

International Conference
Aromatic and Medicinal Herbs in Food

Caro Hotel, Eminescu Conference room,
15-16th June, 2016, Bucharest, Romania

BOOK OF ABSTRACTS

EDITURA

Acknowledgments to



The Romanian Flour Milling and Bakery Specialists Association
Asociația Specialistilor din Morărit și Panificație din România

Organizing Committee

Gabriela Mohan
Nastasia Belc
Manuela Răscol
Alina Culețu
Pillar Zafrilla
Angel Martinez
Eduardo Cardoso

Scientific Committee

Begona Cerda
David Quintin
Akos Mathe
Manuela Pintado
Tatiana Onisei
Enuța Iorga
Radu Stoianov

The information provided in the Book of Abstracts is based on the submitted abstracts of Conference participants. The accuracy, spelling and presentations of the submitted abstracts are the sole responsibility of the authors.

PROGRAMME

Potential use of spices/aromatic species in bakery products 15th June 2016

- 8.30- 9.30 Registration
- 9.30-10.00 Welcome and Opening Session
Nastasia Belc, General Director, INCDBA - IBA Bucharest, Romania
- 10.00-13.00 Session I. Innovative applications of medicinal and aromatic plants and vegetable by-products. Chairman: Nastasia Belc**
- 10.00-10.15 Manuela Pintado, CBQF/Escola Superior de Biotecnologia da Universidade Católica Portuguesa, Porto, Portugal
Food for the future: trends and challenges for the sector
- 10.15-10.30 Miguel Ayuso García, CTC, Murcia, Spain
Sustainable strategies for integrated management of agroindustrial fruit and vegetable wastes. AGROWASTE project.
- 10.30-10.45 Maria Dolores Lopez, CTC, Murcia, Spain
Valorization of citrus industry by products as natural gelling agent. Application in vegetable based filling for bakery industry. LIFECITRUS project.
- 10.45-11.00 David Quintin Martinez, CTC, Murcia, Spain
Development of new active containers with natural additives from agrofood wastes
- 11.00-11.30 Coffee break
- 11.30-12.00 Petronela Matei, Apicola Pastoral Georgescu, Romania
The Benefits of Bee Pollen

- 12.00 – 12.30 Laia Alemany, Dulcesol Group, Spain
Creation of several bakery products based on *Chlorella vulgaris* algae
- 12.30 –13.00 Alexandrina Sirbu, "Constantin Brancoveanu" University, FMMAE Ramnicu Valcea, Romania
Youth Perception and Attitudes of Bakery Foodstuffs Among Consumers of Ramnicu ValceaTown
- 13.00-13.30 Discussions. Questions and answers
- 13.30-14.30 Lunch
- 14.30-16.10 Session II. Bread –The perception of consumers, specialists, mass-media. Chairman: Gabriela Mohan**
- 14.30-15.00 Mona Elena Popa, University of Agronomic Science and Veterinary Medicine of Bucharest, Romania
Trends of Innovation in Bread and Bakery Production
- 15.00- 15.20 Camelia Arghire, Enzymes&Derivates S.AP, Costisa, Romania
Healty Products - the Key for an Adequate Nutrition
- 15.20–15.40 Ana Maria Grigoriu Giulescu, SC Gama Serv 95' Srl, Bucharest, Romania & Novozymes A/S
The Modern Biotechnological Solutions for High Quality Bread
- 15.40 -16.00 Adriana Dabija, Stefan cel Mare University of Suceava, Romania
Aspects Regarding the Use of Indigenous Ingredients in Obtaining Bakery-pastry Products
- 16.00-16.20 Georgiana-Aurora Ștefănoiu, University of Agronomic Science and Veterinary Medicine of Bucharest, Romania
Inactivation by Radiofrequency Treatment of *Penicillium commune* and *Penicillium crustosum*, Fungi with High Incidence in Bread Spoilage
- 16.20-16.40 Coffee break

16.40-17.30 Session III. Posters

19.00-22.00 Official Dinner

Innovative studies and researches on medicinal and aromatic plants
16th June 2016

8.30-9.30 Registration

9.30-13.30 Session IV. Medicinal and Aromatic Plants: extraction of bioactive compounds and application as ingredients in natural products. Chairman: Tatiana Onisei

9.30 – 9.50 Petronela Camen-Comănescu, Botanical Garden “D. Brandza”, University of Bucharest, Romania

Medicinal and aromatic plants – a powerful tool in ecological education

9.50 – 10.10 Gabriela Vlăsceanu, SC Hofigal Export Import SA Bucharest, Romania

Aromatherapy based on volatile oils in honey as monodoses without preservatives.

10.10 – 10.30 Tatiana Onisei, INCDBA - IBA Bucharest, Romania

Quality and safety requirements for herbs and herbal food supplements

10.30 – 10.45 Ákos Máthé, No Gravity, Bratislava, Slovakia

Introductory Remarks To Medicinal And Aromatic Plants And Spices

10.45 – 11.00 Magdalini Selanikli, Regulatory Affairs Manager, ISO PLUS Group, Athens, Greece

Botanicals Regulation in the EU; the potential for a viable regulatory framework

11.00 - 11.30 Coffee break

11.30 – 11.50	Lidia Cremer, Immunomodulation Group, “Cantacuzino” National Institute of Research, Bucharest, Romania <i>The peroxy scavenger capacity of "Natural SOD" vegetal extract</i>
11.50 – 12.10	Pedro M. Castro, UPC, Porto, Portugal <i>Edible films as oral delivery systems for xanthines extracted from medicinal plants: an experimental design approach</i>
12.10 – 12.30	Ana Raquel Madureira, UPC, Porto, Portugal <i>Sage and savoury herbs extracts encapsulated in solid lipid nanoparticles: effect in human gut microbiota</i>
12.30 – 13.00	Ana Oliveira, UPC, Porto, Portugal <i>Innovative application of calcium dips at different pH on quality improvement of ready-to-eat baby-leaf spinach</i>
13.00-13.30	Discussions. Questions and answers
13.30-14.30	Lunch
14.30-15.30	Session V. Posters
15.30-16.30	Conclusions and Closing session
16.30-18.00	Cocktail





Cuvânt înainte

Natura ne oferă hrană, tratamente și stare de bine prin ingrediente alimentare, funcționale atât din punct de vedere nutritiv, cât și tehnologic, condimente și compuși bioactivi. Plantele aromatice și medicinale întrunesc toate aceste beneficii al căror potențial este încă explorat.

Utilizate în alimente sau suplimente alimentare, plantele aromatice și medicinale sunt procesate utilizând diferite tehnologii sau biotehnologii cu ajutorul cărora se încearcă menținerea la nivel cât mai ridicat a compușilor nutritivi, bioactivi, de aromă, de conservare sau de culoare.

Noile cerințe ale consumatorilor cum ar fi nevoia de alimente sănătoase, de atribute senzoriale cât mai rafinate sau de durabilitate, impun dezvoltarea sectorului de plante aromatice și medicinale și produse ale stupului, dezvoltarea unor tehnologii inovative de procesare a lor, creșterea biodiversității și bunăstarea animalelor.

Foreword

Nature offers us foods, treatments and wellness through food ingredients, functional from the nutritive and technological point of view, spices and bioactive compounds. Aromatic and medicinal herbs have all these benefits with a huge potential still unexplored.

