

**MINISTRY OF NATIONAL EDUCATION  
“AUREL VLAICU” UNIVERSITY OF ARAD  
FACULTY OF FOOD ENGINEERING, TOURISM AND  
ENVIRONMENTAL PROTECTION**

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**STUDENT SCIENTIFIC SESSION  
FACULTY OF FOOD ENGINEERING, TOURISM AND  
ENVIRONMENTAL PROTECTION**

**BOOK OF ABSTRACTS**

**XV<sup>th</sup> Edition, May 18-19, 2017**

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## **Section I**

**Food Technology**

**Food Engineering**

**Nutrition**

**Food Quality and Food Security**

**Agrotourism Management**

## **OPI. BIOGENIC AMINES IN FOOD PRODUCTS**

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Biogenic amines are basic nitrogenous compounds. In food products they are generated by enzymatic or by microbial decarboxylation of amino acids.

Biogenic amines can be found in all foods containing proteins or free amino acids, like fish or meat products, dairy products, wine, beer, vegetables, fruits or chocolate. In fermented foods, there are many types of microorganisms, some of them being capable to produce biogenic amines. In non-fermented foods the presence of biogenic amines is in general undesired and they can be used as an indicator for microbial contamination<sup>1</sup>.

The structure of biogenic amines can be: aliphatic - cadaverine, putrescine, spermidine; heterocyclic - histamine, tryptamine; aromatic - tyramine, phenylethylamine<sup>1</sup>.

Consumption of foods with high concentrations of biogenic amines can cause migraine, headaches, gastric or intestinal problems but also allergic responses. Putrescine and cadaverine are not considered toxic individually. They can increase the effect of histamine by reacting with the enzymes (aminoxidases) and interfering with the detoxifying mechanism of the human organism. Also some chemical components, like alcohol, can increase the toxicity of biogenic amines. Different studies show that they are potential precursors for carcinogenic compounds. By reaction with nitrite biogenic amines can produce a range of labile N-nitroso products<sup>2</sup>.

For separation and quantitative determination of biogenic amines in foods several methods have been developed. Chromatographic methods (gas or thin-layer chromatography, HPLC), biochemical methods and capillary electrophoresis have also been described. Detection by UV absorbance is also possible for the heterocyclic and aromatic amines<sup>3</sup>.

**Keywords:** biogenic amines, food products

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## **OP2. EFFECT OF PULSED ELECTRIC FIELD AND WINE AGING ON COLOUR OF RED WINES**

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The aim of study was to evidence the influence of applying PEF treatment to two red grapes varieties (Pinot Noir and Merlot) on chromatic properties of young (November 2016) and aging wines (6 months, April 2017). Different mechanical and electrical parameters: variant indexed as 13 and 14 for Pinot Noir wine and variant 23 and 24 for the Merlot wine. The 2.5 mm distance between the drums, the frequency (178 and 344 Hz) and the voltage (7 and 8 kV) have been tested in order to obtain the colour enhancement in the wines. The VIS-spectrum (380-720 nm) of both wines, young and 6 months aged shown a maximum wavelength at 520 nm characteristic of anthocyanins - the pigments responsible to the red colour of wines.

The chromatic parameters were: RGB, CIE L\*a\*b\*<sup>1,2</sup>, CIE L\*C\*h\*<sup>1,2</sup>, wine colour index and wine hue, were assessed from the transmittance VIS spectra, at the native wine pH. In order to compare the time colour evolution, colour differences, i.e.  $\Delta E$  (CIE L\*a\*b\*)<sup>3</sup>, were evaluated between the wine samples of each time stamp (with control as reference) and between the time stamps (and between the same sample type).

The use of PEF in the winemaking industry is a promising technology that results in obtaining high quality wines from point of view of colour.

**Keywords:** wine aging, pulsed electric field, quality of red wine

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### **Acknowledgement**

This work was performed through the Partnerships Program in priority areas - PN II, developed with the support of MEN - UEFISCDI, project No. 170/2014 "Electromagnetic methods to improve processes wine".

