

**International Conference**

**HEALTHY NUTRITION AND  
PUBLIC HEALTH**

**May 13-16, 2011**

**BRASOV - ROMANIA**

**Book of abstracts**



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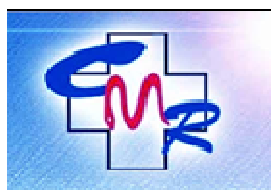
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Cover Design – Vlada-Lena SECRIERU

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**PL1.**  
**INTERDISCIPLINARY APPROACH OF SUSTAINABLE  
DEVELOPMENT IN  
THE TRANSILVANIA UNIVERSITY OF BRASOV**

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Answering to the sustainability demands, universities focused on RTD having various approaches, ranging from specific concepts/topics in this field up to complex concepts, integrating inter- and trans-disciplinary subjects as those corresponding to sustainable development and sustainable communities. Making a step forwards, Transilvania University of Brasov is developing a new research campus, GENIUS (Green, Energy Independent University Campus).

The core of the GENIUS Campus is the RTD Institute, which infrastructure is developed within the frame of the project “RTD Institute: High-Tech Products for Sustainable development”. The project, financed by structural funds (60%) and own university funds (40%) will finalize, by the March 2012, the 12 buildings hosting RTD of excellence in the field of sustainable development (with a strong focus on sustainable energy).

Specific research on human performance and medicine is hosted in dedicated departments, presented along with the entire GENIUS Campus.

GENIUS, the research campus will include the University Interdisciplinary Doctoral School, and all the young Ph.D. students and post-doctoral researchers will run their projects within the departments, along with the M.Sc. students from the research training lines.

Extended cooperation at regional, national and international levels is one major targeted paths to be followed in all the activities developed within the Campus.

**PL.2.**  
**THE ROLE OF BIOAVAILABILITY ON BENEFIT ASSESSMENT  
ASSOCIATED WITH THE INTAKE OF PLANT FOOD  
SUPPLEMENTS**

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In recent years, natural substances have received a special interest; in particular, molecules having antioxidant activity, as such or in botanical preparations, are widely studied and included in many fortified foods and food supplements. Fruits and vegetables are rich in natural antioxidants and their inclusion in the diet is critical in reducing the risk factors for chronic pathologies, such as cancer, cardiovascular diseases, or inflammation. In fact, these diseases are at least partially associated with the harmful effects of free radicals, which interact with endogenous molecules (DNA, proteins, etc.). The correlation between the intake of antioxidants and their effects on human health presents some critical points: 1) the active substances must reach the target organ/system at a suitable concentration and their bioavailability should be assessed by experimental approaches; 2) antioxidant substances must maintain their activity during food processes, shelf life and, if the case, during cooking or other food preparations; 3) there are different *in vitro* test to evaluate antioxidant activity but no convincing scientific correlation has been done between these tests and the *in vivo* situation. In this presentation, some examples on the bioavailability of antioxidant molecules, measured in human studies, will be described, taking also in consideration the matrix effect.

*Acknowledgments*

*The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 245199. It has been carried out within the PlantLIBRA project (website: [www.plantlibra.eu](http://www.plantlibra.eu)). This report does not necessarily reflect the Commission views or its future policy on these areas.*

# DETERMINATION OF ANTIOXIDANTS IN MEDICINAL HERBS

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The evaluation of antioxidant capacity (AOC), total phenols (TP), vitamin C content and identification of several phenolic acids and flavonoids was performed in the following fresh and dried herbs: elder (*Sambucus nigra* L.), barberry (*Berberis vulgaris* L.), rowan tree (*Sorbus aucuparia* L.), coltsfoot (*Tussilago farfara* L.), linden (*Tilia platyphyllos* Scop.), thyme (*Thymus vulgaris*), milfoil (*Achillea millefolium*) and plantain (*Plantago lanceolata* L.). Fresh and dried plants and their infusions were extracted with 2% water solution of metaphosphoric acid (MFK), and with methanol. The results showed that the drying process and preparation of herbal infusions resulted in a significant reduction of the AOC and vitamin C concentration. Fresh herbs contain up to 0.137% (rowan tree) of vitamin C, whereas dried herbs only up to 0.025% (linden). The content of TP in the fresh herbs varies from 0.016 mmol/g (coltsfoot) to 0.069 mmol/g (thyme) and in dried herbs from 0.004 mmol/g (elder) to 0.077 mmol/g (barberry), expressed as chlorogenic acid equivalent. In the herbal infusions on the other hand only between 0.004 mmol/g (elder) and 0.032 mmol/g (coltsfoot) of TP was determined. It was found out that slightly more antioxidants were extracted with methanol compared to the more polar solvent (2% MFK). Four phenolic acids and seven flavonoids we identified in the herbal extracts. With the drying process, the amount of the most of the phenolic compounds was reduced.

## **O.1.1. LOW SODIUM DIET IN THE PREVENTION AND TREATMENT OF ARTERIAL HYPERTENSION**

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Cardiovascular disease is the most important cause of morbidity and mortality around the world and hypertension remain the most important modifiable cardiovascular risk factor. In the prevention and treatment of hypertension the lifestyle changes: healthy diet, physical exercise and weight control are recommended as first line interventions. Healthy diet in patients with hypertension and at least in those with risk to develop arterial hypertension means a low sodium diet limiting sodium intake, excessive alcohol consumption and fatty diet. Several studies reported a direct and progressive relation between increased sodium intake and hypertension and described the mechanisms implicated in those relationships (1). Low salt diet enhances response to antihypertensive drugs, improve blood pressure control and decrease the risk of cardiovascular mortality and morbidity (2). The level of sodium intake recommended by guidelines is less than 6 g sodium chloride/day (3). Some subgroups of population like elderly, African Americans, and patients with chronic kidney disease are particularly “sensible to salt” and in those subgroups low sodium diet appear to be essential in hypertension control. Reduction of dietary salt intake can be realized encouraging the DASH diet (Dietary Approaches to Stop Hypertension) (4). The importance of low sodium diet is now appreciated as a consistent measure to prevent cardiovascular disease and stroke and recently the American Heart Association announced “a call to action” (5).

### *References*

*Dickinson MK, Clifton MP, Keogh BJ. Endothelial function is impaired after a high-salt meal in healthy subjects. Am J Clin Nutr 2011 93: 3 500-505*

*Cook NR, Cutler JA, Obarzanek E, et al: Long term effects of dietary sodium reduction on cardiovascular disease outcomes: Observational follow-up of the trials of hypertension prevention (TOHP). BMJ. 2007, 334: (7599): 885.*

*Chobanian AV, Bakris GL, Black HR, et al: Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; National Heart, Lung, and Blood Institute; National High Blood Pressure Education Program Coordinating Committee: Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension. 2003, 42: (6): 1206-1252*

*Karanja N, Erlinger TP, Pao-Hwa L, et al. Miller, E. R; Bray, G. A “The DASH diet for high blood pressure: from clinical trial to dinner table”. Cleveland Clinic Journal of Medicine . 2004; 71 (9): 745–53*

*The Importance of Population-Wide Sodium Reduction as a Means to Prevent Cardiovascular Disease and Stroke A Call to Action From the American Heart Association. Circulation. 2011;123:00-00.*

**O.1.2.**  
**NOVEL FOOD AND FOOD ADDITIVES - CONSUMER'S  
PERCEPTION IN BUCHAREST**

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Today, the health of European and also Romanian population is more and more affected by the globalization of the food chain. Therefore it is a big challenge for the EU food safety policy to achieve the highest possible degree of protection of human health and consumer interests in relation to food. In order to protect its citizens, the EU conceived a very well build legislation regarding food and food safety that is continually monitorized and adapted to new challenges in this field.

One of the challenges refers to "novel foods" and their consequences to the health of the European and also Romanian population. It is desirable to see the consumer opinion on this issue and therefore we made a study about the perception of the people of Bucharest on novel foods and food additives. The questionnaire type study was made in Bucharest on a sample of 500 persons. The results showed that in Romania, people perception about food safety, novel food and EU food legislation is incomplete. For that we propose to the Romanian Authorities to give higher importance in the future to the safety and food protection.

**O.1.3.**  
**NUTRITIVE BIOMASS PRODUCED BY SUBMERGED  
CULTIVATION OF MUSHROOMS TO BE USED AS FOOD  
SUPPLEMENTS**

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The submerged cultivation of edible mushroom mycelium is a promising method which can be used in novel biotechnological processes to get food supplements from the nutritive fungal biomass. The research works were carried out to get nutritive supplements from the mycelia biomass of mushroom species *Lentinula edodes* (Shiitake) and *Pleurotus ostreatus* (Oyster Mushroom) which are good biological sources of proteins, carbohydrates and mineral elements with beneficial effects on human nutrition. As a result of the authors' recent studies, the continuous cultivation of edible and medicinal mushrooms was applied using the submerged fermentation of different natural by-products of agro-food industry that provided a fast growth as well as high biomass productivity of the investigated strains. All culture media used in experiments were prepared from different sorts of bran and broken seeds resulted from the industrial food processing of wheat, barley and rye seeds. The submerged fermentation was set up at the following parameters: constant temperature, 23°C; agitation speed, 70-90 rev. min<sup>-1</sup>; pH level, 5.7–6.0 units; dissolved oxygen tension within the range of 30%-50%. During a period of submerged fermentation lasting between 120-180 h, the fungal biomass in the shape of small fungal pellets was developed inside the culture media.

#### O.1.4.

### PERSONALITY PROFILES OF STUDENTS WITH HIGH RISK FOOD BEHAVIOURS

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The aim of the performed study was to investigate the personality profiles of students with high risk food behaviours. The method consisted of an epidemiological inquiry using a questionnaire of risk behaviour investigation (CORT – 127 items) and of personality features investigation (Freiburg Personality Inventory – 212 items). The material was a sample of 2076 young people from urban area (62.49% - 1296 girls and 37.51% - 778 boys, with age 18-25 years). As personality features we investigated: Nervousness, Aggression, Depression, Excitability, Sociability, Calm, Domination, Inhibition, Sincerity, Extraversion, Emotional lability. We considered only the students with maximal risk food behaviours (rank 4) and their personality structure. Obtained results: As a general characteristic of the sample the nervousness and sincerity presented the rank 7 with a tendency to psycho-somatic symptoms and self criticism. The students which had high risk food behaviours presenting the following personality features: lack of fruits – low depression, high sociability; lack of milk – low depression, low excitability, high sociability, high domination, low inhibition, introversion, high emotional lability; excess of eggs – high aggression, low depression, high excitability, high sociability, high domination, low inhibition, introversion. In conclusion, there are specific profiles for each kind of food risk behaviours met in investigated students.

*This study was founded by CNCSIS grant, cod 1167, contract 40549/5.11.2003*



### O.1.5.

## ROMANIAN CONSUMERS AND ORGANIC FOOD: IS ROMANIA A SUITABLE MARKET FOR THIS TYPE OF PRODUCTS?

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Organic products are gaining terrain on the European food market. The confidence people have that eating organic means eating healthier is rising, but unfortunately everyone is aware that prices are somewhat bigger for this kind of products than for their non-organic equivalents.

On the Romanian market, organic foods became available recently and this study had in target to identify consumers' awareness of their existence and the socio-demographical characteristics of the target group. The cross sectional investigation was carried out between late 2008 and early 2009 on a random sample of 514 Romanians, living in rural or urban communities.

It was noticed that 81% of the respondents look on labels before buying food, but only 7.9% of the "label checkers" search for "organic" icons. There is a strong correlation between the label check habit and the willingness to pay more for organic food ( $p = .00$ ). More married women, below 45 years, having a higher socioeconomic status declare to be ready to pay more for food, in order to get an organic product.