Used in food or food supplements, aromatic and medicinal herbs are processed using different technologies or biotechnologies trying to maintain as much as possible the nutritive and bioactive compounds, aroma, preservative compounds and natural colorants.

The newest awareness and requests of consumers are healthy foods, new and refine sensorial attributes or sustainability which are imposing a new approach of development of aromatic and medicinal herbs sector, development of innovative technologies for their processing, increasing of biodiversity and animal welfare.

Nastasia Beke

SESSION

Innovative applications of medicinal and aromatic plants and vegetable by-products

Food for the future: trends and challenges for the sector

Manuela Pintado

*CBQF/Escola Superior de Biotecnologia da Universidade Católica Portuguesa, Porto,
Portugal*

Abstract

Food security and quality improved extremely in the industrialized world, however new challenges have been raised to agrofood industry. Climate changes, the impact of food production on the environment, the food consumption (availability) trends and projections, the changes in food consumption over the past 50 years that are associated with rising rates of obesity and chronic diseases such as cardiovascular disease and cancer are some of the main challenges that require new food options to provide nutritious and healthy diets to overcome malnutrition. In future agrofood industry and policies must reflect both agrofood and health sectors, thereby allowing the development of rational and sustainable solutions that will benefit agriculture, human health and the environment.

So, during this presentation some opportunities and trends will be discussed targeting the specificities of the subsector looking forward to improve or to produce new food products and the role and the added value of aromatic and medicinal plants.

Keywords: *food security, climate changes, human health, aromatic and medicinal plants.*

Corresponding author: *Manuela Pintado*

E-mail address: *mpintado@porto.ucp.pt*

Sustainable strategies for integrated management of agroindustrial fruit and vegetable wastes. AGROWASTE project

Miguel Ayuso García

CTC, Molina de Segura, Murcia, Spain

Abstract

AGROWASTE is a LIFE project (LIFE10ENV/ ES/469) which aim is to help processed vegetables companies in their decision making of organic waste and by-products recovery and valorization. This project has been developed in the Region of Murcia (Spain) because this region concentrates a great variety of food companies that generate a significant amount of organic wastes and by-products susceptible to be valued, using appropriated technologies.

The project has developed two databases; the first relating to the types, characteristics and quantities of by-products and organic waste generated by vegetable and fruit canning industry of Region of Murcia and the second dealing with the different valorization technologies.

AGROWASTE has also carried out practical demonstrations of three of the main routes of recovery of by-products and organic waste:

- *Identification and extraction of compounds of interest and their application in the food industry*
- *Development of organic substrates for use in advanced agricultural industry and*
- *Obtaining energy by biomethanisation.*

Keywords: *valorization, wastes, byproduct, interested compounds.*

Corresponding author: *Miguel Ayuso García*

E-mail address: *ayuso@ctnc.es*

**Valorization of citrus industry by products as natural gelling agent.
Application in vegetable based filling for bakery industry.**

LIFECITRUS project

María Dolores Lopez,

Pedro Sanchez-Campillo, Presentacion Garcia, Angel Martinez

Sanmartin, David Quintin Martinez

CTC, Molina de Segura, Murcia, Spain

Abstract

EU citrus fruits production is concentrated in the Mediterranean region. Spain represents nearly the 60% of the EU-28 total production and Italy about 30%; the remaining 10% is distributed among other Member States, mainly Cyprus, Greece and Portugal. The European citrus sector is strongly oriented towards the fresh product market. However, the convenience of citrus juice (mainly orange juice) is reflected in its better adaptation to modern consumption habits than whole fresh fruits. Orange Juice Spanish production is concentrated in the regions of Murcia and Valencia.

The processing of citrus fruits has different phases from the collection of raw materials to the final product. During this process, a significant amount of waste is generated. Management and elimination of this waste is usually derived to direct animal feeding. This solution is not the adequate way to manage the huge volume of citrus waste produced, and they are not supported by the advanced scientific and technical approaches.

CTC has positively tested, at laboratory scale, an innovative process for treating residues coming from the citrus juice and citrus essential oil industries, particularly with lemon discarded parts, with which a natural gelling ingredient is obtained to be used in the food industry. This method also works using other citrus fruits scraps, even with the rejected stuff from fresh citrus fruits packing or the citrus discarded rinds.

The aim of the Life+ LIFECITRUS project is to thoroughly demonstrate, at semi-industrial scale, the effectiveness of this process for the valorization of a wide range of citrus fruit residues.

Keywords: *citrus wastes, natural gelling ingredient, thickeners, circular economy, zero waste.*

Corresponding author: *María Dolores López Martínez*

E-mail address: *lolalopez@ctnc.es*

Development of new active containers with natural additives from agrofood wastes

David Quintin Martínez

Maria Dolores López Martínez

CTC, Molina de Segura, Murcia -Spain

Abstract

Technologies used in preservation of ready to eat fruits and vegetables are cooling (production and distribution, storage and marketing) and modified atmospheres packaging. Active packaging with antioxidants and antimicrobial agents are the best way to prevent spoilage of fruits and vegetables. Rooney M.L., 1995.

The main objective of the NATAL project was to obtain flexible packaging and active separators films with antimicrobial and/or antioxidant properties from natural additives derived from agro-industrial waste applicable to a wide range of food and conservation processes. The agro-industrial productions wastes that were studied were onion, wine by-products, tomato residues, etc.

The main advantages of the obtaining of "active" additives are to valorize wastes, to reduce dependence on big companies that offer synthetic additives at very high costs and finally the freedom to design a specific food additive for a specific food product.

The following activities were carried out under the NATAL project:

- *New antimicrobial coatings based on chitosan films and microencapsulation of additives.*
- *Study and monitor the migration kinetics of different extracts in flexible films*
- *Development of flexible food packaging with excellent mechanical and thermal resistance.*
- *Insert active extracts the plastic of flexible containers to obtain active packaging.*
- *Development of active separators for sliced food. These active separators in contact with food improve shelf life of these products.*

Keywords: *active packaging, natural additives, antimicrobial, antioxidant.*

Corresponding author: *David Quintin Martínez*

E-mail address: *dquintin@ctnc.es*

The Benefits of Bee Pollen

Petronela Matei

Apicola Pastoral Georgescu, Bucuresti, Romania

Abstract

Pollen, the male gametophyte of flowers, collect it as granules is not only the main protein source of food for the bees, but used in direct human food because of its therapeutic claims (almost the same properties as in herbal origin). The Benefits of Bee Pollen – as a wide range of nutritional value and therapeutic properties claims is supported by scientific based evidence. The therapeutic properties, the concentration of bio medicinal components: nucleic acids, essential amino acids content, big content of fibers, the biological active substances such is: flavonoids, phytosterols, significant quantities of several vitamins and minerals etc. is depending on the botanical source of pollen. Monoflower pollen has the same herbal origin: Crataegus monogyna (Hawthorne flower pollen), Salix sp. (Willow pollen), Prunus sp. (Plum flower pollen), Rosa canina (Wild-rose flower pollen), Malus domestica (Appel flower pollen), Calluna vulgaris etc. with many scientific studies regarding multiple benefits. Bee pollen is defined, also, as functional food because it can be used for certain health functions such as an antioxidant, anti-inflammatory activity, and/or antimicrobial agent. Fresh, bee pollen can be frozen and stored under nitrogen until consumption for preservation of optimal biological and nutritive properties, keeping the maximum enzymatic, ferments and lacto-ferments activity, which are essential for benefic effects on normal human health.