### OP3. MICROSCOPIC ANALYSES OF COFFEE BEANS

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Have you ever thought that the coffee you enjoy each day has taken a long journey to arrive in your cup? Between the time they are planted, picked and purchased, the beans go through a typical series of steps to bring out their best. Coffee is more than just a drink: It is a culture, an economy, an art, a science and a passion.<sup>1</sup> Its origin is to a genus of plants known as *Coffea*, in the commercial industry, there are two important species — *arabica* and *robusta*. Across different production segments, the search for quality is a major concern. In recent years, also an upward trend in the cosmetic industry for natural products derived from food aroused - Coffee silverskin (CS).<sup>2</sup> Coffee is one of the few products whose value grows with improved quality, determined not only by the flavor and aroma, but also by the complex mixture of functional compounds: caffeic, chlorogenic, hydroxycinnamic, ferulic, sinapic acids and melanoidins that have strong antioxidant activity. Scanning electron microscopy (SEM) is a well-known, rapid, non-destructive technique that uses a small diameter beam of electrons to examine the surface of the samples down to nano-scale. The modern scanning electron microscopes produce high magnification images with high resolution, a feature of which makes them suitable tools for a wide range of applications in numerous fields of science and industry. In the present study we recorded SEM images of both green and roasted coffee beans in order to obtain rapid information related to their structure during storage.

**Keywords:** coffee beans, scanning electron microscopy, storage

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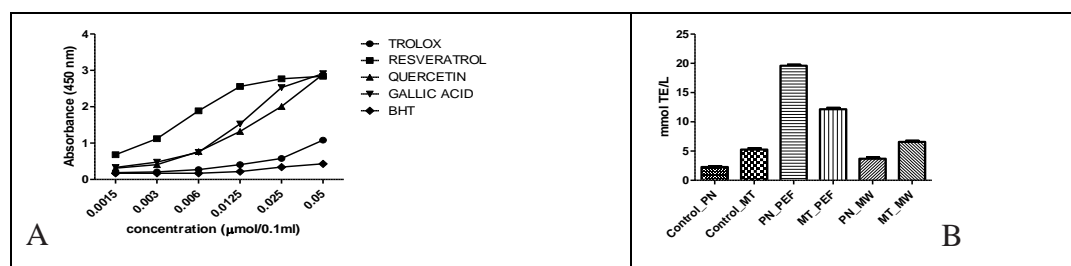
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## OP4. THE ANTIOXIDANT ACTIVITY OF DIFFERENT BIOACTIVE COMPOUNDS AND RED WINES USING CUPRAC METHOD

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The aim of this study was to investigate reducing antioxidant power using CUPRAC method<sup>1</sup> of different antioxidant compounds and red wines (Pinot Noir and Merlot) obtaining by using the green technology, pulsed electric field (PEF) and high frequency electromagnetic field (MW). Five different antioxidant compounds from class of flavonoid (quercetin), stilbene (resveratrol), phenolic acid (gallic acid), synthetical food additive (BHT) was prepared by diluting the stock solution with proper solvents (ethanol or water) in order to obtain the different concentrations (15 to 500  $\mu\text{M}$ ). The reduction of Cu (II)-neocuproine complex to orange Cu (I)- neocuproine complex by antioxidant compounds and red wines was monitored at 450 nm after 30 minutes. Cupric ions ( $\text{Cu}^{2+}$ ) reducing ability of standards is shown in Figure 1A.



**Figure 1A.** Cupric ions ( $\text{Cu}^{2+}$ ) reducing ability at different concentrations of different standards. **B.** Reducing power of two red wines (Pinot Noir, PN and Merlot, MT) obtained by two green technology.

The results shown that cupric ions reducing capability of standards by CUPRAC method is concentration- dependent. At the highest concentration of standards, cupric ions reducing power exhibited the following order: Resveratrol ~ Gallic acid ~ Quercetin > Trolox > BHT. In the Figure 1B, the cupric ions reducing ability of the red wines, shown that using the green technology in winemaking process increased the antioxidant power of samples. The PEF treatment was the most effective treatment.

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### Acknowledgements

This work was performed through the Partnerships Program in priority areas - PN II, developed with the support of MEN - UEFISCDI, project No. 170/2014 “Electromagnetic methods to improve processes wine”

## OP5. SHELF LIFE EVALUATION OF A NEW FUNCTIONAL SOFT DRINK

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The aim of this study was to develop a new functional beverage, free of additives colourants, flavours and preservatives, and to evaluate its shelf life. After formulating and obtaining the product named „Carinada”, the first step was the assessment of microbiological quality and stability, investigating its microbiota. All samples passed very well a sensory evaluation, regarding their appearance, clarity, absence of sediment, veil, off-odours and off-taste. Microscopy evaluation revealed yeast and moulds cells in unpasteurized samples sweetened with sugar and for much smaller extend in rest of the pasteurized samples. Plate counts on Malt Agar allowed the quantitative evaluation of different samples fungal contamination. As expected, results confirmed the effectiveness of pasteurization, pasteurized samples being free of living fungi; unpasteurized samples shown different amount of fungal load, specific to their own formulation.