Romanian market has a real potential for organic food, even though for the moment we are still far from other European markets.

## **O.1.6.** **ETHICAL ISSUE AND FOOD SUPPLEMENTS**

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A lot of ethical dilemmas could be connected with Food Supplements (FS). Using FS is a common practice in Romania, but the ethical issue are not yet encountered.

The core of ethical principal which are involved in FS administration are based on respect for the autonomy of patients which are able to decide for them, the benefices saw at the other patients.

But in the same time we don't have enough knowledge about how the FS interfere in the body, if the non-maleficence issue is respect.

The main problem for the health professional action becomes the informed consent and the patients' knowledge in this field.

For the health professional sometimes is a real challenges to accept the FS and in the same time the role of consultant in order to give to their patient good information about FS.

The article try to establish a minimum key words about ethical issue in FS and to discuss an ethical strategy to approach this subject, connected with the medical and nursing student point of view.

## O.2.1.

### ADAPTOGENIC EFFECT OF GINSENG SAPONINS AND THEIR METABOLITES

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Ginseng, a well-known herbal medicine, has a long history of use as functional food in China. Pharmacological studies have shown that ginseng has various biological activities. Dammarane saponins and sapogenins are well recognized as active ingredients of Ginseng, which can be categorized into protopanaxadiol (PPD) (e.g. Rb1, Rd and Rh2) and protopanaxatriol (PPT) saponins (e.g. Re, Rg1 and Rg2). Our recent finding on saponins and their metabolite sapogenins on learning and memory, hematopoiesis and anti-hypoxia are reported as follows: Both of Rg1 and Rb1 can improve the impaired memory performance induced by scopolamine in Step-Down and Water Maze tests, after ip administration (3-12 mg/kg) for 1 week. Rh1 and PPT, the metabolites of Rg1, could improve learning and memory deficiency and showed stronger efficacy than that of Rg1 with an equivalent efficacy at 1/28 and 1/2.8 dosage of Rg1, respectively. PBD1226, the formulation of comprises saponins (5-40 µg/ml), as well as PPD and PPT (both 0.1-40 µM) markedly stimulated proliferation of myeloid and erythroid progenitor cells (CFU-GM, CFU-E/BFU-E) in vivo. Furthermore, PBD1226 at 37.5-150 mg/kg stimulated proliferation of myeloid and erythroid progenitor cells, increased hematopoiesis and nucleated cells in bone marrow, as well as the contents of RBC and PLT in the blood in Co60 irradiated or cyclophosphamide-treated bone marrow injure model. PPD, a metabolite of Rb1, could inhibit proliferation of acute lymphoblastic leukemia cell line (Reh, RS4;11) in a dose-dependent manner, in L1210 mouse model of acute lymphoblastic leukemia. PPD (10-40 mg/kg) significantly improved general health condition and immunity and prolonged survival duration of mice after ig administration. PBD1227, another formulation of comprises saponins could noticeably prolonged mouse survival time in different test (regular anoxic, sodium nitrite intoxication, and decapitation test) when it was given by ig administration for 30-day. Overall, our results indicate ginseng saponins and their metabolites have a distinct effect on learning and memory, tumor, and hypoxia, which showed they have strong effects to harmful stresses and increase adaptability accordingly; Therefore, dammarane saponins and their metabolites are considered to be substances of wide adaptogenic effects.

*Acknowledgments: Thanks for financial support from Ministry of Science and Technology of China (Project No. 2009ZX09103-336 2009ZX09502-014).*

## **O.2.2.**

# **RISK-BENEFIT ASSESSMENT OF PLANT FOOD SUPPLEMENTS: A REVIEW OF EXISTING APPROACHES**

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Plant food supplements (PFS) are widely accepted by European consumers for their health-promoting effects combined with relatively low costs. Although PFS have been used for decades, there is still a lack of information and of tools useful to ensure their safety to consumers. To date, various approaches to risk-benefits assessment have been proposed for food and food supplements but such approaches have not been yet adapted to PFS.

In order to fill the gap on missing information on the methodology for risk-benefit assessment of PFS, within the PlantLIBRA project a revision of the risk-benefit assessments studies and methodological publications in the food and food sector is being carried out. Peer-reviewed publications, relevant papers from national and international bodies and EU projects concerning risk-benefit assessment are being collected. Also publications from the pharmaceutical sector will be taken into consideration in the review process.

The approaches used for risk-benefit assessment are being then quantitatively evaluated, the advantages as well as the problems encountered in the application of such methodology to PFS are being assessed. The results of the analysis will represent the basis for the subsequent development within the PlantLIBRA consortium of a valid methodology for the risk-benefit assessment of PFS.

### *Acknowledgments*

*The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 245199. It has been carried out within the PlantLIBRA project (website: [www.plantlibra.eu](http://www.plantlibra.eu)). This report does not necessarily reflect the Commission views or its future policy on these areas.*

### **O.2.3.**

## **EXCESS CALORIES AND FOOD IN RELATION TO BIOLOGICAL HEALTH**

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Food balance disorder produced by the ingestion of large quantities of products with high caloric value and easily assimilated is to blame for 70-85% of obesity cases.

They generate metabolic complications with serious consequences on the cardio-vascular, musculoskeletal and even nervous system.

The main cardiovascular effects are increased cardiac output and systolic blood pressure. Dyslipidemia, as well as static disorder of the spine and joint function are other serious consequences of excess caloric food. All degenerative diseases except osteoporosis are caused by eating calorie-rich products.

An obese person is exposed to three times higher risk of developing heart disease, 4 times higher for arterial hypersensitivity, 5 times more likely to suffer from diabetes mellitus, 6 times more likely to suffer from diseases of the gallbladder.

It is also a direct cause-effect relationship between excess calorie food and the increasing frequency of cancer of the colon, rectum, pancreas, cervix, ovary, breast.

Excess carbohydrate food leads to fermentation faeces, dental cavities, diabetes mellitus.

Excess protein can lead to decay processes by stimulating microbial flora in the stasis colon followed by bone demineralization and osteoporosis.

Increased saturated fat intake leads to increased incidence of colon and rectum cancer in both sexes.

But no matter the source of the excess heat, either protein, carbohydrate or lipid, it is converted into fat. They gradually clog the vital arteries leading to decreased nutrient strength for each organ.

What's left of that fat goes to the body's central fat storage, around the viscera and the subcutaneous tissue. For every 7700 kilocalories that the body receives more than needed one kilogram of fat is deposited. And each kilogram of excess weight reduces life expectancy by two months. 30 kilograms extra means five years less.

Instead, only a 10% weight loss in a man aged between 35 and 55 leads to a decrease of 20% risk of coronary heart disease. An increase of 10% causes a 30% increase in coronary heart disease risk.

### O.3.1.

## DEVELOPMENT OF COLORIMETRIC PROTEIN PHOSPHATASE INHIBITION ASSAYS FOR THE DETECTION OF AQUATIC BIOTOXINS

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Microcystins (MC) are toxins released by cyanobacteria in freshwaters. More than 70 structural variants of MCs are known, each one showing different toxicity levels. After ingestion, toxins can penetrate into the hepatocytes where they irreversibly inhibit the protein phosphatases type 2A (PP2A) and 1 (PP1) inducing external signs of poisoning such as vomiting, and potentially liver cancers.

Okadaic acid (OA) is a marine toxin produced by toxicogenic dinoflagellates. This phycotoxin accumulates in the digestive glands of shellfish without causing any toxic effect on it. However, when humans consume a sufficient amount of contaminated seafood, OA inhibits PP2A causing gastrointestinal troubles known as DSP (Diarrheic Shellfish Poisoning).

The toxicity and ubiquity of OA and MC make necessary the development of fast and reliable methods to detect them. The ALARMTOX project is focused on the development of tests for the detection of aquatic biotoxins to guarantee the quality of continental waters and aquaculture products. Our group developed colorimetric tests for sensitive detection of OA and MC. Protein phosphatases have been entrapped into a polymeric matrix at the bottom of microtiter well. The toxins inhibiting the enzyme, OA and MC are quantifiable by measuring the extent of the protein phosphatase inhibition.

*This work has been funded through INTERREG SUDOE IVB, and FEDER through the SOE1/P1/E129 ALARMTOX project.*

### **O.3.2.**

## **INFLUENCE OF ENVIRONMENTAL FACTORS ON ANTIOXIDANTS CONTENT IN ROSE HIP BERRIES**

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Total phenols (TP), antioxidative capacity (AOC) and vitamin C content of rose hip berries, harvested at ten different locations in Slovenia, were determined in the course of this study. The berries were harvested twice, in September and in late October (with 42 days difference). The samples were extracted with three different solvents (2% water solution of metaphosphoric acid (MFK), 2% MFK with addition of TCEP reducing agent and with less polar methanol). The highest levels of vitamin C and TP were determined in 2% MFK extracts with addition of reducing agent TCEP which reduces dehydroascorbic acid (DHA) to ascorbic acid (AA). The vitamin C concentration in fresh rose hip berries was between 0.057 mmol/g and 0.29 mmol/g, while the level of TP was between 0.050 mmol/g and 0.128 mmol/g, expressed as chlorogenic acid equivalents. The detected values vary regarding the location and season of harvesting as well as the extraction method. It was also found out that during the ripening in late autumn the concentration of vitamin C decreases, while the TP and total AOC increases. During this period, the level of DHA also increases, which coincides with the decreased level of AA. The experiments additionally showed that the best method for preservation of rose hip berries is by freezing the extracts in 2% MFK and that during drying process the berries lose a large portion of active substances.

### O.3.3.

## ENZYMATIC BIOSENSORS FOR MYCROCISTINS DETECTION WITH ESTUARY MACROALGAE

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This work describes the construction and characterization of highly sensitive amperometric biosensors for microcystin detection based on immobilization of the enzyme phosphatase alkaline (PPA) throughout a sensitive paste containing a red macroalgae. For the preparation of the PPA paste, a PPA solution was incorporated to a commercial gel containing polyvinyl alcohol functionalized with pyridinium groups (PVA-SbQ) and the resulting mixture was added to the *Gracilaria* red macroalgae previously hydrolyzed and lyophilized. Then the mixture was added to the graphite powder dispersed in the hydroxyethyl cellulose plus the bovine soralbumine (BSA) inert enzyme. For the biosensor construction, it was used a screen-printed three-electrode sensor, widely used in the construction of enzyme biosensors, and the analytical principle was based on the enzymatic inhibition in presence of microcystin. Limits of detection around sub-ppb levels were obtained for drinking water samples. The biosensor shows to be enough stable so that in a storage time of 4 months at 4°C, no significant loss of enzyme activity were observed.

*Acknowledgments: UFMA and CNPq*



### **O.3.4.**

## **SYNTHETIC FOOD DYES – SAMPLE PREPARATION AND ANALYSIS**

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Worldwide a series of researches mentioned the harmful action of food synthetic colorants on health. Thus the most recent regulations of the EU regarding the safety of alimentation reduce the number of dyes that can be used and impose a maximum concentration limits.

The aim of this presentation is to review some important aspects of food colorants especial of synthetic one.

Special attention is given to sample preparation, taking in account the complexity of food matrix.

Some examples of sample preparation by solid phase extraction (SPE) of liquid samples such beverages and hydro-soluble solid products such candies and gelatin based products and their performances (recovery) are given.

For solid water insoluble samples such as puddings and mustard, ultrasound assisted extraction with different extraction systems is presented.

For identification and quantification spectrophotometric and chromatographic (TLC) techniques were used.

The presentation based on experimental results.