Keywords: *bee pollen, herbal origin, botanical origin, therapeutic properties, health.*

Corresponding author: *Petronela Matei*

E-mail address: *Calitate@apicola.ro*

**Creation of several bakery products based on
Chlorella vulgaris algae
Laia Alemany,
Joaquin Del Rio**

Juan y Juan Industrial, Grupo Dulcesol, Villalonga, Spain

Abstract

INTRODUCTION: *There is an increasing interest in the use of natural ingredients to produce functional food. Microalgae has shown viability in meeting nutritive demands due to their rapid growth, health benefits, and enriched compounds they produce, so, they are being used in the formulation of different products in order to introduce polyunsaturated fatty acids, pigments, antioxidants, vitamins, carotenoids and vegetable protein with a high quantity of essential aminoacids.*

AIM: *To study different sub-types of *Chlorella vulgaris* strain to use it in new bakery products.*

METHOD: *The subtype comparison, medium selection, protein quantification and fatty acid characterization were performed at laboratory scale. A high-efficiency harvesting procedure is carried out in closed tubular photobioreactors to ensure aseptic conditions and reduce contamination. After centrifugation, the algae biomass is added to several products at laboratory scale and at factory production level.*

APPLICATION & RESULTS: *Several percentages of algae biomass were incorporated in the standard formulation of the tested products. However, other compounds included in the formulation of those have been adjusted in order to obtain a great texture and taste to guarantee an organoleptic quality product potentially accepted by consumers.*

CONCLUSIONS: *The proportions and formulations of new products containing algae were adapted to accomplish our target parameters.*

Keywords: *Chlorella vulgaris, bakery product, microalgae.*

Corresponding author: *Laia Alemany*
E-mail address: *laia.alemany@dulcesol.es*

Youth Perception and Attitudes of Bakery Foodstuffs among Consumers of Ramnicu Valcea Town

Alexandrina Sirbu

"Constantin Brancoveanu" University, FMMAE Ramnicu Valcea; COPE Ltd. Costisa-Neamt, Romania

Abstract

Romanian market trends related to consumption of the bakery products have been significant changed in the last decade, from a perspective of the consumption patterns and attitudes manifested in the market by consumers. Eating outside the home and health concerns are only a few factors, which have influenced the demand for bakery and farinaceous products.

In this work was carried out a study on consumers' perception and attitudes towards bakery products that have been expressed by young people in Ramnicu Valcea in spring of 2016.

Consumer behavior has been analyzed through a survey, the procedure being applied according with a classical marketing methodology based on questionnaire and interview.

Results showed that the bread remains in the center of youth diet, being associated with other foods for consumption. Also, the degree of preference for bread and its specificity were assessed.

However, a substitution effect has been observed; consumption of bread is declining in favor of other bakery products and specialties. The number of those who consume bread made of flour from cereals other than wheat is quite low; and consumer preferences for white bread persist although marketers have promoted assiduously other types of bread, such as whole-meal breads, fiber-enriched ones etc.

Keywords: *consumer behavior & perception, youth, bakery.*

Corresponding author: *Sirbu Alexandrina*

E-mail address: *sirbu.alexandrina.ro@gmail.com*

SESSION

Bread – The perception of consumers, specialists, mass-media

Trends of Innovation in Bread and Bakery Production

Mona Elena Popa

Amalia Carmen Mitelut, Georgiana Stefanoiu, Elena Tanase

University of Agronomic Science and Veterinary Medicine of Bucharest, Romania

Abstract

Bread, mostly made from wheat, is an essential constituent of the human diet and the nearly ubiquitous consumption places it in a position of global importance (VTT, public release, 2010). There is a need of innovation in bread making for attracting more people who are more reluctant for traditional products. One trend in bread making is related with the whole grain which is more and more used in bread and bakery industry. Cereal grains contain fiber and other health promoting compounds, making them ideal ingredients for functional foods that target outcomes such as cholesterol reduction and glycemic control. Genotype and growing environment can vary the levels of bioactive compounds in cereal grains, which present opportunities for breeders, producers, grain handlers and processors to select for improved nutritional quality of products.

Another trend is related to the shelf life of these products. Baked products are perishable foods that undergo severe physical, physiochemical, sensory and microbial changes during storage. Essential oils (EOs) have attracted attention because of their antimicrobial and antioxidant properties. The applications of essential oils are diverse, but many of them are focused on development of methods that prolong shelf- life of products, such as active packaging through encapsulation of EOs in packaging material or label in order to be slow released of volatile active compounds.

Keywords: bread, bakery products, whole grains, essential oils, active packaging.

Acknowledgements: The research leading to these results has received funding from Romanian - EEA Research Programme operated by MEN under the EEA Financial Mechanism 2009 - 2014 and project contract no. 1SEE/2014.

Corresponding author: Mona Elena Popa

E-mail address: pandry2002@yahoo.com

Healthy Products - the Key for an Adequate Nutrition

Camelia Arghire

Georgiana Gabriela Codină

Enzymes & Derivates S.AP, Costisa, Romania

Abstract

Bakery products are very important foods, situated at the base of the nutritional pyramid. Nowadays we assist at the increase of the diseases caused by an inadequate consumption of food or by less healthier food. Food industry specialists face an important challenge - to obtain products with a better quality from nutritional point of view, which combine good sensory and technological properties. Various ingredients and additives are used to increase the shelf life of bakery products- their necessity being demonstrated and legally reglemented. Preservatives, emulsifiers, gums or dyestuffs can be substituted in the bakery products recipe with natural products that lead to the same effects as the additives mentioned above. Bakery tests for substituting different additives, as mono - and diglycerides, DATEM (known as E 471 and E 472 respectively) were done through different mixtures of enzymes, based on phospholipases. The occurrence of a rancid smell and taste may be reduced or even eliminated by using antioxidants like rosemary extracts. Also, inulin fibers, citrus or pea may improve bread nutritional quality due to its impressive functional properties. The technological aspect could be improved also, because the fibers control moisture and could partially replace eggs, oils, fats, synthetic ingredients. Clean label bakery products may lead us to a healthy nutrition, which could allow the actual and the future generations a safe premise for a healthy life.

Keywords: *clean label, preservatives, enzymes, fibers, functional products.*

Corresponding author: *Camelia Arghire*

E-mail address: *camelia.arghire@enzymes.ro*

The Modern Biotechnological Solutions for High Quality Bread

Ana Maria Grigoriu Giulescu

SC Gama Serv 95' Srl, Bucharest, Romania

& Novozymes A/S

Abstract

Bread is a staple food in human diet. The quality of baked products is influenced with many factors such as flour quality, method of dough making procedure, process parameters, recipes, type of bread, etc. Raw materials used in baked products are characterized with diverse characteristics and inconsistent quality causing instability of the finished products' quality.

Wheat flour is main and essential ingredient in the baked products recipes. Due to dramatic climate changes, it has been observed a high variability of wheat flour quality. Due to growing consumers' demand of high bread quality, the optimization of flour quality with improving systems is one the major means of technological process.

Consumers continuously demand higher standard products, which urges producers to follow the market trends and continuously improve their products and formulations. Biological solutions and enzymes proved to be one of the most efficient methods to improve the quality of bread. The enzymes are used in bread making for decades. The use of enzymes in baking is constantly growing – offering flexible and high-performing solutions that help to open full flour functionality, stabilize the process parameters and ensure or improve the quality of dough and the final products.