Preliminary results of the physico-chemical characterisation of Carinada drink are going to be presented in order to show the stability of the product during 30 days after preparation. A sample of Carinada drink storage in the same conditions, dry and dark place, temperature 10<sup>0</sup>C, during 4 months (109 days) was also characterized during the same time span as the freshly prepared one.

**KEYWORDS:** functional soft drink, shelf life, microbiological stability, microbiota, physico-chemical characterisation.

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## **OP6. UTILIZATION OF BREWER'S SPENT GRAIN AND MUSHROOM IN FORTIFICATION OF SMOKED SAUSAGES**

**Maria-Ioana MORAR, Melinda NAGY, Cristina Anamaria SEMENIUC, Maria TOFANĂ, Sonia Ancuța SOCACI**

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The aim of this study was in obtaining new types of smoked sausages with desirable nutritional properties and to evaluate the influence of storage time (T0, initial state; T1, at day 7 of storage; T2, at day 15 of storage) on physicochemical and microbiological properties of smoked sausages fortified with brewer's spent grain, mushrooms (*Agaricus bisporus*).

Protein, fat, moisture and ash content were analysed using the Food Scan<sup>TM</sup> Lab 78810 (Foss Tecator Co., Ltd., Denmark) method. The total carbohydrates and energy value were calculated from the content of moisture, protein, lipid, and ash, respectively. Microbiological parameters of smoked sausage formulations were tested of *Salmonella* spp. and *Escherichia coli* using the method described in SR EN ISO 6579:2003 + AC:2006 standard and SR EN ISO 16649-2:2007 standard, respectively (International Organization for Standardization, 2006, 2007b). Total combined yeasts and moulds count (TYMC) was determined using the method described in SR ISO 21527-1:2009 standard (International Organization for Standardization, 2009). Smoked sausage formulations have shown different stability during the period of storage. In general, a loss of moisture content and an increase of ammonia content were noticed in smoked sausages from the physicochemical point of view and a decrease in TVC, *E. coli* and TYMC level from the microbiological point of view.

**KEYWORDS:** *Agaricus bisporus*, brewer's spent grain, smoke sausage, chemical composition, microbiological properties

## OP7. CHEMICAL COMPOSITION, ANTIOXIDANT AND ANTIBACTERIAL ACTIVITY OF TARRAGON ESSENTIAL OIL

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The purpose of this study was to investigate the chemical composition, the total phenolic content, the antioxidant and antibacterial activity of essential oil extracted from dried leaves of tarragon.

The extraction of tarragon essential oil was done by hydrodistillation using a Clevenger-type apparatus. Analysis of volatile organic compounds was carried out using the ITEX/GC-MS method. The antioxidant activity and total phenolic content were determined using the ABTS and Folin-Ciocalteu method, respectively. Antimicrobial properties of tarragon essential oil (the diameter of the zones of inhibition, minimum inhibitory concentrations, and minimum bactericidal concentrations) were tested in vitro against *Escherichia coli* (ATCC 25922), *Salmonella enteritidis* (ATCC 13076), *Staphylococcus aureus* (ATCC 25923), and *Listeria monocytogenes* (ATCC 19114). Gentamicin, a broad-spectrum microbicide, was used as positive control. The tarragon essential oil was most effective against *S. enteritidis*, followed by *S. aureus*, *E. coli*, and *L. monocytogenes*.