### O.3.5.

## IMMUNO- AND APTAMER-BASED BIOSENSORS FOR OCHRATOXIN A DETECTION

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Ochratoxin A (OTA), which was discovered in 1965, is the most common naturally occurring mycotoxin and is produced mainly by *Aspergillus ochraceus*, *Aspergillus carbonarius* and *Penicillium verrucosum* (FAO/WHO 2001). OTA has been found in a large variety of commodities, such as cereals, beans, dried fruits, coffee, beer, wine and meat from animals fed with contaminated fodder. OTA shows varied toxicity, like nephrotoxicity, hepatotoxicity, teratogenicity, immunotoxicity, myelotoxicity and carcinogenicity. OTA has been considered by the International Agency for Research on Cancer (IARC) to be a potential carcinogen (group 2B) for human. To avoid the risk of OTA consumption, the detection and quantification of OTA level in contaminated raw materials are of great significance. Various analytical methods have been established for the determination of OTA. The uses of biosensors to detect OTA have been studied in our group for very long time. The sensitive biological elements for OTA include antibody and aptamers.

Immunoassays based on antigen-antibody reactions, such as enzyme linked immune sorbent assays (ELISA), electrochemical immunoassays, surface plasmon resonance (SPR) and quartz crystal microbalance (QCM) were reported. We have developed several immunobiosensors for the detection of OTA in wine. Immunosensors based on avidin/biotin-OTA showed enhanced performance characteristics compared to those based on the adsorption of bovine serum albumin (BSA)-OTA conjugate. Performance of polyclonal (PAb) and monoclonal (MAb) antibodies against OTA was compared, showing at least one-order of magnitude lower IC<sub>50</sub> values when working with MAb. Alkaline phosphatase (ALP)- and horseradish peroxidase (HRP)-labelled secondary antibodies were evaluated. Both conjugates led to similar results when working with OTA standard solutions in buffer. And electroactive interferences present in spiked wine samples did not affect HRP-labelled immunosensors (4% slope deviation). Also we have developed an impedimetric immunosensor for the detection of OTA. This immunosensor is based on immobilization of OTA on carbon screen printed electrodes (CSPE) via diazonium electrochemical reduction in aqueous media. Then IgG modified magnetic microspheres were used to amplify the process of competition of OTA and anti OTA antibodies.

Aptamers are single stranded oligonucleotides selected in vitro by the systematic evolution of the ligand by the exponential enrichment (SELEX) process from random-sequence nucleic acids. An aptasensor for Ochratoxin A (OTA) using unmodified gold nanoparticles (AuNPs) as indicator has been developed. The principle of the assay is based on the conformation change of OTA's aptamer in phosphate buffered saline (PBS) containing Mg<sup>2+</sup> and OTA, and the phenomenon of salt-induced AuNPs aggregation.. The linear range of the colorimetric aptasensor covered a large variation of OTA concentration from 20 to 625 nM and the detection limit of 20 nM (if applicable).

## **O.4.1.**

### **REQUIREMENTS FOR REGISTRATION OF FUNCTIONAL FOOD AND TRADITIONAL CHINESE MEDICINE IN CHINA**

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Like a drug for a purpose of treating or preventing a disease, a health food has to be scientifically evaluation and officially approved before it legally is marketed in China. Its R & D is directed by a series of regulatory documents, which are issued by national people's congress and Health Ministry respectively. The application dossier for health foods to be submitted to SFDA (State Food & Drug Administration) includes the experimental data on its functional effects, safety evaluation, stability tests, quality control, and so on. If necessary, a clinical study is needed to further prove its effect and safety. Health foods are produced in accordance with GMP standards. Health foods in China are characterized by TCM (Traditional Chinese Medicine) involved in them. Health care but not treatment of diseases plays an important role in TCM. Actually, TCM has derived from food therapy. A quite number of TCM raw materials (medicinal plants) also are popular foods, which are permitted as ingredients of a health food. Formulation of some health foods is directed by TCM theory and knowledge, and certainly, their ingredients are TCM drugs. The health foods with TCM account for more than 50% of all the health foods marketed in China.

## O.4.2.

# NAVIGATING THE REGULATORY MAZE TO EVALUATE THE SAFETY AND EFFICACY OF NOVEL FOOD SUPPLEMENTS FROM SOUTH AFRICAN PLANTS: A CASE STUDY

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South Africa is a country of rich biodiversity and deep-rooted traditions in terms of plant-based traditional medicine. While the majority of the South African population has now good access to primary and secondary care and western medicines, a significant proportion of the population still relies on plant-based traditional medicine for a number of ailments. Most of the traditional preparations in the country are not described in official documents, are dispensed directly by traditional healers and are not available in pharmacies or health shops. In comparison, and especially in urban areas, a growing percentage of the population turns to herbal remedies and plant food supplements for self-medication and these products occupy a significant proportion of shelf space in pharmacies and health shops.

While official guidelines related to characterisation and assessment of the safety and efficacy of plant-based preparations with health claims are being prepared by relevant regulatory agencies, the scientific validation of plants used in traditional medicine and their translation into Plant Food Supplements or Complementary Medicines remains a challenge.

CSIR Biosciences has been involved in the scientific validation of a number of claims and biological activities associated with plants used in traditional medicine, and has devised internal strategies to characterise the safety and efficacy of these preparations. A case study, based on *Elephantorrhiza Elephantina* (BP5), a plant traditionally reported to have multiple indications will be presented and used to illustrate the complexities of the development of Plant Food Supplements from traditional medicines.

### *Acknowledgments*

*The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 245199. It has been carried out within the PlantLIBRA project (website: [www.plantlibra.eu](http://www.plantlibra.eu)). This report does not necessarily reflect the Commission views or its future policy on these areas.*

**P.1.1.**  
**REFORMULATION OF DIARY PRODUCTS IN ORDER TO  
LOWER SALT CONTENT: A NECESSITY FOR THE  
PRODUCERS, A BIG ADVANTAGE FOR THE CONSUMERS**

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Salt is man's oldest ingredient, used especially for its preservative qualities. But salty taste became a must and salt overconsumption has risen the incidence of high blood pressure and its life threatening complications (stroke, heart disease, renal disease, etc).

To actively prevent these problems, it is necessary, as the World Health Organization stated, to lower salt intake under 5 g/day. The present study had in target to evaluate the contribution of different types of cheeses at the salt intake in Romania and to assess the utility of the reformulation, in order to lower salt content and protect consumers' health.

We used weekly food diaries and salt content evaluation of cheeses, for people living in all Romanian counties, respectively for cheeses produced in Romania.

The average salt content of Romanian cheeses was 3g (higher for "telemea" and lower for "cascaval"), but the overall contribution to the salt intake was high. Almost 18% of the total intake of salt in all Romanian counties came from cheeses, even though the daily cheese intake was as great as 14 g. The necessity to reformulate some high popular products ("telemea") is obvious and food science has to pay a special effort in this area.

**P.1.2.**  
**STATUS OF THE BULGARIAN CHICKPEA GERM PLASM  
COLLECTION**

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The National Gene Bank at the Institute of Plant Genetic Resources, Sadovo maintains 320 accessions of chickpea, 220 of which - under the long-term storage and the other 100 - as a working collection. Some of them are introduced from Hungary, Russia, Turkey and the U.S., but significant numbers are received from ICARDA, Syria and from PPP"V. Ja. Jurjev", Ukraine.

The accessions with Bulgarian origin constitute a small part of the collection. They are represented by old populations, newly selected varieties and lines. For Bulgaria chickpea is not a particularly important crop and the breeding is quite limited. But recently an increasing interest is observing mainly due to versatility of the use and to the increased level of technological processing (Michov. et.al., 2002).

One of the major features of the chickpea collection is the high phenotypic variation. The colour of the flowers also varies widely. There are accessions in the collection with different colour of the seed, with variable shapes and sizes.

The biggest part of the collection is the early ripen accessions which fully realize their biological potential under the climate conditions of Southern Bulgaria. 36 chickpea breeding lines were field tested for cold resistance. But usually they produce a few seeds and fall in line (in phases of development) with accessions that are sown in early spring.

The conclusion of the carried out evaluation of the chickpea germ plasm collection is that the assessed materials can be used in various directions: in breeding process; for establishment of core collection; for direct introduction and for creation of database with access to all users.

### **P.1.3.**

## **“IZK ALYA” NEW CHERRY TOMATO VARIETY**

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Results from a comparative study of three breeding tomato lines from “cherry” type by economic, morphological, physico-chemical, chemico-technological and sensory characteristics are given. On the basis of the obtained good results the breeding line L-1456 was offered as variety “IZK Alya” for testing of distinctness, uniformity and stability (DUS) in the Executive Agency for Variety Testing, Field Inspection and Seed Control, Sofia. This variety had been developed at Maritsa Vegetable Crops Research Institute, Plovdiv by traditional breeding methods using hybridization and individual choice. The new variety “IZK Alya” belongs to the grape type tomato. It is indeterminate, direct one for mid-early field cultivation. Plants are vital. The raceme is simple, settled at every third leaf forming 10-16 fruits. The fruits are small with average weight of 12-17 g, oval-elongated, two-locular and smooth. The mature fruits are intensively red coloured, crack resistant, firm and tasty with balanced sweetness and sourness. Dry matter content is 8-9.5%. Fruits are suitable for fresh consumption, drying and freezing. The variety is resistant to *Tobacco mosaic virus* (race 0), *Fusarium* and *Verticillium wilt* and nematode tolerant.

**P.1.4.**  
**PROBLEMS FOR CONSUMERS IN THE MAJOR FOOD CHAINS  
OF PLOVDIV**

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Food safety is one of the most important topics for consumers. They need to consume quality products. Big supermarkets offer the Bulgarian consumer many food products imported from abroad. Although the country imported products from other parties. That is why the Ministry of Agriculture and Food establishes minimum thresholds for food quality and recently opened a new structure, to it – Agency Quality of Food.

Done is a fruit and vegetables in large retail chains in the city of Plovdiv.



## **P.1.5.**

### **THE ROLE OF ENERGY CONSUMPTION ON HEALTH**

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Due to the importance of maintaining a state of health through proper nutrition conditions of employment to have a program that requires sustained mental effort, it requires a specific food consumption.

From this point of view, food energy is useful, helping to sustain the vitality of the body during a day of work which requires maximum power consumption.

Scientific areas related to nutrition are found in food science and nutrition science. Nutrition Science provides quantitative information on the type of energy values which are necessary for the smooth body of vital functions.

Food Science indicates the type of food appropriate to individual needs, good functionality for a body system, which must be kept in a permanent equilibrium.

As a new trend concerning diet, in order to cover the needs of a body in the activity, requires an energy diet. In this context, the energy needs of the body refer to the diet that provides nutrients to cover energy needs and the needs of plastic. From this point of view, the diet should consist of a balanced mix of food.

This complexity is supported in the necessity of individual energy consumption, which also raises the probability of getting all the nutrients necessary for human body.

**P.1.6.**  
**ORGANIC FOOD MARKET IN BULGARIA: CONSUMER  
PERCEPTIONS**

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Organic agriculture in Bulgaria started its development about 25 years ago and nowadays it's becoming more and more popular among the producers. At the same time due to the problems concerning the food safety, pesticide residues in foods and health problems resulted from the low quality and contaminated foodstuffs the consumer interest about organic foods is increasing. Organic food market in Bulgaria is still emerging and the number of organic products offered to the consumers is limited. Most of these products are imported from other European countries. A questionnaire-based interview was performed among the consumers in order to evaluate their knowledge about organic products and the main factors influencing the consumer demand and the consumption of organic foods in Bulgaria.