Enzymes that are used in in bakery and milling industry are: alfa-amylases, xylanases, lipases, glucose-oxidases, gluco-amylases, maltogenic amylases and others.

The purpose of this research is to deliver the key messages about the origin of enzymes, their mechanism of actions and benefits of enzymes applications in Romanian industry.

Keywords: *enzymes, bread.*

Corresponding author: *Ana Maria Grigoriu Giulescu*

E-mail address: *office@gama-serv.ro*

Aspects Regarding the Use of Indigenous Ingredients in Obtaining Bakery-pastry Products

Adriana Dabija

Stefan cel Mare University of Suceava, Suceava, Romania

Abstract

The global food market and consequently that of bakery products is dynamic and contributes to increasing competition due to technical and scientific progress and consumer demands. Milling and bakery industry experts give great importance to the diversification of the range of products in order to meet consumer demand. New product ideas stem from seeing trends worldwide, which is applied to each region, and manufacturers are now combining innovation and tradition in the development of new products.

Today, bread remains perhaps the most important food in the world. In Romania there is, according to statistics, about 400 varieties of bakery and industrial pastry products. Monitoring market trends constantly leads to new products.

Nutritional food design is achieved in practice by students of the field of Food Engineering, and by also participating in international competitions like the ECOTROPHELIA content, an event which focuses on developing eco-innovative food products with commercial potential in the European Union.

In this competition students presented some innovative bakery-pastry products which capitalize on various local ingredients: dill, basil, pine nuts, berries, artichoke, sea buckthorn, plum, lavender, etc. There have also developed products that used in their manufacturing recipe by-products from the food industry such as: whey, buttermilk, spent grains, fruit pulp etc.

During these competitions students have the opportunity to capitalize on their knowledge gained in college and their inventiveness. For students, this competition can be a springboard both nationally and internationally.

Keywords: *dill, basil, pine nuts, by-products, capitalize.*

Corresponding author: *Adriana Dabija*

E-mail address: *adriana.dabija@fia.usv.ro*

Inactivation by Radiofrequency Treatment of *Penicillium commune* and *Penicillium crustosum*, Fungi with High Incidence in Bread Spoilage

Georgiana-Aurora Ștefănoiu¹

Amalia Carmen Miteluț¹, Paul-Alexandru Popescu¹, Elisabeta Elena Tănase¹, Mihaela Cristina Drăghici¹, Mona Elena Popa¹, Radu Cramariuc², Ana Maria Balaurea-Chirilov³, Gabriela Mohan⁴

¹University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania

²Competence Center of Electrostatic and Electrotechnologies, Bucharest, Romania

³S.C. Vel Pitar S.A., Bucharest, Romania

⁴National R&D Institute for Food Bioresources INCDBA-IBA Bucharest, Romania

Abstract

This study was conducted to determine the efficacy of radio frequency (RF) treatment in combination with pre - heating for control of mould in rye bread. In this study was used a 27.12 MHz RF system to apply treatment protocols. The samples were prepared without yeast, they were put in Petri dishes and inoculated with bread spoilage fungi with high incidence in cereals and in bakery: *Penicillium commune* and *Penicillium crustosum*. The identification and isolation of these two fungi were realised by Biolog MicroStation System MicroLog Equipment located in the Microbiology Laboratory- ELISA from Institute of Food Bioresources Bucharest (INCDBA-IBA) in accordance with the methods set out. For each sample were used three replicates. The samples were subjected to radio frequency treatment at three different temperatures (60°C, 80°C and 100°C) in order to establish the efficacy of treatment against growing of fungi. Before the RF treatment the samples were pre - heated at two different temperatures (25°C and 40°C) to avoid the phenomenon of condensation and for better heating uniformity. In both cases the development of fungi on the surface of the treated samples began over 20th day for the samples treated at 60°C, 80°C and 100°C compared to control, which had a normal growth on rye bread surface, starting with 2nd day from inoculation. Especially it was observed that in the case of control samples inoculated and pre - heated at 40°C the growing of fungi started more slowly for *Penicillium crustosum* and *Penicillium commune* even after 7 days from the inoculation date in comparison with the same inoculated samples but without pre-heating treatment. The results are promising and show that RF heating represents a good perspective for increasing shelf life of the tested type of bread.

Keywords: bread spoilage, preservation, radiofrequency treatment, rye bread, *Penicillium commune* and *Penicillium crustosum*.

Acknowledgements: This paper was published under the frame of Partnerships in priority areas Programme, PCCA Contract no. 164 / 2014, RAFSIG.

Corresponding author: Georgiana-Aurora Ștefănoiu

E-mail address: stefanoiu.georgiana@yahoo.com

SESSION

Medicinal and Aromatic Plants: extraction of bioactive compounds and application as ingredients in natural products

Medicinal and aromatic plants - a powerful tool in ecological education

Petronela Camen Comănescu¹,
Niță Eugenia¹, Anastasiu Paulina²

¹Botanical Garden "D. Brandza", University of Bucharest, Romania

²Faculty of Biology, University of Bucharest, Romania

Abstract

Every country has its own medicinal and aromatic plant treasure, unique to a culture or society. This knowledge passed over the time, usually by word of mouth and cultural rituals, and has been the basis for health care, agriculture, education and the wide range of other activities that sustain societies in many parts of the world.

The accelerated urban tempo has influenced the loss of oral traditions; children prefer to watch television rather than listen to their grandparents' stories or walk in nature.

The botanical gardens have an important role in maintenance of the cultural heritage and traditional use of plant species. Through educational programmes for young people, Botanical Garden "D. Brandza" promotes the importance of medicinal and aromatic plants in our daily lives and the necessity of conservation of the natural resources.

Our activities propose a sensory approach, children could touch, taste and smell plants, in the same time learning about the traditional use of them.

Keywords: *education, children, botanical garden, plants.*

Corresponding author: *Petronela Camen Comănescu*

E-mail address: *vpetronela@yahoo.com*

Aromatherapy based on volatile oils in honey as monodoses without preservatives

**Gabriela Vlăsceanu,
Ștefan Manea**

SC Hofigal Export Import SA Bucharest, Romania

Abstract

Volatile oils or *aetheroleum*, called improperly essential oils or flavorings are products of plant secondary metabolism, volatile, with fragrant flavor. They are mixtures of chemical constituents with various therapeutical properties but with a level of toxicity. Their knowledge is a prerequisite for practicing aromatherapy doctor.

Aromatherapy means using of essential oils in curative, preventive or improvement of various diseases (infectious, psychiatric, metabolic, and endocrine). Aromatherapy done huge benefit in pharmacotherapy as allowing eradicate many diseases with milder means than those offered by synthetic chemistry, provided they are well chosen, for the purposes of assessing therapeutic efficacy.

V.o. toxicity due to abuse and is printed by certain chemical constituents. Appear after prolonged use, by accumulation of doses (chronic). Therefore, the volatile oils can be administered as aerosols (in respiratory diseases or disinfection); for oral, Hofigal Export Import SA provides a *single-dose form*, with volatile oils incorporated into honey. Thus, single-dose administration that combines the benefits of essential oils with honey properties:

- not allowing direct contact of v.o. not irritating mucous membrane.
- by right dosage is eliminated the toxicity associated with higher doses.
- although no preservatives, ensure product stability, not in contact with air, without risk of microbiological contamination to reuse.
- single-doses are designed to adjust dosage and administration to the allopathic way of thinking also, according to the relation “dose-effect”.