**KEYWORDS:** tarragon essential oil, chemical composition, total phenolic content, antioxidant activity, antibacterial activity

## **OP8. LOW CALORIE DRAGEES ENRICHED WITH ACTIVE PRINCIPLES FROM PLANTS WITH ANTIOXIDANT, ANTICANCER AND HEPATOPROTECTIVE EFFECTS**

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This study attempts to develop a functional food product classified as a low calorie dragee. The functionality of the product was obtained by adding natural bioactive compounds from blueberry (*Vaccinium myrtillus*) and turmeric (*Curcuma longa*), able to produce antioxidant, anticarcinogenic and hepatoprotective actions on human organism<sup>1-3</sup>. The product can be labelled as low calorie because we have replaced the sugar from the traditional dragees recipe with maltodextrin, a polysaccharide and steviol which is a diterpene isolated from stevia (*Stevia rebaudiana*). The importance of these dragees is highlighted through their rich content in bioactive compounds, since the human organism is exposed daily to toxic factors such as the daily diet, the pollution and stress.

**KEYWORDS:** Functional food, functional dragees, anticancer, low calories, hepatoprotector.

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## **OP9. VOLATILE ORGANIC COMPOUNDS AND FATTY ACIDS PROFILES OF PORTUGUESE CHEESE OBTAINED FROM COW, SHEEP OR GOAT MILK**

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Cheese is one of the dairy product obtained from milk that exhibits a continuous consumption growth worldwide. In 2016 the domestic consumption of cheese was more than 18 million tons, from which more than 9 million tons were consumed in European Union-27.<sup>1</sup> One of the new sensitive and robust technique used for quality control during the manufacturing process and for the evaluation of the final product is gas-chromatography coupled with mass spectrometry.<sup>2</sup>

In the present study we analysed the volatile organic compounds (VOCs) profile of some Portuguese cheese obtained from cow, sheep or, respectively, goat milk (Queijo de Nisa, Queijo de Serpa, Queijo de cabra-Guilherme, and Queijo de São Jorge), by using a static technique. The VOCs were collected in tubes with adsorbents and then desorbed in a thermodesorbter coupled to the gas-chromatograph-mass spectrometer (GC-MS) equipment. The VOCs profile includes aliphatic and aromatic compounds and esters. The fatty acids from cheese samples were derivatized and then the products were separated and identified by using GC-MS. The identification of all the compounds was performed by using NIST and WILEY commercially libraries. The major concentration of palmitic and stearic acid was observed in all samples out of 19 different fatty acids identified.

**Keywords:** cheese, gas chromatography, mass spectrometry, fatty acids, volatile organic compounds

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**OP10. MICROENCAPSULATED PROBIOTICS WITH FOOD APPLICABILITY**  
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In recent years, the consumers have changed their perception regarding daily diet, understanding the importance of nutrition on health and wellness. Studies have shown the beneficial effect of pre- and probiotics in the treatment of metabolic diseases such as diabetes mellitus type I, irritable bowel syndrome, obesity and disorders of the immune system <sup>(3)</sup>. In order to manifest this effect, the probiotics must be in a concentration of at least  $10^7$  cfu g<sup>-1</sup>. This paper focuses on obtaining a probiotic powder that is easily incorporated into food matrices to provide functional effects on health. For this purpose, the selected strain was *Lactobacillus plantarum* ATCC 8014, recent studies showing that there are particular strains of *L. plantarum* that are resistant to the antibiotics, this resistance being necessary to restore the balance of intestinal flora. For achieving this goal, the probiotic bacteria used were microencapsulated by spray drying technique, using different hydrocolloids for protection against the gastric's acidity high level <sup>(1)</sup>, <sup>(2)</sup>. Several experimental tests were performed for determining the necessary concentrations of hydrocolloids (sodium alginate, pectin, gum arabic, casein), the viability of the bacteria before and after the spray drying process and the survival rate, highlight that from all four tested matrices, the best results have been obtained using casein and sodium alginate.

**KEY WORDS:** probiotics, viability, *Lactobacillus plantarum*, spray drying, functional.

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## OP11. ASSESSMENT OF THE ANTIMICROBIAL POTENTIAL OF THYME OIL DURING KASHKAVAL CHEESE RIPENING

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Kashkaval cheese is one of the most appreciated cheese types in Romania. It's a semi-hard cheese belonging to the Pasta Filata-type.<sup>1</sup> During the kashkaval cheese ripening or storage, a series of defects may occur due to the multiplication of spore-forming anaerobic bacteria (such as *Clostridium tyrobutiricum*) or moulds (such as *Oidium crustacea* or *Oidium sulfurea*).<sup>2</sup>

The aim of this study consisted of the evaluation of thyme essential oil effect on the fortified kashkaval cheese microflora. The thyme essential oil was obtained by hydrodistillation, from dried leaves, using a Clevenger-type apparatus. In the fortified Kashkaval cheese processing, the thyme essential oil was introduced into the raw milk under the form of an emulsion. Kashkaval cheese samples (control and Kashkaval cheese fortified with thyme essential oil) were subjected to microbiological examination for total moulds count, lactic acid bacteria, *Escherichia coli*, *Staphylococcus aureus* and *Clostridium tyrobutiricum*.