**P.1.7.**  
**DETERMINANT TOMATO ACCESSIONS – BIO-RESOURCE FOR  
THE HEALTHY NUTRITION**

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Conservation of the genetic diversity of crops that we grow for food is a priority in the strategy for sustainable development and living in a healthy environment. In the period 2007-2010 63 determinant tomato accessions with a different geographical origin, grown in ex situ collection of IRGR-Sadovo were studied. Some morphological and biochemical parameters responsible for the quality and nutritional value of the fruit were evaluated. The correlations show that fruits with high contents of Vitamin C, sugars, total acidity and dry matter are with less mass. Accessions which are suitable for food processing and fruit with high yield were identified. A4000033 from Israel and the Bulgarian cultivar Trapezitsa are with best biochemical indicators and high dry matter content. The first accession is small-fruited, suitable for processing with high durability and transportability. The second is characterized by large fruit and is suitable both for fresh consumption and canning. Local accessions from expeditions are also characterized by high dry matter content of over 5%. The high values of variation coefficients for studied parameters showed high genetic diversity in the collection. This makes the accessions interesting genetic material for inclusion in breeding programs in response to changing consumer demands.

**P.1.8.**  
**TRADITIONAL DIETS IN THE ETHNICAL GROUPS IN**  
**DOBROGEA**

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Dobrogea was along the time a multi-ethnic cultural model. Not only there were never conflicts accounted between ethnic communities but also some of the specific habits regarding the food or other aspects from day to day life were “borrowed” from one to the others.

Our study was focussed on the traditional food habits preserved in 4 prominent communities in this region (Romanians from both Southern and Northern Dobrogea, Russians- lipoveni, Tartars and Southern-Danubians Romanians- aromani). We were interested in the specific content of their traditional diet, in the old cooking means still used, as well as in the specific traditions and ceremonies, involving food habits.

On that purpose, we organized many meetings with the elderly members of the communities in 5 villages, which answered a questionnaire regarding the mentioned aspects. We also made pictures of old traditional cooking meals, food store vials and bread prepared still in use.

As a general conclusion, we noticed, amongst all the communities, the temperance of food consumption. Also, the fasten habits, related usually to religious reasons, were observed in all the subjects.

Regarding the food content, is important to mention: the low amount of meat, the high amount of wheat as home-made bread or pastry and the high amount of fish in most communities.

**P.1.9.**  
**TEENAGERS, WEIGHT PERCEPTIONS AND CONCERNS ON  
THEIR OWN WEIGHT**

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Adolescence is an important time in human development, during the numerous and profound changes in biological, physical, mental, moral, during childhood traits that disappear, giving place to the complex and rich features. The working method was a transversal populational study, by use of the CORT 2004 questionnaire for the investigation of some health risk behaviours in young subjects, on a representative population of teenagers in Timiș County, including 2044 pupils. By calculating body mass index, showed a 85.8% percentage of normal weight adolescents, the ratio boys/girls was 1.1/1.

Girls are more frequent in underweight category and boys in the overweight and obese category. 1/4 of the teens want to keep their weight, 36.4% will decrease and 27% want to gain weight. By girls, the fourth wish to maintain their weight, half want to lose weight and 1/10 want to gain weight. The boys, one quarter want to keep weight, almost half want to gain weight and 1/5 want to lose weight. It appears that a means of asserting power is the appearance, teenagers seeking to highlight the physical well-conformed.

## **P.1.10.**

### **YIELD AND QUALITY OF ORGANIC MID-EARLY TOMATOES**

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A field experiment was performed during the period 2009 - 2010 in the Maritsa Vegetable Crops Research Institute, Plovdiv on strongly leached meadow cinnamonic soil with two determinate tomato varieties - Trapezitza and Yana.

The influence of new fertilizers Montero and Lumbrikal (used as background) and Emosan and Sison (made by feeding during the vegetation) on the yield and product quality was investigated. The purpose of the study is to propose scientifically proved, technological solutions related to fertilization terms in organic production on the basis of the obtained results.

It was found that self-fertilization with Lumbrikal and Montero increase the yield of determinate tomatoes averagely from 8.2% to 15.7% compared to the control without fertilisers. Statistics show the greatest increase of the yield for both varieties after the use of background Montero and introduction Emosan – for the variety Trapezitsa with 27.6% and for the variety Yana with 21.8%, compared to the control. Statistically significant differences have been demonstrated between the two varieties in the joint action of factors - variety and applied fertilization.

Clearly expressed variety response is established to the influence of applied fertilizer on fruit quality of tomatoes.

**P.1.11.**  
**WEED ASSOCIATIONS AMONG WINTER OILSEED RAPE  
PLANTS – A MEDIUM FOR PROPAGATION OF  
ECONOMICALLY SIGNIFICANT PESTS ON VEGETABLE  
CROPS**

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Over the last few years the number of fields planted with winter oilseed rape has significantly increased (*Brassica napus oleifera biennis D.D.*). A serious technological problem during the process of growing is posed by the weeds and the self-seeders of grain crops, which enhance the spreading and increase the population of the main pests. This process is favoured by the fact that the winter oilseed rape grows early in spring and the weed associations which are to be found among rape plants serve as tanks storing pests on spring plants in close proximity to the rape plants or rotating with them.

During the period from 2007 to 2010, we made experiments with winter oilseed rape plants in the experimental fields of the Agricultural University. We established the weed composition within the crops, which consisted mainly of annual weeds - *Amaranthus retroflexus L.*, *Papaver rhoeas L.*, *Sinapis arvensis L.*, *Poa annua L.*, *Chenopodium album L.*, *Setaria spp.* and others as well as some perennial weeds – *Sorghum halepense Scop.* and *Convolvulus arvensis L.* We made an analysis of the possibilities for distribution and propagation of the economically significant pests which grow within the weed associations and among the winter oilseed rape plants and later spread among the spring crops.

**P.1.12.**  
**VITAMINS IN DAILY LIFE**

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Healthy food consists mainly of micronutrients, macronutrients and water. Macronutrients including carbohydrates, fats and proteins, and micronutrients are vitamins and minerals. These are important factors for the functioning of the human body.

The average nutritional needs for different groups of people depend on age, sex, degree of activity. We analysed the reporting of 300 subjects from Brasov in terms of vitamin supplements. Subjects were divided in four categories of age, sex, and were asked about use of vitamin supplements, the season in which they normally use them, products used, observe a benefit post-dose, price, consumption in the future of vitamin supplements. We made a top vegetables and fruits.

For different reasons, many people do not provide the recommended daily intake of certain essential micronutrients. Nutritional supplements fill their deficit when daily demand is not ensured through a balanced diet.



**P.1.13.**  
**HEALTHY EATING HABITS FOR A BETTER LIFE**

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As Hippocrates said, “Let your food be your medicine and your medicine be your food”, the foods is absolutely essential to maintain the health of your body and it is known that certain foods may actually provide medical or health benefits beyond basic nutrition.

This study analysed the benefits of a healthy diet and encouraged the healthy eating habits for a better life. Our study it is based on an online alimentation questionnaire that has 42 questions referring the daily eating habits. The participants that submitted this questionnaire have the age between 18 and 35 years, a part of them are students from Faculty of Medicine (general medicine, nursing, physiotherapy), Faculty of food and tourism and PR employees.

Reviewing the participant’s answers, we observed that most of the participants make daily exercises for 30-50 minutes. The majority of these people don’t take any daily vitamins and almost half of the participants drink coffee every day.

A high percentage of the participants consider breakfast important and they usually eat cereals and eggs. Based on their answers we obtained a list of the favourite vegetables and fruits, tomatoes oranges are in the top of the list. Other questions provide data concerning the eating sweets, drinking water and consumption of different kind of meat (the most eaten is chicken meat).

Our daily diet and exercises are very important for our health. There is no such thing as “good” or ”bad” food, some of them being healthier or more harmful than others, depending also on the quantities that are used by people.

**P.1.14.**  
**NATUROPATHY AND DIGESTIVE HEALTH**

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Naturopathic Physicians are some of educated and rigorously trained healers. Their holistic approach to diagnosing and treating disease brings together the best of the following therapeutics: herbal medicine, homeopathy, physical medicine, nutrition.

The objective of this paper is to highlight effective naturopathy regarding health maintenance and treatment of digestive disorders such as gastritis, gastric and duodenal ulcer disease Cohn, dysentery, bladder, obesity, gastroesophageal reflux, etc.

Each person must realize the importance of maintaining their own health. It is much easier to prevent than to treat disease.

The prospective study was conducted by interviewing young people (students from Faculty of Medicine, Transilvania University of Brasov). The questions were related to the healthy nutrition that could prevent a digestive disease. The results of this study indicate the high importance of correct information and the usage of naturopathy

## **P.1.15**

### **CORRELATION BETWEEN NUTRITION AND HEALTH**

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Sometime the population has no knowledge or disregards the rules for optimal health. Goes to doctor when he is already sick, and believe that drugs will make him a new man.

Each of us must understand that healing comes from us. We have the power to prevent, relieve, control or cure a disease, with ours own body which is endowed with immune system that must be maintained by a healthy lifestyle. Some of us place great importance on food being aware of the impression that it has on health, but there are people who do not care, or they will not change their habits that have increased with.

Bad habits of modern lifestyle with: abundant and processed food, alcohol abuse, sports inactivity, polluted environment, overdevelopment stress, attend every second with new candidates for systemic metabolic dysfunction and even cancer.

To assess the level of knowledge about food and life hygiene, we made a questionnaire study of a lot of people from different environments, with various ages. Data were collected from the results statistically to a group of 100 people from different backgrounds but with common characteristics on eating habits, after drawing up a questionnaire with 53 questions.

The persons needed to choose a correct answer from a multiple choice possibility. The concise and quick answer highlighted shortcomings in the education of the subjects regarding the way and choices for food. Group consisted of women and men almost in equal proportions, 47% women and 53% men.

After statistical processing of results we have obtained the following information: lack of interest in healthy eating, need to educate parents about healthy habits for their children, erratic schedule of meals, increased intake of food ingested in a short time without sufficient chewing, hand hygiene is rarely meet, refined sweets consumption at a young age, a reluctance to answer honestly about food lifestyle.

This paper has as aim the educational purpose addressed to people and their children, offering alternatives to bad health habits and advices recommendation to purchase healthy foods in order to avoid illness and to be a happier person.

## **P.2.1.**

### **THE ROLE THAT PLANT FIBERS HAVE IN HUMAN HEALTH**

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The main feature of plant fibers in relation to human biology is the fact that they are not digestible. As a result, they are not attacked by the digestive enzymes. These features give them important positions in digestion physiology. Vegetable fibers have two fundamental properties:

a) assimilating various harmful substances, which are removed along with unabsorbed water in the large intestine through faeces

b) very high capacity to assimilate, to absorb water.

Due to these two major functional properties, a high fiber diet shows multiple positive physiological effects:

a) speeds up the intestinal transit time, exerting a role in the detoxification of the digestive tract.

b) helps the excretion process of bile acids under the action of bacterial flora, products with cancerous potential.

c) stimulates and changes the release of gastrointestinal hormones thus influencing in a positive way the pancreatic secretory function

d) influences the lipoprotein metabolism, reducing triglycerides and the liver cholesterol concentration

e) increase the amount of water retained in the lumen of the digestive tract, forming a digestive bowl specific to each segment of the digestive tract, allowing the absorption and elimination of harmful substances

f) the products of pectin degradation have antibacterial and detoxification properties.