Keywords: *aromatherapy, volatil oil, single-doses, Hofigal.*

Corresponding author: *PhD. Pharm. Gabriela Vlăsceanu*

E-mail address: *terapii_noi@hofigal.eu*

Quality and safety requirements for herbs and herbal food supplements

Tatiana Onisei

Radu Stoianov, Adina Raducanu

National R&D Institute for Food Bioresources INCDBA-IBA Bucharest, Romania

Abstract

Medicinal plants producers, raw material suppliers for herbal products as well as food business operators have to implement good manufacture practices along the whole food chain.

As plant quality is responsible both for the consumers' safety and for the product efficacy, we'll focus on the main threats and health risks linked to the products promoted as "100% natural".

GMP for medicinal plants cultivation and harvesting from wild flora as well as the importance of the environment will be reviewed. The impact of the quality of air, water and soil on the plant bio-productive parameters, such as biomass production and bioactive compounds content will be discussed. Main risks like air pollution, water and soil contamination are identified and commented in direct correlation with the plant capacity of accumulation and metabolism. Herbal teas are the most relevant study cases in this direction, so the most used plants by the Romanian producers (top 5) and the main teas from the market will be analysed. For herbal food supplements as final products of plant processing, quality management system implementing is extremely important. Hygienic rules, employees qualification and health, equipment maintenance, biochemical and microbiological analyses of raw material before manufacturing, packaging and labelling are some of the main issues aiming to ensure quality and safety products on the market.

In herbal food supplements having as origin non-EU countries there were registered specific problems of quality and safety, such as authenticity (plant substitution), conformity with the listed ingredients (adulterants), minimal content of bioactive compounds (no efficacy).

Keywords: *bioactive compounds, herbal food supplements.*

Corresponding author: *Tatiana Onisei*

E-mail address: *tatiana.onisei@bioresurse.ro*

Introductory Remarks to Medicinal and Aromatic Plants and Spices

Ákos Máthé

No Gravity, Bratislava, Slovakia

Abstract

Spices, condiments and flavoring plants are generally aromatic plants (i.e. plants with a pleasant taste and odor). Their history, similarly to that of Medicinal and aromatic plants (MAPs) overarches the time span of mankind. These species and their utilization/products are manifold.

Early forms as complemented by the up to-date areas of utilization (e.g. food and feed additives, dietary supplements and nutraceuticals) constitute powerful drivers for the exploitation (frequently overexploitation) of these natural resources.

Research, production as well as utilization of MAPs have been greatly affected by the availability of raw materials.

Production, i.e. wild-crafting and cultivation of good quality spices to be used safely and with efficacy have become a precondition both for the various forms of uses and the preservation of frequently natural resources in high demand.

Appropriate policies and legal frameworks, standards, etc. (Good Agricultural and Collection Practice, Good Manufacturing Practice, Fair Trade, etc.) have been elaborated to safeguard sustainable utilization.

Production trends with increasing popularity, e.g. organic production, where crops are produced with respect to their natural life cycles, aimed at producing both healthy commodities and adding value to the produce. Despite a growing demand for organic spices and herbs in the EU, the quantities consumed vary by product and region.

The EU is a net importer of spices and herbs. A dominant part of the EU exports consists of spices and herbs which have been imported and re-exported to other EU and overseas markets.

Keywords: *medicinal and aromatic plants, spices.*

Corresponding author: Ákos Máthé

E-mail address: akos.mathe@upcmail.hu

Botanicals Regulation in the EU; the potential for a viable regulatory framework

Magdalini Selanikli

Regulatory Affairs Manager, ISO PLUS Group, Athens, Greece

Abstract

Botanicals are defined by the Scientific Committee of the European Food Safety Authority (EFSA) as ‘...all botanical materials (e.g. whole, fragmented or cut plants, algae, fungi and lichens) obtained [...] by various processes (e.g. pressing, squeezing, extraction, fractionation, distillation, concentration, drying up and fermentation).’ (2009;7(9):1249:1). Botanicals are used widely in food supplements through the world, both as part of nutrition as well as in folklore medicine. Approximately 2000 health claims for botanicals are awaiting assessment by the European Food Safety Authority (EFSA), since 2010 when the evaluation of these claims was put on hold due to the doubts as to the appropriateness for botanicals of the requirements outlined by the EU Health Claims Regulation (EC) 1924/2006. The market for botanical food supplements in the EU is estimated to be worth approximately €2.1 billion per year and the vast majority of companies manufacturing botanical food supplements are SMEs. In Romania, the size of the food supplements market is €200m with botanicals accounting for up to 25% of that total.

Many EU member states has established their own regulatory regimes related to botanicals, to control sufficiently safety, efficacy and claims, mainly under the umbrella of traditional use. Romania, Italy, Belgium effectively operate their own evaluation systems, however is that enough to guarantee the fair application of mutual recognition across the entire EU? How do we address the borderline issue? This contribution will examine the current practices of EU member states in enforcing systems of quality and claims evaluation in the field of medicinal and aromatic plants and their impact on the application of Mutual Recognition regulation in the EU. This contribution will also evaluate the tools developed by and available to industry for self-regulation in this area.

Keywords: *botanicals,safety, efficacy, traditional use, mutual recognition.*

Corresponding author: *Magdalini Selanikli*

E-mail address: *mselanikli@iso-plus.gr*

The peroxy scavenger capacity of “Natural SOD” vegetal extract

Lidia Cremer,

Andreea-Roxana Lupu

*Immunomodulation Group, “Cantacuzino” National Institute of Research, Bucharest,
Romania*

Abstract

Among commonly studied reactive oxygen species, the peroxy radicals play a special role due to their importance in biological systems, appearing as end-products of oxygen reactions with alkyl radicals. Searching for products with appropriate peroxy scavenger properties is of actual interest.

In our study we used Oxygen Radical Absorbance Capacity (ORAC) method to assess the antioxidant capacity (peroxy radicals scavenger properties) during the phases of the technological process for obtaining Natural SOD, a green barley extract patented in Romania by „Cantacuzino” National Institute of Research. Another purpose was to evaluate the necessity to test each product batch, due to the quality of the raw material. Finally, we aimed to establish the acceptance range for the antioxidant capacity of Natural SOD, compared with ascorbic acid (a well characterized antioxidant).

The obtained results showed that peroxy scavenging activity of Natural SOD could be an indicator of raw material quality. The specific ORAC values of each batch were not significantly modified during the technological process. Using an acceptability range as a reference for supplementary checking of the batches in the current production, the thoroughness of the quality control protocol will be increased.

We conclude that ORAC assay is a valuable quality control method for antioxidant (peroxy radical scavenger) capacity of Natural SOD product.