The results show that the addition of thyme essential oil has significantly influenced the number of lactobacilli and moulds in fortified cheese.

**KEYWORDS:** Kashkaval cheese, thyme essential oil, antimicrobial potential, ripening

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## OP 12. FULL-FAT YOGURT

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The topic of the project is the technology of full-fat yogurt production.

The used raw material is whole cow's milk and specific bacterial cultures. Milk passes over a series of technological operations until it becomes full-fat yogurt, such as qualitative and quantitative reception, filtering, centrifugal cleaning, normalization, homogenization, pasteurization, cooling, inoculation, packaging and thermostatic. Each operation has a particular importance for obtaining a qualitative product.<sup>1,2</sup>

The project includes a questionnaire through which the intention was to find out the consumer's preference for four types of yogurt and the important criteria they consider when choosing the product. The following yogurts are presented in the questionnaire: full-fat yogurt, yogurt with strawberries, yogurt with cereals and Greek yoghurt. Every yogurt has different characteristics, ingredients, nutritional values, having in common the raw material, as whole cow's milk.

The questionnaire contained 8 questions and was filled by 70 persons.

Most of the questioned people, namely 61% are between ages 20 and 35, the most frequent graduation level being university.

From the questioned ones, 54% prefer the full-fat yogurt, and 39% consumes yogurt once a week.

The most important criteria when choosing yogurt is the brand, the answer being supported by 37 responses, constituting 54%.

40% from the questioned people consider that food additives used within acceptable limits do not affect their health.

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## **OP13. and PP. MAKING WINE FRUIT JAM LIQUEUR SZAMORODNI TYPE**

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Szamorodni is a white liqueur wine, with an alcoholic strength of 13 to 15 percent per volume, obtained out of grapes of Furmint type, harvested over-ripened. The Szamorodni type wine is a result of processing the healthy beads with beads which are affected by noble mold produced by the *Botrytis cinerea*.

As a practical part, there were made several jam sorts with liqueur wine, Szamorodni type. At the basis of making pear, orange and peach jams, with adding Szamorodni type wine stands the classical technology of obtaining jams.

A team of tasters (10 people), took part at the sensory analysis of the jams, with adding Szamorodni type wine and concluded as follows:

- The pear jam, with adding Szamorodni type wine obtained 19.08 points out of 20, being rated as "Very good"
- The orange jam, with adding Szamorodni type wine obtained 18.03 points out of 20, being rated as "Very good"
- The peach jam, with adding Szamorodni type wine obtained 17.7 points out of 20, being rated as "Good"

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## **OP14. and PP. JELLIES MADE OF SPARKLING ROSÉ WINE**

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Sparkling wines are situated in the category of effervescent wines with a content of endogenous origin of  $CO_2$  and with a alcoholic strength of minimum 10 %. Sparkling rosé wines have been obtained from high quality grapes, from Pinot Noir variety and with a content of alcohol of 11 %.

The practical part was based on preparing a sparkling rosé wine jelly in two varieties: one type of jelly has been obtained using as sweetener white sugar, and the second type of jelly has been obtained using as a natural sweetener, honey bee.

The jellies obtained due to the classic technology have been tasted by a team, composed of 10 people, who appreciated the sensorial features of the samples based on tasting files.

Summarizing the data it concluded the following:

- the jellies with white sugar sweetener have been obtained 3,5 from 5 points.
- the jellies with natural honey bee sweetener have been obtained 4,5 from 5 points.

By accomplishing the average on a hedonic scale, both of the jelly samples obtained have been considered as “Good”.

In conclusion both of the jelly samples were favorably appreciated by the tasters.

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## **Section II**

**Engineering and Environmental Science**

**Environmental Protection**

**Biodiversity**

## **OP1. IS RECOMMENDED TO USE RENEWABLE ENERGY?**

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Renewable energies are basically considered to be energies that originate from self-regenerating sources in short time or are virtually unlimited sources. The term renewable energy refers to forms of energy produced by transfer, resulting from renewable natural processes. Thus, the energy of sunlight, wind, water flow, biological processes and a geothermal heat can be captured by people using different processes.