**P.2.2.**  
**CURRENT SITUATION OF PESTICIDES RESIDUES IN  
TRADITIONAL CHINESE MEDICINES AND DETECTION  
METHOD RESEARCH**

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Many traditional Chinese medicines were used for food supplement. The current situation of pesticides residues in traditional Chinese medicines (TCM) and detection method and restriction standards of TCM were discussed in this paper.

A method was optimized and validated for the simultaneous determination of 100 pesticides residues in traditional Chinese medicines samples. The sample were extracted with acetonitrile using ultrasonic extraction then cleaned up by a column packed with Carb/NH<sub>2</sub>. The samples were separated by the temperature program with capillary column VF-5MS. The detection was using the technology of GC-MS-SIM and GC-MS-MS. The quantities of pesticide residues were calculated by external standard method. For the GC-MS-SIM method, pesticides were positively confirmed by retention time and ion ratios. For GC-MS-MS method, pesticides were positively confirmed by the precursor ion and product ions. The analytical process was validated in each matrix by the analysis of spiked blank samples. Recoveries and precision values were 75.10-121.77% and 15%, respectively, for the bulk majority of pesticides, at three spiked mixed pesticide levels. The proposed analytical methodology was applied to the analysis of the pesticides in samples. There are few of pesticides were detected in some samples, most pesticide residues were not found in most samples.

*Acknowledgments*

*This paper was supported by National S&T Major Special Project on Major New Drug Innovation (Item Number: 2009ZX09502-027).*

**P.2.3.**  
**INDICATION FOR DIETARY SUPPLEMENTS: GLUCOSAMINE  
AND CHONDROITIN**

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Glucosamine and chondroitin are two molecules that make up the type of cartilage found within joints. The theory behind using the glucosamine and chondroitin joint supplements is that more of the cartilage building blocks will be available for cartilage repair.

Trials of glucosamine and chondroitin preparations for osteoarthritis symptoms demonstrate moderate to large effects, but quality issues and likely publication bias suggest that these effects are exaggerated. Nevertheless, some degree of efficacy appears probable for these preparations.

In most of Europe, glucosamine is approved as a medical drug and is sold in the form of glucosamine sulphate. In this case, evidence of safety and efficacy is required for the medical use of glucosamine and several guidelines have recommended its use as an effective and safe therapy for osteoarthritis. The Task Force of the European League Against Rheumatism Committee has granted glucosamine sulphate a level of toxicity of 5 in a 0-100 scale, and recent Osteoarthritis Research Society International (OARSI) guidelines for hip and knee osteoarthritis also confirm its excellent safety profile.

A typical dosage of glucosamine is 1,500 mg per day. You may need to take supplements on a long-term basis to reduce the pain and inflammation of osteoarthritis.

## **P.2.4.**

### **IDENTIFICATION OF INITIAL MATERIAL FOR ORGANIC BREEDING IN GARDEN PEA**

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It was evaluated the productivity, disease and pest infestation and seed quality in four garden pea accessions, grown at four organic production systems. The attempt was performed in the experimental plot of the Maritsa Vegetable Crops Research Institute – Plovdiv during the period 2009 – 2010.

High productivity in mid-early line K102 at four variants of organic growing was recorded. The mid-late line 6/00 is suitable for growing in the conditions of natural fertility with biological plant protection. The productivity of variety Marsi is the highest in fertilization with biohumus and in application of bioinsecticides for plant protection. Productivity of the early variety Musala does not exceed the standard.

The attack of disease and pests is stronger expressed in early group varieties (for *Fusarium* spp. up to 11.94 % and strong up to 63.50% for *Bruchus* spp.) The percentage of the attack is low in *Laspeyresia* spp. to 6.42% and to 3.44% in *Pythium* spp. Lower degree of attack was recorded in organic production systems with application of bioinsecticides.

Garden pea seeds that were obtained are with lower absolute weight towards those recorded in conventional production but the germination is kept the same from 90.25% to 98%.

**P.2.5.**  
**RISKY PERIODS OF PESTICIDE (INSECTICIDE AND FUNGICIDE) POLLUTION OF VEGETABLES GROWN IN GREENHOUSES**

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Owing to the need of the population to consume vegetables in winter and spring (December-May), the production of vegetables grown in greenhouses is increasing, covering larger and larger areas. In order to protect the vegetables from economically important pests, we often use a wide range of pesticides which are dangerous for the health of consumers.

As a result of the long-lasting observations on vegetable growing, we now have the opportunity to outline some periods of the vegetation of crops which include the execution of certain entomological and phytopathological activities that significantly pollute the production placed on the market.

The obtained results can be used for various technological solutions for the purpose of reducing the risk posed by the residual quantities of pesticides in the grown vegetables.



**P.2.6.**  
**EFFECT OF POTASSIUM FERTILIZATION ON THE  
PRODUCTIVITY AND QUALITY OF DETERMINATE  
TOMATOES**

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A field experiment was performed during period 2005-2007 year in the Maritsa Vegetable Crops Research Institute, Plovdiv on strongly leached meadow cinnamonic soil with tomato varieties Marti and Topaz.

Experience was carried out in 8 treatments at two levels of potassium fertilization, as two sources of potassium - potassium sulphate and potassium nitrate was tested. Growing tomato and productivity manifestations as well as the biochemical composition of the fruit are investigated.

Relationship has been found between the potassium rate and form on the yield from determinate tomatoes. Potassium fertilization increases the yield up to 26.2% in variety Marti and 21.3 % in variety Topaz. Potassium form has not a significant impact on yield in variety Marti, whereas in variety Topaz, the yield is higher after fertilization with potassium nitrate.

There are differences in the lycopene content in the fruits of variety Marti where the influence of potassium nitrate is more strongly on the variation of this indicator, especially in the higher fertilization rate. In variety Topaz there is no significant difference in the fruits lycopene content, both in the treatments and between the two potassium forms.

**P.2.7.**  
**APITHERAPY (BEE PRODUCTS) IN NATURAL HUMAN  
NUTRITION**

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Apitherapy is the treatment of specific natural products that bees collected. Many bee products not only have special nutritional value, healthy body able to increase performance, but also curative effects. We mention in particular honey, bee pollen and royal jelly.

Biological properties of these products make excellent therapeutic effects: activates regeneration phenomena in elderly people; remove or prevent fatigue; improve blood circulation especially in the territory of the capillary; constitutes a vital source of energy through physical exhaustion; regulating hormonal mechanisms; have bacteriostatic action, interfering with the body's immune defense processes by increasing the number of leukocytes.

In particular, bee pollen has benefits concerning human body: maintain the collagen layer necessary for the skin at any age trophicity; facilitate wound healing; strengthens blood capillary endothelium; increases the body's ability to fight viral infections; help prevent cancer; improves the body in states of allergic condition by decreasing the secretion and histamine release.

Royal jelly acts as a tonic and euphoric stimulant effects on healthy human. It increases resistance to fatigue with a better intellectual performance, a high intellectual performance, an increased capacity for learning, better memory.

As such, for the healthy man, royal jelly is a general stimulus, immune response and improves overall body functions.

**P.2.8.**  
**SOME FOOD CONTAMINANTS AND THEIR POSSIBLE  
BIOTRANSFORMATION AND EFFECTS ON HUMAN BODY**

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Human foods included various environmental contaminants such as heavy metals, pesticides, polycyclic aromatic hydrocarbons, persistent organic pollutants, mycotoxins. After ingestion, these contaminants pass intestinal mucosa; enter in bloodstream and by portal circulation to penetrate in liver. In liver and other tissues or organs these contaminants acts as enzyme specific substrates and suffer biotransformation processes to form metabolites (more hydrophilic contaminant derivatives). Some metabolites (phase I biotransformation compounds) can be more actives as initial compounds, and their process is named bioactivation. Metabolites or initial contaminants can interact with phase II enzymes biotransformation to form more hydrophilic conjugates, what can suffer renal released.

Contaminants and/or their metabolites can acts on some tissues or organs to induce pathological states.

In this review are presented possible mechanisms of some contaminants biotransformation, the action mode of their metabolites on endogen compounds at molecular level, and their effects on human health.

### P.3.1.

## COMPARISON OF NANOTUBES-GLASSES AND SCREEN-PRINTED ENZYMATIC BIOSENSORS FOR THE DETECTION OF ORGANOPHOSPHATE INSECTICIDES

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In this work, nanotube-glass and screen-printed biosensors were compared regarding their ability to detect organophosphate (OP) insecticides in food and environmental samples. To nanotube-glass electrodes construction, a sensitive paste was prepared by adding, sequentially, the Meldola's Blue-Reinecke Salt (MBRS) precipitate to TCNQ mediator, graphite powder, hydroxyethylcellulose (HEC), liquid paraffin, phosphate buffer (pH 7.5), soroalbumine bovine enzyme (BSA) and finally the acetylcholinesterase (AChE) enzyme, previously encapsulated into PVA-SBQ polymer. So, the resulting mixture was used to fill a glass tube containing in its interior carbon fibers, which were thermally sealed at the edges. The electrical contact was made with Pt and this working electrode was connected to a potentiostat, together the Ag/AgCl reference electrode in order to perform electrochemical measurements and inhibition assays. The newer biosensor described here shows to be highly reproducible and more sensitive when compared to well-known screen-printed AChE-biosensors. Moreover, because of the facility in macroscale preparation and its operation in favourable electrochemical conditions (very low working potential, absence of detectable noise), such electrode is preferable to be used in OP analysis in either food or environmental samples, presenting also elevated stability.

*Acknowledgments: UFMA and CNPq*

**P.3.2.**  
**LYCOPENE DETERMINATION IN TOMATOES BY DIFFERENT SPECTRAL TECHNIQUES (UV-VIS, FTIR AND HPLC)**

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Lycopene is the most important carotenoid present in red tomatoes, being up to 90 % of the total carotenoids from this plant. It has attracted attention due to its antioxidant role in cancer prevention. An efficient detection and quantification of lycopene are imposed as alternatives to the existing time consuming and complex methods.

In this study was studied 26 types of tomato powder samples, using different analytical methods: UV-Vis spectrophotometry (UV-Vis), Fourier-transform infrared spectroscopy (FTIR), and high-pressure liquid chromatography (HPLC).

UV-VIS spectrophotometry showed the absorption peaks of carotenoids from these tomato powder samples in order to identify the sample with the highest lycopene concentration.

(FTIR) spectroscopy was used in this study to quantify lycopene content in tomatoes varieties. FTIR spectra showed a distinct vibration band at 957 cm<sup>-1</sup> assigned to a trans CH deformation vibration of lycopene. The FTIR results were compared with those obtained with HPLC chromatography. The content of lycopene in tomatoes could be measured accurately and reproducibly; the correlation coefficient was 0.9996. The outcome of the study shows that the FTIR method is a good analytical method for quantification of lycopene in tomatoes.

*Acknowledgments: We would like to acknowledge DEVELONUTRI UE Project for its financial support.*

**P.3.3.**  
**PRINCIPLES, EXTRACTION METHOD AND SPECTRAL  
CHARACTERIZATION OF PIGMENTS FROM LYCIUM  
BARBARUM**

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Lycium barbarum has a long history of medicinal use in energy restoring tonic, to cure a wide range of ailments from skin rashes, eyesight problems to diabetes, antioxidant, anticancer. The carotenoids include any one or more of zeaxanthin, neaxanthin, cryptoxanthin,  $\beta$ -carotene, lycopene and lutein. In fruits of Goji are present many carotenoids, flavonoids, polysaccharides.

Polysaccharides are long-chain sugar molecules, are a distinguishing characteristic of goji berry, are a primary source of dietary fiber in the intestinal system, and once they are metabolized polysaccharides support and maintain the health of the colonic mucosal lining, lower pH and reduce colon cancer risk, enhance mineral uptake, stabilize blood glucose levels, stimulate the immune system, offer antioxidant protection.