Keywords: *antioxidant, peroxy radical scavenger, ORAC, green barley extract, Natural SOD.*

Corresponding author: Lidia Cremer

E-mail address: lidia_cremer@yahoo.com

Edible films as oral delivery systems for xanthines extracted from medicinal plants: an experimental design approach

Pedro M. Castro^{1,2},
Ana Oliveira¹, Pedro Fonte^{2,3}, Ana Raquel Madureira¹, Bruno Sarmiento^{2,4,5}, Manuela Pintado¹

¹CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto, Portugal

²CESPU, Instituto de Investigação e Formação Avançada em Ciências e Tecnologias da Saúde, Gandra-PRD, Portugal

³REQUIMTE, Department of Chemical Sciences – Applied Chemistry Lab, Faculty of Pharmacy, University of Porto, Porto, Portugal

⁴3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal

⁵INEB – Instituto de Engenharia Biomédica, University of Porto, Porto, Portugal

Abstract

Two formulations of edible films intended for oral delivery of therapeutic xanthines were developed, following an experimental design approach. Gelatin type A and sodium carboxymethylcellulose were used as polymeric matrices with different physico-chemical nature. Caffeine, a well-known methylxanthine, was used as model bioactive molecule, representing overall xanthines (e.g. caffeine, theophylline, theobromine) extracted from medicinal plants. Fourier-transform infrared spectroscopy (FTIR) analysis was performed to outwit the formation of covalent bonds between caffeine and the matrix of edible films. Scanning electron microscopy (SEM) was performed to assess if caffeine was homogeneously dispersed on the matrix of edible films. Simulation of gastrointestinal tract and ex vivo permeability studies across intestinal mucosa were performed to predict the delivery profile of caffeine from developed formulations of edible films. Gelatin type A-based edible films offered a slow release of caffeine whereas sodium carboxymethylcellulose-based edible films promote an immediate release of caffeine.

Keywords: *edible films, sodium carboxymethylcellulose, gelatin type A, xanthines, caffeine.*

Corresponding author: *Manuela Pintado*

E-mail address: *mpintado@porto.ucp.pt*

Sage and savoury herbs extracts encapsulated in solid lipid nanoparticles: effect in human gut microbiota

Ana Raquel Madureira¹,

**Débora Campos¹, Beatriz Gullon¹, Ana Amaro¹, Cláudia Marques²,
Luís M. Rodriguez-Alcalá, Conceição Calhau^{2,3}, Jose Luis Alonso⁶,
Bruno Sarmento^{3,4,5}, Ana Maria Gomes¹, Manuela Pintado¹**

¹CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto, Porto, Portugal

²Departamento de Bioquímica, Faculdade de Medicina, Universidade do Porto, Porto, Portugal

³CINTESIS, Centro de Investigação em Tecnologias e Sistemas de Informação em Saúde, Porto, Portugal

³CICS, Department of Pharmaceutical Sciences, Institute of Health Sciences-North, CESPU, Gandra, Portugal

⁴IS, Instituto de Investigação e Inovação em Saúde, Porto, Portugal

⁵INEB, Institute of Biomedical Engineering, University of Porto, Porto, Portugal

⁶Department of Chemical Engineering, Faculty of Science, University of Vigo (Campus Ourense), Spain

Abstract

Diet components have been shown to have a huge impact in gut microbiota bacteria viability and metabolic activity. Sage and savoury aromatic herbs are popular in Mediterranean countries and are used in culinary and natural medicinal applications, owing to their biological properties attributed to their phenolic compounds composition. On the other hand, solid lipid nanoparticles (SLN) can be used for oral delivery of phenolic compounds, in order to protect them from the digestion harsh conditions and improve their bioavailability at intestinal epithelium. Recently, the production and characterization of SLN loaded with herbal extracts was performed for future use as functional food ingredients. Hence, SLN loaded with sage and savoury extracts were evaluated for their effect on intestinal microbiota growth and metabolic products generated. Fermentations in anaerobic batch culture using volunteer human faeces were made during 24 h. Dynamic bacterial populations changes using PCR-real time, generation of short chain fatty acids (SCFA) and lactate and quantification of phenolic compounds and fatty acids by analytical methods were performed. Solid lipid nanoparticles released phenolic compounds at non-inhibitory bacterial growth concentrations. Released herbal extracts phenolic compounds by SLN showed a beneficial effect on gut microbiota growth (e.g. bifidogenic effects) and were used as a substrate.

Acetate, formate, lactate and butyrate are produced in higher concentrations. Released phenolic compounds also induce PUFA metabolic activity and trans fatty acids, and production of saturated fatty acids, as well potential beneficial conjugated linoleic acid isomers. Solid lipid nanoparticles loaded with herbal extracts modulate gut microbiota and metabolic activities.

Keywords: *sage, savoury, encapsulated, gut microbiota, PCR-real time, SCFA, phenolic acids.*

Innovative application of calcium dips at different pH on quality improvement of ready-to-eat baby-leaf spinach

Ana Lúcia da Silva Oliveira¹,

Ana Luísa Amaro¹, Jason de Sain², Maria Manuela Estevez Pintado¹

¹Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto, Porto, Portugal

²Vitacress, Portugal SA, Quinta dos Cativos, Boavista dos Pinheiros, Odemira, Portugal

Abstract

*Spinach is a Mediterranean food rich in vitamin C and flavonols which are reported to exhibit multiple biological functions such as anti-allergenic, anti-inflammatory, antimicrobial, anti-oxidant, cardioprotective and vasodilatory effects. Their nutritional value could be decreased during industrial mechanical operations, through the enzymes release. The purpose of this work was to apply innovative applications of calcium under different pH on texture maintenance and structure preservation of ready-to-eat (RTE) baby-leaf spinach (*Spinacia oleracea* L.) was studied. Spinach leaves were treated with calcium chloride, calcium lactate and calcium propionate, at two different pH conditions (5 and 7), packaged and stored for 7 days at 5 °C. After 24 h, the crispness increased 49% and 29% for leaves treated with calcium chloride and lactate at pH 5 and the elasticity increased to the double after calcium propionate treatment at pH 7. The tissue flexibility decreased (20-60%) for all calcium treatments at pH 5 and pH 7 while tissue crispiness increased (7-40%) only for calcium treatments under pH 7. The electrolyte leakage was higher for all calcium treated samples when compared with controls and increased throughout storage. Total vitamin C content was lower in leaves treated with calcium chloride at pH 5 (31%) and pH 7 (19%) while the remaining treatments did not impact vitamin C content.*

The different calcium additives tested for potential texture quality maintenance did not provide the expected benefits on baby spinach leaves but increasing solution pH from 5 to 7 lead to an increased firmness by the end of shelf-life.

Keywords: *Spinacia oleracea, calcium treatments, firmness, quality parameters.*

Corresponding author: Maria Manuela Estevez Pintado

E-mail address: mpintado@porto.ucp.pt



SESSION

POSTERS

Design and Development of an e-Learning Course on Aromatic and Medicinal Plants

E.L. Cardoso¹,

A.L. Amaro¹, T. Melo¹, G. Adamek², N. Belc³, A.M. Sanmartín⁴

¹ CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto Porto, Portugal

² University of Economics in Bratislava, Slovak Republic

³ National Research & Development Institute for Food Bioresources – IBA Bucharest, Romania

⁴ Centro Tecnológico Nacional de la Conserva y Alimentación Murcia, Spain.

Abstract

The emerging applications of Aromatic and Medicinal Plants (AMP) production, processing and storage have the potential for adoption at a large scale but there is the need to produce and transmit knowledge through research and education and to promote training on these relevant subjects. The “GoodHerbs” project funded by the European Erasmus+ Program, involves partners from Portugal, Spain, Romania and Slovenia and one of its objectives is to design and develop courses on AMP, through e-learning for an enlarged audience. The development of this courses followed an analysis and integration of the learning needs to new technological trends that influence the food sector. An overview of the current and projected applications for the food and related sectors was performed showing that they offer a variety of benefits to the whole of food chain – from innovative tastes and textures, to a potential reduction in the dietary intake of salt and other food additives, improved antioxidant capacity, increased bioactive compounds intake and preservation of quality with positive health effects. An e-learning system based course was developed following the ADDIE (Analysis, Design, Development, Implementation and Evaluation) methodology which is a generic process traditionally used as a reference in the production of courses based in e-learning technologies. The five phases represent a dynamic and flexible guideline that allows us to track and keep improving the entire process. This model was adapted to design a course reinforced by a laboratory in-class component. The course prototype developed and implemented is ready to be exploited by the AMP community.