In this paper, we present the advantages and disadvantages of renewable energy houses and their costs.

To obtain the electricity that is independent of the national energy system, these houses it can be used sources of renewable energy such as solar, wind or hydropower. Using these resources, you can produce enough electricity, but you can manage and cushion your investment after a long period of time, and then you may have profits by selling energy to the national electricity grid.

**Keywords:** renewable energy, electricity, house

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[adev.ro/no2pdt](http://adev.ro/no2pdt)

## **OP2. THE PROBLEM OF MEDIATIZATION OF THE NUCLEAR ACCIDENTS**

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The living beings have evolved in an environment that has significant doses of ionized radiation. The ionized radiation from the atomic core are alarming. Those appear in two forms: rays and particles at high frequency. It is well known that high doses of ionized radiation, higher than the background radiation, may cause cancer and leukemia at few years from exposure. It is assumed, thanks to experiments on plants and animals that ionized radiation may cause genetic mutations that may affect the future generations. The nuclear accidents are underlying some of big ecological disasters on the Planet. The prevention first of all, but also finding the right solutions in the case an accident happens, represents an important factor of maintaining an ecological balance and even more the life on the Earth. The forms and ways of solving the consequences of nuclear accidents are in continuously development once with the human being reaching the whole new level of conscience and the perceptions of how important it is to maintain a natural and ecological balance. In this work, we propose to study and to pay attention to the risk of radiation that appeared as a consequence of nuclear accidents in specific locations on the planet, and also the problem of media coverage and media role into solving specific ecological problems.

**Keywords:** nuclear accidents, radiation, media, ecology

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### OP3. ECO BUILDING CONSTRUCTION

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In the last decades of this century, on European plan was taken some measure for stopping the lossing of natural and financial resources. A principal component of ecological construction is "healthy" construction materials. The most healthy materials about which we will speak are: gypsum, wood, clay and heaps of strans.<sup>1-6</sup> A good construction material need to present an excellent report between thermal isolation and warmth accumulation, also to have a good capilar conductivity. This mean that construction material may quickly remove water from the wet place into dry part of this. The word "Ecohouse" may be defined in the ecological context in that a construction and her lifestyle are optimized for having minimum impact for environment, both of building methods, also depend on it habitants. In this work we will present some methods of construction of an "ecohouse" using natural materials. Also we will present some methods of interior design and eco gardens which have the main idea to realize eco balance between man and nature.

**Keywords:** ecohouse, construction material, natural materials, interior design

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## **OP4. THE INFLUENCE OF DIFFERENT COMPOSITION OF SIMULATED ACIDIC RAIN ON PLANTS**

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Acidic rain is one of the main stressor for plants due the raising in the emissions of SO<sub>2</sub> and NO<sub>x</sub>. Such emissions in atmosphere lead in formation of sulfuric and nitric acids which finally arrive on the soil, water or plants as rain, fog or snow. The pH of such deposition decrease over the last years fewer than 5. On plants leaf the influence of acidic water deposition includes necrosis and nutrient losses. In this study the influence of simulated acidic rain with different composition on *Phaseolus vulgaris* L. plants has been studied. In order to simulate the acidic rain, we used three different composition of acidic water as sulfuric acid, azotic acid and hydrochloric acid which could occur in the nature. The photosynthetic parameters decrease in the first 24 hours after stress application. The green leaf volatiles emission and terpenes emission has been shown to be higher for plants treated with sulfuric acid.

**Keywords:** acidic rain, photosynthetic parameters, green leaf volatiles, terpenes, *Phaseolus vulgaris* L.

## **OP5. THE STUDY ABOUT PLANTS DEVELOPMENTS UNDER MICROWAVE STRESS**

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Beside the pollution of water, air and soil, along with the increase in people's livelihood, a new pollution source started to affect our life: pollution produced by electromagnetic radiations.<sup>1-4</sup> This type of pollution is more dangerous, because it is hard to be detected. Pollution caused by electromagnetic waves on different living systems can only be highlighted by the produced effects produced. The purpose of this paper is to analyze the impact of electromagnetic waves on *Triticum aestivum* plants. The results have been presented and discussed.