Zeaxanthin, is an antioxidant in the carotenoid family. It plays a key role in our immune system support and are abundantly found in goji berry.

Beta-carotene is a carotenoid pigment in orange-red foods like goji berry, pumpkins, carrots, etc. It is important for the synthesis of vitamin A (a fat-soluble nutrient and antioxidant that is essential for normal growth), vision, cell structure, bones and teeth, and healthy skin. Goji berry's beta-carotene content is among the highest for edible plants.

In this article is investigated the principle, extraction and separation method of pigments from Lycium Barbarum. The pigments have been characterized by different spectral methods (UV-VIS, FTIR and TLC).

*Acknowledgments This work was partly financed by the POSDRU/88/1.5/63269 Program for PhD. Students.*

### **P.3.4.**

## **pH AND TOTAL ACID CONTENT OF SOME COMMON SOFT DRINKS IN ROMANIA**

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#### **Introduction**

In recent years, the consumption of soft drinks has increased. Most soft drinks contain one or more food acidulants such as phosphoric acid and citric acid. The assessment of a beverage's total acid content may be a more accurate method for predicting erosive potential. The aim of this study was to assess the initial pH of some common soft drinks and to determine their ability to maintain a low pH by measuring their total acid content (titratable acidity or buffering capacity).

#### **Materials and Methods**

For this study, thirty types of soft drinks commonly available in Romania markets were selected. The erosive potential of soft drinks was assessed by measuring their pH and titratable acidity.

#### **Results and Discussion**

The pH levels of Pepsi and Cola drinks were comparable and lower than those of Romanian drinks. Total acid content of Romanian drinks were statistically higher than Pepsi and Cola drinks. The pH of all the soft drinks investigated was below the critical pH at which enamel dissolution occurs. Decrease in pH and increase in titratable acidity have been associated with increase in dental erosion.

#### **Conclusion**

Based on the data obtained in this study, it was concluded that all the soft drinks selected for assessment had significant erosive potential.

### P.3.5.

## COMPUTATIONAL METHODS APPLIED TO STUDY THE PEPTIDES IN FOOD

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Peptides have an important role in food and nutrition sciences. We present here how to apply computational methods to study the peptides in food, such as: prediction of potential biological activity of peptides by searching for sequence similarity between peptides known to be bioactive from internet database. The sources of peptides in food are the raw materials or they can form during technological processes and storage of the food products. The origin of peptides, its dynamic changes during processing and storage and the influence of its presence are current research interest. The composition and the changes in the peptides influence the properties of food products. The food peptides can be subject of research under many aspects: biological activity, functional properties, allergenicity, and information on the product or resource origin and authenticity. Also, the peptides can be the biological markers for food characterisation.

#### *References*

- 1. Darewicz M., Dziuba J., Minkiewicz P., Bioinformatic - aided characteristics and identification of peptides for in silico detection of potentially celiac-toxic proteins, Food Sci. Technol. Int., 13, 2007, 125–133.*
- 2. Reece P, Bremer M, Stones R, Danks C, Baumgartner S, Tomkies V, Hemetsberger C, Smits N, Lubbe W. A bioinformatics approach to the development of immunoassays for specified risk material in canned meat products. Anal Bioanal Chem., 394(7), 2009, 1845-51.*

*Acknowledgments: This work was supported by the PNCDI II - P4 Partnerships research contract no 62-056/2008.*



## P.3.6. THE MONTE CARLO METHOD IN THE FOOD PROTEINS

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Functional food problem is one of the outstanding aims in actual biotechnological research. Protein are related both biological as well as functional properties of the food products. Food proteins have a positive impact on the health of cardiovascular, immune, nervous and gastrointestinal systems. Many food proteins have immunomodulatory, opioid, antioxidant or antimicrobial activities. As is well known, the function of a protein is directly related to its structure. The Monte Carlo method is concerned with the problem of how a given sequence of amino acids assumes precisely that geometrical shape which is biologically useful. Currently, it is much easier to find coding DNA sequences than to find the corresponding structures. Solving the folding problem would be a major breakthrough in understanding the biochemistry of food and in designing artificial proteins. Here is present a method Monte Carlo of approach to the food proteins. In this method, for each amino acid residues of protein chain are trial five Monte Carlo moves types to find the conformation with minimum energy. The method is tested for  $5 \times 10^5$  time steps on the H/P model in a discrete lattice for protein chains with variable number of residues.

*Acknowledgments: This work was supported by the PNCDI II - P4 Partnerships research contract no 62-056/2008.*

**P.3.7.**  
**THE PRESENCE OF DEOXYNIVALENOL IN COMBINED FEED  
AND THE IMPACT ON THE ANIMAL AND HUMAN HEALTH**

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Deoxynivalenol (DON) belongs to the trichothecene mycotoxins and is produced by *Fusarium* fungi. Deoxynivalenol is often occurring in basic cereal components of combined feed stuff.

The effects of deoxynivalenol to the animals are: inhibits the DNA and RNA synthesis, hemolytic effect (hemolysis of erythrocytes), a poor feed conversion and hence to a reduction of live time. It also has an immunosuppressive action.

The contamination of feeds was considered as one of the major factors related to safety for consumers.

In this study was analyzed DON from different feed, on DSVSA Laboratory using ELISA method. The values obtained were compared with maximum admitted level according to EU Regulation and National legislation.

**P.3.8.**  
**DEVELOPMENT OF COLORIMETRIC IMMUNOASSAYS FOR  
THE SENSITIVE DETECTION OF OKADAIC ACID**

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Okadaic acid (OA) is a marine toxin produced by toxicogenic dinoflagellates. This phycotoxin accumulates in the digestive glands of shellfish without causing any toxic effect on it. However, when humans consume a sufficient amount of contaminated seafood, gastrointestinal troubles known as DSP (Diarrhetic Shellfish Poisoning) occur.

The toxicity and ubiquity of OA make necessary the development of fast and reliable detection methods. The simplest screening method is the mouse bioassay, which, however suffers from low sensitivity, specificity and ethical problems of animal experimentation. According to the European Food Safety Authority (EFSA), it is required to develop alternative detection systems such as Enzyme-linked immunosorbent assays (ELISA). The antibody that recognizes the toxin is referred as the “primary” antibody and confers the specificity to the assay. A “label” is necessary to allow the detection and the quantification of the antigen. In the present work, direct and indirect detection methods were used and compared. With indirect detection, the label is covalently attached to a secondary antibody. Alternatively, using the direct detection, the label is attached via a covalent bond to the primary antibody. Despite the potential advantages of direct detection, many immunoassays employ the principle of indirect detection since the labeling of primary antibody is relatively complicated.

*This work has been funded through the BIOKA EUROTRANSBIO project.*

**P.3.9.**  
**GERMINATION TESTING OF PHASEOLUS VULGARIS L.**  
**GROWN IN AN IONIC LIQUID TREATED SAND**

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Garden bean' seeds (*Phaseolus vulgaris* L.) in dry state and at maturity stage represent the main food over the world. Because they are exalbuminous seeds, the entire content of nourishing substances, mainly vegetal proteins, fibres and minerals, are localised in cotyledons witch are responsible for hypocotyls elongating (epigeous germination in this case).

The aim of this paper is to check the influence of the ionic liquids presence in substratum (soil or sand) on the germination process. Ionic liquids are salts in liquid state, not fully tested yet, that exhibit high potential of use as green solvents, in ecological technologies, due their very low volatility. BMIMCl (1-butyl 3- methylimidazolium chloride) and BMIMBF<sub>4</sub> (1-butyl 3- methylimidazolium tetrafluoroborate) have been used for tests.

By performing visual observations, photos, microscopically sections and cells measurements, information concerning germination seeds capacity, their vitality, epicotyls and hypocotyls morphology, have been obtained.

These ionic liquids determined better growth of plantlet, without anatomy cells changes.

*Acknowledgments: This research was funded by CNCSIS through the Project IDEI839/2009.*

**P.3.10.**  
**HIGH TEMPERATURE INFLUENCE ON THE POLLEN  
VIABILITY OF PISUM SATIVUM ACCESSIONS**

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The temperature stress (30°C) during bud formation and blossoming period of pea accessions are responsible for abortion of the reproductive organs.

The influence of high temperature on the pollen viability in 23 *P. sativum* accessions from collections of the Vegetable Crops Research Institute, Plovdiv and Institute of Plant Genetic Reassures, Sadovo, Bulgaria was studied. In the preliminary investigation the temperature regimes 45°C/2 and 3h, closed to the semi-lethality for pollen viability of the three model garden pea cultivars was evaluated to be suitable for choice of genotypes tolerant to high temperature.

In this study using the above-mentioned temperature regimes, a negative relation between treatment continuance and: quantity of the reproductive organs with viable pollen; pollen germination; pollen tube length was defined.

Among the studied accessions (MVCRI), the cv. Musala kept the high quantity of reproductive organs (70 and 44% - 2h and 3h treatments) with different pollen viability. The cv. Pulpudeva and line No 22-13 showed comparatively identical tolerant response to the temperature regime 45°C/2h. The cv. Hemus and Uspech manifested tolerant to high temperature male gametophyte.

The most promising from IPGR, Sadovo were cv. Froidure and Picardi and lines No 470-26, A6BM008, A6BM0011 regarded temperature 45°C for 2h stress.

**P.3.11.**  
**MICROBIOLOGICAL CHANGES DURING RIPENING OF DACIA  
SAUSAGE, A TRADITIONAL DRY CURED ROMANIAN  
SAUSAGE**

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Counts of total aerobic mesophilic flora, lactic acid bacteria, salt tolerant flora, and Enterobacteriaceae were performed. A control sausage was produced without added starter cultures (sausage A), one with *L.sakei* CECT 5964 and *S.equorum* SA25 (sausage B) and one with *L.sakei* CECT 5964, *S.equorum* SA25 and *L.acidophilus* CECT 903 (sausage C). Samples from each batch of sausages were taken at 0 (mix before stuffing), and after 2, 4, 7, 14, 21 and 28 days of ripening. High microbial counts were observed with values at the end of ripening period of 9,77 log Colony Forming Units (CFU) for lactic acid bacteria (A), 11,47 log CFU (B) and 11,19 log CFU (C); 9,89 log CFU for total aerobic mesophilic flora (A), 11,38 log CFU (B) and 11,30 log CFU (C); 4,45 log CFU for the salt tolerant flora (A), 5,31 log CFU (B) and 5,27 log CFU (C). The starter cultures had a significant inhibitory effect on Enterobacteriaceae counts, values at the end of ripening period being 1,32 log CFU (A), 0,33 log CFU (B) and this microbial group wasn't detected (C). The results show that the ripening process in a pilot scale chamber under controlled conditions contributes to a more homogeneous behavior of the microbial flora.

*Acknowledgements: This work was supported by Project SOP HRD – SIMBAD 6853, 1.5/S/15-01.10.2008.*

**P.3.12.**  
**QUERCETIN AS A FOOD SUPPLEMENT AND ITS  
ENCAPSULATION INTO BETA-CYCLODEXTRIN**

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Quercetin has antioxidant and anti-inflammatory effects and consequently it has significant health benefits protecting against cardiovascular diseases and diabetic disorders. Due to its effects on human health, quercetin has increasingly attracted the attention of food scientists. In this respect, the molecular encapsulation of quercetin (Q) into  $\beta$ -cyclodextrin ( $\beta$ -CD) nanocavity might be important because the inclusion complex could increase the quercetin light and thermal stability in various nutritional supplements. This work presents the preparation of the inclusion Q and  $\beta$ -CD complex by three different methods, such as kneading, co precipitation and freeze-drying. The complex formation is evidenced by FTIR, X-ray diffraction (XRD) and differential scanning calorimetry (DSC). The crystalline structure of the inclusion complex was determined from XRD data coupled with molecular mechanics calculations. Molecular modelling (MM+ molecular mechanics) shows the spatial architecture of the inclusion complex in good agreement with experimental data. To provide insight into the self assembly formation of this complex, the self-assembled films were deposited, on different solid supports, such as glass and mica, and investigated by AFM. The morphology revealed the films nanostructure. These findings may constitute a direct contribution to the molecular encapsulation of quercetin into  $\beta$ -CD increasing the understanding of its complex solid structure.