Keywords: aromatic and medicinal plants, food, nutrition, wellbeing, e-learning.

Corresponding author: Eduardo Luís Cardoso

E-mail address: ecardoso@porto.ucp.pt

Satiety Innovation
Presentacion Garcia Gomez,
Angel Martinez Sanmartin
CTC, Molina de Segura, Murcia, Spain

Abstract

Why do some foods fill us up quicker than others? Food experts understood that flavor, texture and visual appeal of foods contribute to the sensation of being “full”. The SATIN FP7 research project is dedicated to identify which ingredients and processing methods of several food components (proteins, carbohydrates, fats) and categories (bread, fish, dairy etc.) accelerate satiation, suppress appetite and extend satiety until hunger appears again. Satiety-enhancing foods can help with energy intake and weight control.

SATIN – SATiety INnovation is a five year, €6 Mill. EU funded project which aims to develop new food products using the latest processing innovation techniques. Exploiting better understanding of the biological processes in the stomach and the brain that underpin what makes us feel “full”, the project will evaluate whether this approach is a viable weight management tool.

The worldwide prevalence of obesity nearly doubled between 1980 and 2008. According to country estimates for 2008, over 50% of both men and women in the WHO European Region were overweight, and roughly 23% of women and 20% of men were obese (source: WHO).

SATIN represents a consortium of 18 academic and industrial partners from 9 European countries including leading research institutes, large companies and small and medium sized enterprises in the food and retail industry which specialize in novel food formulation, and production.

Keywords: *Satiety, healthy food, obesity prevention, FP7 project.*

Corresponding author: *Presentacion Garcia Gomez*
E-mail address: *sese@ctnc.es*

**Conception of Future Foods Enriched with Active Compounds,
Polyphenols, obtained by the Valorization of Artichoke By-products**

David Quintin Martinez,

Angel Martinez Sanmartin, Presentacion Garcia Gomez, Maria

Dolores Lopez Martinez

CTC, Molina de Segura, Murcia, Spain

Abstract

*Artichokes, *Cynara scolymus*, have been considered for hundreds of years as a favorite food for their taste, while also as a remedy against disease and finally for its beneficial properties for digestion. Spain, together with Italy, is one of the world's largest producers of artichokes that play an important role in the nutritional characteristics of the Mediterranean diet. The active compounds of this plant are mainly found in the leaves, where they concentrate their active principles such as phenolic acids, flavonoids and cinarin that naturally stimulate the formation of bile in the liver. The dietary supplementation with artichoke extracts is able to reduce about 10% cholesterol in the body. Artichokes are extraordinarily rich in polyphenols. Several recent studies have highlighted the extraordinary content of caffeic acid derivatives and flavonoids in the edible parts of artichoke and in by-products obtained during industrial processing of artichoke hearts.*

The use of active compounds as polyphenols, obtained from artichoke industrial by-products, like a natural antioxidant agent and functional ingredient has been studied in different food products. The beneficial effects of polyphenols on health are guaranteed by scientific studies.

Keywords: *Artichokes, byproducts, extracts, polyphenols, zero waste.*

Corresponding author: *David Quintin Martinez*

E-mail address: *dquintin@ctnc.es*

Use of Lemon Peel as Natural Ingredient in Elaboration of Fruit Jams Replacing Synthetic Pectin

Maria Dolores Lopez,
Pedro Sanchez-Campillo, Presentacion Garcia, Angel Martinez
Sanmartin, David Quintin Martinez

CTC, Molina de Segura, Murcia, Spain

Abstract

Due to lemon composition and exceptional properties, either this citrus fruit or part of it can totally or partially replace chemical additives like pectins, acids, antioxidants, etc., in fruit jams elaboration.

Two kinds of jams have been elaborated: High sugar content jam - 63°Brix- and added sugar free (sucrose) - 12-14°Brix. To obtain a stable product that complies with all food safety requirements, heat treatment has been used as cooking and preserving method. This product is packed in hermetic glass containers with sanitary metal twist-off caps. The pasteurization factor has been assured in accordance with the product pH value. pH of peach jams - 63°Brix- was not affected by the incorporation of lemon peel puree, having a similar pH value than traditional jams. Sensory evaluation of high and low caloric jams showed that these jams were considered acceptable, based on hedonic-scale ratings given by consumer panellists. The colour of peach jams turned more luminous. Treated lemon peel pure with fibre content of 10,2 g/100g, from industrial by-products, can be used in other fabrications due to its high functional value

The following goals have been reached: a step forward in exploiting and using all the lemon with almost zero waste; a more natural product with greater added value and better nutritional and functional properties is obtained; a differentiated product with excellent properties is offered to customers -associated to the consumers trend of reducing energy content in food in order to consume healthier products.

Keywords: *lemon peel, jam, natural ingredients, fiber, circular economy, zero waste.*

Corresponding author: *María Dolores López*

E-mail address: *lolalopez@ctnc.es*

Quinoa (*Chenopodium quinoa*) effects as an adjuvant in nutritional intervention in prediabetic subjects

Maria Salud Abellán Ruiz,

Maria Dolores Barnuevo Espinosa, Pilar Zafrilla Rentero, Carlos García Santamaría, Miriam Aldeguer García, Fulgencio Soto Méndez, Isabel Guillén Guillén, Antonio J. Luque Rubia, Carlos J. Contreras Fernández, Francisco Javier López Román

Catholic University of Murcia (UCAM), Murcia, Spain

Abstract

Introduction: Quinoa is a pseudo-cereal containing low glycemic index carbohydrates, dietary fiber, high biological value protein, phytosterols, and n-3 and n-6 fatty acids which have generated interest in prediabetes nutritional interventions. This randomized (2:1), placebo-controlled, double-blind study evaluated the effects of quinoa on body mass index (BMI), glycated hemoglobin (HbA1c), fasting plasma glucose (FPG) and the satiation and fullness (complete) degree in pre-diabetic patients. Material and method: 30 patients were randomized (2:1) in two study arms: quinoa and placebo (maltodextrin), with an intake period of 28 days. BMI, HbA1c and FPG were determined before starting treatment and at 28-day intake. Satiety and fullness sensation was just assessed by visual analog scale (VAS) at the day 28. ANOVA was performed for repeated measures with two factors to study (within-subject factor: time; inter-subject factor: product consumed) to demonstrate the effectiveness of quinoa on the study variables. Results: 29 patients (placebo, n = 10; quinoa, n = 19) completed the study, and the quinoa group shows a significant decrease in BMI ($p < 0.05$) and HbA1c values ($p < 0.001$), and an increase in the satiation and fullness (complete) degree ($p < 0.001$). No significant differences were found in FPG levels from baseline to post-intake period. Conclusions: There results show that quinoa intake during 28 days decreases BMI and HbA1c levels, maintains FPG levels, and increases the satiation and fullness (complete) degree in pre-diabetic patients.