**Keywords:** pollution, microwave, *Triticum aestivum*

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## **OP6. PROTECTION OF THE ENVIRONMENT**

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Environmental problems may effect vast are, even if this have local origin in this context, was a assessed the quality river “Raut” from mun. Balti, Republic of Moldova, for establishing the antropic impact by pollution. For analysis the degree of polution of Raut river was taken samples from: entrance in locality near food plant, near water purge and on the exit from mun. Balti. Samples were analyzed in the laboratory from University of Petrosani were was determined turbidity, conductivity and composition of water, by determination of principal ions, mineralization, pH, and nitro content forms. Quality indications of water of Raut river from mun. Balti denote a negative impact because of spilling of refuse by water purge . River water has a low content of nitrite, nitrate and chlorine, but the mineral salt concentration, the ammonium ions and the hardness of water were high.

**Keywords:** water pollution, Raut river, pH, ions, water hardness

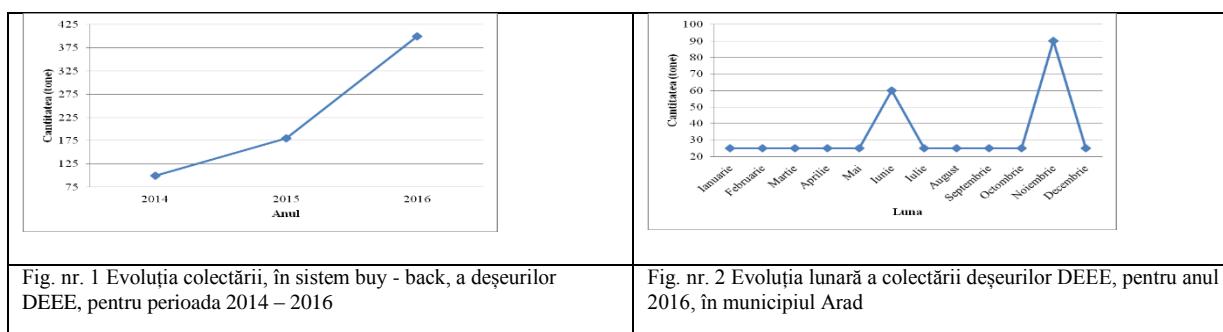


## OP7. IMPORTANTA RECICLARII DESEURILOR DIN ECHIPAMENTELE ELECTRICE SI ELECRONICE (DEEE)

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Lucrarea își propune să responsabilizeze populația în privința reciclării deșeurilor din echipamentele electrice și electronice (DEEE) <sup>1,2</sup>, urmare a faptului că România „ca țară membră a Uniunii Europene, este obligată să recicleze 4 kg / locuitor,, din această categorie de deșeuri.<sup>3</sup> În urma studiului de caz realizat, la o societate comercială de profil din municipiul Arad, pentru o perioadă de trei ani s-a constatat că evoluția colectării tuturor tipurilor de deșeuri DEEE, în perioada 2014 – 2016 a evidențiat un trend ascendent (fig. nr.1), atingând, anual, două maxime în perioadele campaniilor „buy - back” (fig. nr. 2).



Peste 80 % din materiale recuperate din DEEE sunt reciclabile și valorificabile<sup>3</sup>, cea mai mare cantitate fiind reprezentată de fontă și oțel, materialele plastice, aluminiul și cuprul (tabelul 1). Dintre toate, cel mai valoros este cuprul.

Tabel 1 Materiale rezultate în urma reciclării DEEE (tabel preluat, parțial, din [1])

Componența DEEE	Procente (%)	Cantități colectate în 2016 (t)
Fonta și oțel	48	192
Aluminiu 5 %	5	20
Cupru	7	28
Materiale plastice	20	80
Sticla	5	20
Lemn și materiale neferoase	4	16
Cauciuc și materiale ceramice	3	12

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## **OP8. POLLUTION OF BÎC RIVER**

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The water is an indispensable factor of life and also has an important role in ecological balance and its pollution is a serious problem with the current population. The water pollution is altering the physical, chemical and biological characteristics of their being produced directly or indirectly, natural or man-made, the polluted water is unfit for normal use. One of the most important properties of water, in addition to temperature, color and electrical conductivity, is turbidity. In this paper we present a method of determination of turbidity. The method is based on the measurement of luminous intensity weakening which passed through a liquid containing suspended solid particles are absorbed or released. Following these measurements can be verified and determination the degree of pollution and what are major pollution sources.