**P.3.13.**  
**STRUCTURE OF MAIZE STARCH GRANULES FROM  
ROMANIAN CULTIVAR**

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Surface structure and morphology of granules are important for the characterization of maize starch used as raw material for various applications, including the food industry. In this respect, it is already understood that the starch processing involves many interfacial modifications and the rate of such changes is controlled mainly by the surface structure of granules. These data for Romanian maize starch granules are yet unavailable. In the present work we provide the micro and nanostructure data by AFM and SEM imaging for native maize starch powder spread out in thin films or compacted into tablets.

AFM and SEM reveal the size, shape and surface morphology of native maize starch granules from Romanian cultivar. Numerous structures, protrusions (particles), pores or depressions and cracks were found on the surface of maize starch granules and they have a broad range of sizes. The occurrence of small spherical protrusions might be related with highly branched amylopectin molecules in substantial agreement with amylopectin blocklets model. The larger particles were also visualized representing different associations of amylopectin and amylose and other granule surface components as previously discussed. The existence of rather smooth regions with low surface roughness and rougher zones on the starch granules is confirmed.



### P.3.14.

## CHROMATOGRAPHIC AND SPECTRAL SCREENING OF ACTIVE COMPOUNDS FROM DIFFERENT *ROSMARINUS OFFICINALIS* L. EXTRACTS

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*Rosmarinus officinalis* L. (Rosemary) is a very well-known cultivated plant. The main active compounds studied from this specie are the terpenes from volatile oil. But the Rosemary contains also a lot of polyphenols.

This study present a comparative screening of terpenes and polyphenols (flavonoids and phenolic acids) from different *Rosmarinus officinalis* extracts: tincture (cold extraction), mother tincture obtained from fresh plant (cold extraction), glycerol macerate obtained from fresh young shoots (cold extraction) and separated volatile oil (hydrodistillation). The analysis of terpenes was made by TLC and GC-MS. The analysis of polyphenols was made by TLC and UV-Vis spretral methods. There were evaluated also the antioxidant activity of the studied extracts using the DPPH method.

The TLC analysis of terpenes shows the presence of them in higher amounts in volatile oil and mother tincture. The tincture obtained from dry leaves contains a different terpenes composition than the mother tincture. The glycerol macerate contains a smaller amount of terpenes. Using GS-MS determination were identified in volatile oil 38 compounds, the main being: alpha- pinene (23,57 %), 1,8-cineole (21,39 %), camphene (11,59 %), camphor (9,97 %), beta-pinene (5,57 %), terpineol (3,00 %), limonene (2,95 %), borneol (2,64 %), p-cymene (2,60 %) and beta-myrcene (2,04 %).

The TLC analysis of polyphenols show a higher concentration of them, both flavonoids and phenolic acids, in mother tincture and glycerol macerate. It can be identify based on  $R_f$  values and specific coloration the luteolin and luteolin 7-glycoside from flavonoids respectively the rosmarinic acid and caffeic acid from phenolic acids. The spectral determination of total flavonoids show that the mother tincture contains the highest concentration of 0,27 mg/ml, while the tincture and the glycerol macerate contain 0,133 mg/ml respectively 0,013 mg/ml expressed in luteolin. The content of total polyphenols was expressed in rosmarinic acid and the obtained values are: in mother tincture 0,601 mg/ml, significant higher than in tincture 0,199 mg/ml or glycerol macerate 0,054 mg/ml. These results show that the mother tincture has the highest concentration of polyphenols from the studied extracts. At the evaluation of these results must be take in account that the glycerol macerate is used as a 10 % dilution.

The determination of antioxidant activity using the DPPH method show a significant higher antioxidant effect for mother tincture ( $IC_{50}=39,07 \mu L$ ) and tincture ( $IC_{50}=65,58 \mu L$ ), a lower one for glycerol macerate ( $IC_{50}=103,23 \mu L$ ) and a very poor one for volatile oil ( $IC_{50}= 478,20 \mu L$ ).

This study shows that the extract obtained from freshly processed plant contain a higher amount of active compounds (terpenes and polyphenols) respectively a significant higher antioxidant effect that is useful in a most efficient therapeutic effect of the *Rosmarinus officinalis* extracts.

**P.3.15.**  
**EVALUATION OF AMPEROMETRIC ENZYME-BASED  
BIOSENSORS FOR HEAVY METALS IONS DETECTION IN  
FOOD AND FOOD SUPPLEMENTS**

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Some plants could absorb and accumulate xenobiotics being used as indicators of environmental pollution. Virtually all metals can produce toxicity when ingested in sufficient quantities, but there are several which are especially important because either they are so pervasive, or produce toxicity at such low concentrations. When metals bind to biological molecules they may inactivate important enzyme systems, or affect protein structure. This characteristic can be used to develop new methods to detect heavy metals as amperometric biosensors.

In this work amperometric biosensors based on enzyme inhibition by heavy metals ions are developed. The enzyme is immobilized on the chemically modified electrodes surface. Different immobilization methods are used to fix the enzymes on the electrode surface and comparison between sensors performance was done. In order to find the sensors optimal working parameters the effect of electrolyte pH, working potential and incubation time of heavy metals on immobilized enzymes at modified electrodes was studied. Additionally, the concentrations of heavy metal ions are analysed using the atomic absorption spectrometry (AAS) and a good correlation of the results was found.

*Acknowledgements*

*The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 245199. It has been carried out within the PlantLIBRA project (website: [www.plantlibra.eu](http://www.plantlibra.eu)). This report does not necessarily reflect the Commission views or its future policy on this area.*

**P.3.16.**  
**EVALUATION OF VOLTAMMETRIC SENSORS FOR HEAVY METALS IONS DETECTION**

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Heavy metals ions, even in small amount, have been proved to have a negative impact on the environment and public health. One modality for the humans or animals to ingest heavy metals is the drinking water or the groundwater where vegetables are cultivated.

In this work different configurations of screen-printed electrodes were used to develop electrochemical sensors employed to monitor and detect heavy metals ions. In order to improve the sensor sensibility a bismuth film is deposited on the electrode surface. Bismuth film electrodes (BiFEs) formed by electrochemical deposition on screen-printed electrode substrates have been investigated, in order to assess the benefits of bismuth films in the negative potential range compared to bare screen-printed electrodes. At BiFEs obtained by in situ deposition of bismuth film, the square-wave anodic stripping voltammetric response to cadmium and lead ions is successfully demonstrated and evaluated. The optimized configurations of the BiFEs are used to detect heavy metals concentration in real samples and good correlation with atomic absorption spectrometry was found.

*Financial support from CNMP Romania 72-172/01.10.2008 is gratefully acknowledged.*

**P.3.17.**  
**CATECHIN PROFILE, POLYPHENOL CONTENT AND  
ANTIOXIDANT ACTIVITY IN ITALIAN COMMERCIAL TEAS**

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Tea (*Camellia sinensis*) is one of the most popular beverages in the world because of its taste and aroma. In recent years, several health benefits have been associated with tea consumption, such as the reduction of risk factors for, chronic diseases (cancer and cardiovascular diseases). This benefits are generally attributed to their antioxidant properties. Although these findings are not fully supported by epidemiological studies, a significant body of research is directed toward elucidating the relationship between dietary polyphenol intake and the reduction of the described risk factors. Catechins show the strongest positive activity, suggesting that teas with the highest contents of these compounds may have healthy properties. The aim of our study was to investigate the antioxidant activity of Italian commercial green and black teas, in parallel with their polyphenol content and catechin profiles

The catechin profile was measured by reverse-phase HPLC; the antioxidant activity (AOA) by using 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical; the total polyphenol content (TPC) by using Folin-Ciocalteu colorimetric assay. We have also measured the changes in catechin and polyphenol content during the shelf-life.

The quantification of active healthy substances in tea is essential to define the human dietary intake, which is a critical parameter when epidemiological, intervention, and clinical studies must be performed or assessed.

**P.3.18.**  
**THE ESSENTIAL OILS TREATMENT – AN „ENEMY”FOR  
POTATO VIRUS Y IN SOLANUM TUBEROSUM AND  
NICOTIANA TABACUM?**

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Obtaining health and safety food impose the improvement of techniques used for control the pathogen agents, choosing new opportunities, methods, players, natural resources.

Potato virus Y (PVY) (Potyviride) is one of the most important viruses of potato (*Solanum tuberosum* L.) efforts to control PVY are essential when producing potatoes for market or seed'. Being very susceptible to potyvirus infection, Usually, *Nicotiana tabacum* (family Solanaceae) is used like test plant for potato virus Y.

Phenolic compounds and well-known constituents of *Rosmarinus officinalis*, *Thymus serpyllum*, *Lavandula officinalis* plants (Family Lamiaceae, order Lamiales) have antioxidant activity and pharmaceutical properties (Petersen, 2001). They are also antimicrobial, antiviral which protects the plants. Antioxidants such as rosmarinic acid, chlorogenic acid, polyphenols presents in essential oils extracted from Lamiaceae family plants and many other compounds like hydrogen peroxide, ascorbic acid and are implicated in the processus signaling against stress. The effects of treatments with essential oils from *Rosmarinus officinalis* (for potato) and from *Thymus serpyllum*, *Lavandula officinalis* (for tobacco) (dilution 1/100 and 1/1000) on pigments content, minituber yield (potato) and on antiviral activity (tobacco) were evaluated after virus mechanical inoculation. The treatments of positive potato plants significantly reduced the number of tubers, enhancing their weights, while leaf pigment content also increased. Concerning the antiviral effect of the *Thymus serpyllum* and *Lavandula officinalis* oils, all the treated tobacco plants presented after PVY infection values of absorbances at 405nm significantly lower than the untreated and inoculated controls. Without oils treatments, PVY inoculated plants suffered significant reductions in leaf weight compared to uninfected controls and to plants treated with essential oils. Concerning the antiviral effect of the *Thymus serpyllum* and *Lavandula officinalis* oils, all the injected plants presented after PVY mechanical inoculation absorbances values at 405nm significantly lower than the untreated and inoculated controls. Plants oil treatments significantly reduced the absorbance values at 405nm, enhancing their weights. It has been suggested that a physiological balance of antioxidant components is necessary in order to obtain protection to generalized stress; however, antioxidants are not always accessible to some of the sites where they are most needed in times of stress. Our results agree with this statement since the oil injections and ascorbic acid/ H<sub>2</sub>O<sub>2</sub> treatments induced significant anti-stress effects only in the tubers from positive plants. These researches demonstrated potential benefits of *Rosmarinus officinalis* oils in enhancing the potato yield and quality of tubers and of treatments with oils extracted from *Thymus serpyllum*, *Lavandula officinalis* plants on the *Nicotiana tabacum* plant immunity. This research presents a novel potential approach for overcoming the most common damage in tubers of potato virus Y (PVY) infected material, using natural compounds that offer the possibility of reduction of biocide usage

*Acknowledgments This work was supported by the Romanian National Authority for Romanian Research Project PN07-44-01-02. Authors gratefully acknowledge its financial support.*

**P.3.19.**  
**GAS-CHROMATOGRAPHIC STUDY OF CHEMICAL TAXA  
FROM CHRYSANTHEMUM BALSAMITA L SPECIES**

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Chrysanthemum balsamita L (Asteraceae), costmary, originated from South -Western Asia is a herbaceous, perennial plant, cultivated in Romania as an aromatic and medicinal plant. It is very well adapted to the paedoclimatic and agrotechnical conditions of Brasov region.

