the cross-road from Arad City, Romania, named Podgoria, by using a static technique. The VOCs had been collected using tubes with adsorbent (carbotrap) and analysed using a gas-chromatograph with thermosesorbter coupled with a mass spectrometer. Also, comparison with emission of VOCs from Ceala, Mureş Natural Park, close to Arad, has been performed. The identification of the compounds have been made by using NIST and WILEY libraries. The evaluation of aromatic compounds emission in the cross-road Podgoria from Arad will be presented.

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The entire responsibility regarding the abstracts belongs to the authors.