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**POSTER SESSION**  
**AND**  
**PRODUCT PRESENTATION**

# **P1 and PP1. JELLY ENRICHED WITH ANTIMYCOTIC BIOACTIVE PRINCIPLES FROM PLANTS**

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This study attempts to develop a functional food product with anesthetic and antimycotic properties. The main purpose was to extract the bioactive principles from four plants<sup>1-3</sup> (*Syzygium aromaticum*, *Cinnamomum verum*, *Salvia officinalis* and *Quercus infectoria*) and determine their antimycotic activity on *Candida albicans* species. Based on the study results we chose to incorporate the bioactive principles extracted from *Syzygium aromaticum*, *Cinnamomum verum* and *Quercus Infectoria* in a jelly matrix in order to obtain functional food supplements able to ensure antimycotic and anesthetic effects on human organism. The aim of the study was to reduce the consumption of synthetic compounds found in pharmaceutical treatments and replace them with bioactive natural compounds. These natural compounds should be consumed as functional food products able to produce a therapeutical effect.

## **KEYWORDS**

Functional food, functional jelly, antimycotic, anesthetic.

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## **P2. VALORIFICATION OF CITRUS ESSENTIAL OILS IN THE DEVELOPMENT OF AN INNOVATIVE FOOD PRODUCT WITH FUNCTIONAL PROPERTIES**

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The aim of this study was to develop a functional food product (chewing gum) with antistress, antioxidant and antimicrobial proprieties by incorporation of orange and lemon essential oils. Chewing gum is a soft, cohesive product obtained from sugar, agave syrup, gum base, flavours and dyes. Essential oils are plant secondary metabolites containing tens or even hundreds of volatile compounds which provide the plant characteristic flavour. Essential oils can be extracted by water steam distillation, cold expression, with organic solvents, ultrasonic or microwave assisted extraction, or other modern methods. Many studies have demonstrated that orange and lemon essential oils have antioxidant, antimicrobial and antistress activity. Based on these considerations, during the experiment, the chewing gum with incorporated essential oils (extracted by hydro-distillation) and blueberries juice, rich in anthocyanins (hydrosoluble pigments with antioxidant activity) was obtained. In order to develop functional chewing gum, the antioxidant and antimicrobial activity of orange and lemon volatile oils, as well as their volatile profile were determined using spectrophotometric and gas chromatography–mass spectrometry methods, respectively. Likewise, it was carried out a study regarding the stress level, the proper methods to eliminate it and the acceptance level on the market for the consumption of chewing gum enriched with volatile oils. The promising results obtained have indicated the fact that the product may represent a succes from sensorial and economic point of view.

**KEYWORDS:** Essential oils, anthocyanins, antioxidant, antimicrobial, functional product, antistress

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### **P3. SOUR CREAM SAFETY – A CASE STUDY**

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The aim of this study was to make an inventory of the physical, chemical and biological hazards that concerns the sour cream safety. This is the first step in the evaluation of the Hazard Analysis and Critical Control Point (HACCP) System implemented for a specific sour cream production plant.

**KEYWORDS:** sour cream safety, HACCP, physical, chemical and biological hazards.

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#### **P4. UNSALTED BUTTER SAFETY – A CASE STUDY**

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The aim of this study was to make an inventory of the physical, chemical and biological hazards that concerns the unsalted butter safety. This is the first step in the evaluation of the Hazard Analysis and Critical Control Point (HACCP) System implemented for a specific unsalted butter production plant.

**KEYWORDS:** unsalted butter safety, HACCP, physical, chemical and biological hazards.

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## **P5. COMPARATIVE STUDY OF FLAX AND HEMP CROPS` MICROBIOTA BEFORE AND AFTER RETTING**

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### **ABSTRACT**

It is of high relevance knowing about a crop`s microbiota. The aim of this study was to quantitatively assess hemp seed`s microbiota and to correlate it with sample`s moisture content, as both parameters greatly influence the quality of the end-products and the sustainability of seed processing.

**KEYWORDS:** hemp, microbiota, quality

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The entire responsibility for abstracts belongs to the authors.

Abbreviations: OP = oral presentation, P = poster, PP = product presentation.