We analysed the volatile compounds obtained from two infraspecific taxa of Chrysanthemum balsamita species: Chrysanthemum balsamita var. balsamita and Chrysanthemum balsamita var. tanacetoides.

The vegetal material (herba) obtained from the 2 varieties underwent extraction in n-pentane, the extracted compounds being later separated on column in hydrocarbonate and oxygenate fractions.

In Chrysanthemum balsamita var. balsamita 80 compounds were separated by gas chromatography – mass spectrometry analysis, of which camphor was majoritary, while in Chrysanthemum balsamita var. tanacetoides 103 compounds were separated, of which carvona was mostly present.

**P.3.20.**  
**STUDIES REGARDING THE SAFETY AND CONTROL OF**  
**IRRADIATED FOOD**

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Food irradiation is a preservation technique that implies a controlled exposure of foodstuff, to a source of ionizing radiation of well known energy. In compliance to the studies achieved under aegis of some international organisms, food irradiation is adequate for the treatment of a large palette of food products, it is efficient and has minimum influence on the functional or organoleptic properties of food treated at commercial doses. Food safety studies shown that it doesn't generate noxious compounds in the food structure and it is technically necessary to ensure food safety. Food irradiation can ensure population supply with safer foodstuff (by inactivating pathogen microorganisms) and with higher quantities of foodstuff (by increasing the validity period). The detection of irradiated food is mainly an activity in the benefit and for the protection of the consumer, that regards for the collective security of foodstuff. The paper is bringing out a physical method for the detection of irradiated food that is Electron Spin Resonance (ESR) Spectroscopy. This method is sophisticated and it asks for qualified personnel for an adequate application.

**P.3.21.**  
**AN OPTICAL BIOSENSOR FOR THE RAPID DETERMINATION  
OF GLUCOSE IN FOOD**

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An optical glucose biosensor based on the immobilization of glucose oxidase in a sensing film was developed. The sensing film consisted of an organically modified silicate film embedded with tri(4,7-diphenyl-1,10-phenanthroline) ruthenium (II) perchlorate and a polyvinyl alcohol sol-gel matrix with immobilized glucose oxidase. The biosensor has the advantages of short response time, lower detection limit, high sensitivity, and stability.

A kinetic curve simulation method was employed for glucose measurements, as a result of which the measurement time was less than 1 min for each sample analysis. In addition, the appearance of the sensing film, and effects of the amounts of immobilized enzyme, pH, temperature, ionic strength, and co-existing substances (including heavy metal ions and organic compounds) were investigated. The glucose values estimated by this optical biosensor correlated well with those determined using the conventional method for food samples.



**P.3.22.**  
**TARTRAZINE DETERMINATION FROM MUSTARD SAMPLE**  
**BY TLC-PHOTODENSITOMETRY**

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A facile and rapid TLC method for tartrazine determination from mustard is proposed. Silica gel precoated plates and an isopropyl alcohol – ammonia (70 : 30, v/v) mixture as mobile phase were used for tartrazine separation from natural colorants present in mustard sample. The photodensitograms were obtained by scanning the developed plates at 425 nm in reflection mode. The target analyte was extracted from solid matrix using ultrasound assisted solvent extraction with methanol - ammonia (9 : 1, v/v). The extractions procedure was optimized considering the number of extraction and the volume of extraction agent. The extracts were further purified by solid phase extraction using a RP - C18 cartridge. Calibration curves method was used for quantitative determination. The method was validated on mustard samples spiked at different concentration levels with tartrazine. Good recoveries ranging from 84.14% to 102.18% and relative standard deviation (R.S.D.) lower 8.29% were obtained. TLC technique provides LOD and LOQ value for the synthetic dye of 4.289 mg/kg and 7.980 mg/kg respectively. Regarding whole analytical procedure (including extraction and purification steps) the LOD and LOQ values were 8.578 mg/kg and 15.960 mg/kg respectively. The method was applied for tartrazine determination in five various mustard samples purchased from a local market.

**P.3.23.**  
**SIMULTANEOUS DETERMINATION OF FOOD SYNTHETIC  
DYES IN GELATINE DESSERTS BY USING NEW THIN-LAYER  
CHROMATOGRAPHIC TECHNIQUES AND DIGITAL  
PROCESSING OF IMAGES**

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A new thin-layer chromatographic method based on digital processing of images was developed for simultaneous determination of some azo dyes from gelatinous products. The colorants were isolated from food matrix using C18-SPE in acidic conditions. The recoveries of this method were higher than 95% for all the studied dyes. TLC analyses were performed on Silica gel plates using n-butyl alcohol - acetic acid – ethanol - water as mobile phase. Quantification of analytes was performed by standard addition method at three concentration levels. An extensive study for simultaneous quantitative evaluation of dyes was developed by comparing the photodensitometric results with those obtained by using different software (ImageDecipher-TLC, Sorbfil TLC) for digital processing and evaluation of the chromatographic plates. For the more accurate quantitative evaluation of the samples, the pure colour (red, green or blue) and integrate colour (grey) channels were selected and the obtained results were compared.

These methods were applied for dyes determination from various gelatine containing products purchased from local market.

**P.3.24.**  
**APPLICATION OF ICP-MS TO THE DETECTION OF  
MULTIELEMENTS IN SOME ROMANIAN WINES**

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The multielement analysis of wine is of great importance for quality and authenticity control of wine, metals' bioavailability and toxicity. With the rapid development of wine, more and more people begin to pay higher attention to its ingredients. Ten kinds of wine were studied by ICP-MS to detect the heavy metals and microelements. Determinations of multielement analysis were made in different types of wines from the same area, but different years of production (2009 and 2010). Five kinds of elements: Sr, Mn, Zn, Cr and Rb were higher than 200 µg/l; Rb, Mn and Sr, are very important to human health. In addition to microelements, contents of heavy metals: Cr, Pb, Cu and Cd are also important as markers to identify the quality of wine. Our results showed that wine contains small quantities of heavy metals, less than 50 µg/l Pb>Ni>Ag>Be>Co>Se>U>Cd. All measurements showed that the wine meets the national hygiene standards.

**P.3.25.**  
**CHARACTERISATION OF WHITE TRUFFLES USING  
ELECTROCHEMICAL AND ANALYTICAL METHODS**

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The white truffle is a hypogean fungus, living entirely underground, ensconced among the roots trees, and those among the oaks are the most sought and they usually weigh around half a kilogram. *Tuber magnatum pico* is also known as the white truffle, the Alba white truffle.

The paper aims characterization of preserved truffles by: cyclic voltammetry, scanning electron microscopy (SEM), energy dispersive X-ray analysis (EDAX), total organic carbon (TOC) and by atomic absorption spectroscopy (AAS).

Antioxidant capacity of the truffles was analyzed according to the pH and the scan rate on two working electrodes: nickel and platinum cluster, and the tests were conducted in two media reaction: alkaline and acid.

For morphological and elemental analysis of truffles was used scanning electron microscopy (SEM). Semi-quantitative analysis of materials was performed with energy dispersive X-ray analysis (EDAX). Also was determinate the content of organic and total carbon by TOC and the content of heavy metals from the truffles samples.

**P.3.26.**  
**STUDY ON EXTRACTION AND SEPARATION OF ZINGIBER  
OFFICINALE ACTIVE COMPOUNDS BY CHROMATOGRAPHIC  
AND SPECTROSCOPIC METHODS**

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Ginger (*Zingiber officinale*) is not only one of the most widely used spices in the entire world, but also a plant with many applications in medicine. Ginger is a popular remedy for rheumatism, motion sickness, motion sickness, bad pitch, retching persistent, abnormal appetite, difficult digestion, indigestion, gastritis hypoacid, physical and mental fatigue, convalescence, bloating, frigiditate.

Ginger contains volatile oils and a range of biologically active compounds with many benefits to health, including: zingiberol, borneol, neral, and Geranios and phenolic compounds: gingerols, shogaoli. They have anti-inflammatory, antibacterial, antiseptic, carminative, stimulant, diuretic and anti-tumor.

This paper aims extraction of biologically active compounds of dry and fresh ginger and separation and analysis by chromatographic (TLC, GC-MS, HPLC-DAD and HPLC-CAD) and spectroscopic (FT-IR, UV-VIS) methods.

**P.4.1.**  
**FOOD, FOOD SAFETY AND NOVEL FOOD – CULTURAL  
ASPECTS, NUTRITIONAL BEHAVIORS AND GLOBAL  
LEGISLATION**

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Nowadays, the state of nutrition is relevant and important in every country around the world. The food has become a very important factor in every economy. It is a basic element in households and even in political strategies. All countries have a well organised legislation regarding food security and protection. When we talk about food we must have in mind social differences, bound-areas, bonds and contradiction. There is a different food culture in every country or even in different regions of the same country. Those differentiations include the perception about food, food safety and nutrition. But also important are issues such as persistence, biological diversity, climate change and nutritional economics. People have a different perception regarding "eating" concept. The aim of this study was to try to understand this interesting and challenging complex system of differences. We must eat in order to live and our way of living can be studied through food.

**P.4.2.**  
**IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM IN  
DRINKING WATER ANALYSES LABORATORIES ACCORDING  
WITH SR EN ISO 17025:2005**

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Accreditation systems recognize the laboratories competence to test and standardize and to use this international standard as a basis for their authentication. This standard is performed for testing and standardizes analyses using the standardization, non – standardization and laboratory developed methods. Laboratory analysis must be performed by competent persons and with properly equipments.

Fairness and reliability of testing and standardized methods performed by a laboratory are determined by many factors including: human factors; accommodation and environmental conditions; methods of testing and standardized methods; equipments and methods validation; measurement traceability, sampling and handling of testing measurements.

In order to continue improving the effectiveness and efficiency of laboratory work, the manager should plan and organize the activities to determine the staff involvement and implementation of quality objectives.

Thus, the failure to comply the established values set by law is immediately analyzed by the environmental authority which will inspect and identify the cause of exceeded recommended limit.

A case study related of drinking water is presented together with our laboratory management, the staff involvement, the implementations of the quality objectives and all our activities related to water control.

**P.4.3.**  
**ASSESSING ENVIRONMENTAL QUALITY PARAMETERS**  
**FROM A SLAUGHTERHOUSE AREA**  
**AS PART OF WASTE MANAGEMENT PROGRAM**

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The waste management in food industry becomes increasingly important from a global perspective of environment pollution assessment, directly related with local, regional and global air pollution, toxic wastes accumulation and distribution, impairment of water and soil quality, emission of “green house” gases, all that threatening the survival of humans and other living species, the biodiversity integrity and the heritage of future generations.

This present work has the aim to evaluate the potential hazards that can influence the environmental quality from a food industry area, near an important slaughterhouse. The study includes analysis of slaughter house effluents for major wastewater and air quality parameters, on samples collected weekly over a one month period.

Air pollution tracing CO, NO, SO<sub>2</sub>, PM 10 and NH<sub>3</sub> parameters and the average wastewater characteristics in terms of pH, organic matter, CCO-Mn, CBO5, NH<sub>4</sub><sup>+</sup> were observed, relating to the proper normative specific for each environmental factor.



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