Keywords: *Chenopodium quinoa, pre-diabetes, type 2 diabetes mellitus, body mass index, glycated hemoglobin, satiation, complete.*

Corresponding author: *Maria Salud Abellán Ruiz*

E-mail address: *msabellan@ucam.edu*

The glycaemic index of quinoa (*Chenopodium quinoa*) tested in healthy subjects

Maria Dolores Barnuevo Espinosa,
Maria Salud Abellán Ruiz, Pilar Zafrilla Rentero, Miriam Aldeguer
García, Carlos J. Contreras Fernández, Fulgencio Soto Méndez,
Antonio Martínez Garrido, F. Javier López Román

Catholic University of Murcia (UCAM), Murcia, Spain

Abstract

Background and objective: The Glycaemic index (GI) provides a measure to assess the glycaemic potency of a meal. It gives comparative information about the glycaemic properties of the available carbohydrate in a food on weight for weight basis.

The aim of this research was to enable better control of postprandial concentrations of blood glucose by including in the diet quinoa.

Methods: In accordance with ISO/FDIS 26642:2010, ten healthy subjects ingested the quinoa and the reference meal (White bread) with at least a 1 week gap between measurements to minimize carry-over effects. Participants carried out the study in the morning after a 12 h overnight fast. Subjects were encouraged to keep a minimum physical activity during the testing. Capillary blood samples were taken at 0 min (in the fasting state) and at 15–30 minute intervals over the next two hours after the meal (at times 15, 30, 45, 60, 90, 120, 150 and 180 min). Blood glucose was measured using a calibrated AccuChek® Performa glucometer.

Results: The Quinoa showed a GI of 61.25%, the maximum average concentration was reached 40 minutes, and was 111.10 mg / dl, while white bread obtained before (30 minutes) a higher concentration of blood glucose (126 mg / dl). The area under the curve after consumption of quinoa was 1979.25 g x h / dl, and 3231.45 g x h / dl for white bread.

Conclusion: Quinoa consumption could minimize the peak postprandial blood glucose and have benefits in preventing some chronic diseases such as diabetes.

Keywords: Quinoa, glycaemic index, area under the curve, glycaemic.

Corresponding author: Maria Dolores Barnuevo Espinosa

E-mail address: mdbarnuevo@ucam.edu

Definition and development of functional barriers for the use of recycled materials in multilayer food packaging.

BANUS project, 7th FP, UE

Raquel Giner¹,

Presentacion Garcia², Angel Martinez²

¹AIMPLAS, Valencia, Spain

²CTC, Murcia, Spain

Abstract

BANUS project aims to develop new multilayer structures for food packaging applications, in order to evaluate their properties as functional barriers, using conventional polymers to achieve new functionalities and open new potential markets for the traditional recycling companies in Europe. Taking into account that the main objective of the project is to guarantee the suitability of the developed functional barrier layers, it is necessary to check that, independently of the quality of the used recycled material, the functional barrier is able to avoid any migration of contaminants to food. A great advantage of BANUS approach is to be able to guarantee food safety when using recycled materials (plastic and paper) even coming from non-authorized recycling processes in food packaging structures.

The project considers the substitution of a percentage of virgin material by recycled material (paper or plastic) in the selected structures in order to develop more environmental friendly food packaging structures. As the main requirement of food packages is always to guarantee food safety for consumers, this substitution will be achieved after evaluating the functional barriers positioned between recycled layers and foodstuffs.

Keywords: Bioeconomy, recycled food containers, safety, functional barrier.

Corresponding author: Angel Martínez

E-mail address: angel@ctnc.es

Selection and application of a strain of *Chlorella vulgaris* in an industry of pastries and bakery products

**Laia Alemany,
Joaquin Del Rio**

Juan y Juan Industrial, Grupo Dulcesol, Villalonga, Spain

Abstract

Microalgae comprise a vast group of photosynthetic, heterotrophic organisms which have an extraordinary potential for cultivation as energy crops. They can be cultivated under difficult agroclimatic conditions and are able to produce a wide range of commercially interesting byproducts such as fats, oils, sugars and functional bioactive compounds.

Microalgae provide vegetable proteins of high biological value, w3 unsaturated fatty acids, antioxidants, pigments, minerals and vitamins, so DULCESOL starting working in bakery products based on these microorganisms.

The objectives of this project are:

- *Selection of a suitable strain for the food industry;*
- *Viability of use;*
- *Study of different subspecies. Productivity;*
- *Scaling up. Obtaining microalgae at pilot plant level;*
- *Applications in bakery and pastry.*

Results in different bakery products were presented in the talk as well as the degree of acceptance by the consumers.

Keywords: *Chlorella vulgaris, bakery product, microalgae.*

Corresponding author: *Laia Alemany*
E-mail address: *laia.alemany@dulcesol.es*

Dietary lipids protection from oxidation by lingonberry phenolic extracts *in vitro* digestion conditions

Oana-Crina Bujor^{1,2}, Valentin I. Popa¹, Claire Dufour²

¹Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection, Iasi, Romania

²UMR 408, Safety and Quality of Plant Products, INRA, University of Avignon, Avignon, France

Abstract

The oxidation of polyunsaturated lipids is responsible for not only the deterioration of food quality, but also for damage to tissues and the gastric compartment has been proposed as a major site for diet-related oxidative stress [1]. Lingonberry (*Vaccinium vitis-idaea* L.) is a wild shrub whose fruits and above-ground parts are known as a natural source of food, beverage and dietary supplements due to their richness in bioactive compounds. Among these constituents, polyphenols are found in high content in lingonberry [2].

The aim of this study was the *in vitro* investigation of lipid oxidation in an *in vitro* model of gastric digestion and its inhibition by aqueous and hydroethanolic (55% EtOH, fruits only) extracts of lingonberry leaves, stems and fruits. Dietary lipids in the course of gastric digestion were modeled by sunflower oil-in-water emulsions stabilized by bovine serum albumin (BSA) or egg yolk phospholipids (PL). Oxidation was initiated by the addition of metmyoglobin (20 μ M) at pH 5 and at 37 °C. The accumulation of lipid-derived conjugated dienes was followed by UV spectroscopy at 234 nm.

Leaf and stem extracts (0.1 mg Dry Extract/mL emulsion) proved to be efficient inhibitors of lipid oxidation during digestion in both emulsified systems (42-59% inhibition). Both fruit extracts (0.4 mg Dry Extract/mL emulsion) were the least effective in the BSA model, but more active in the PL model. In conclusion, all the morphological parts of lingonberry can play a protective role towards oxidation of dietary lipids during gastric digestion.

Keywords: *Vaccinium vitis-idaea* L., antioxidant activity, oil-in-water emulsion, digestion.

References:

[1] Ursini F. and Sevanian A., *Biol. Chem.*, **2002**, 383, 599–605.

[2] Bujor O-C., *PhD thesis*, **2016**.

Corresponding author: Oana-Crina Bujor

E-mail address: oana_crin@yahoo.com

**Assessment of phenolic compounds content in
Vaccinium and Crataegus species from natural areas in the
Romanian Eastern Carpathians and Danube Delta**

Camelia Stefanache,

Oana-Crina Bujor, Valentin Grigoras, Doina Danila

NIRDBS/“Stejarul” Biological Research Centre, Piatra Neamt, Romania

Abstract

*The aim of this research was to assess the Total Phenolic Content (TPC) of different extracts of *Vaccinium vitis idaea*, *Vaccinium myrtillus*, *Crataegus monogyna* and *Crataegus pentagyna* leaves and fruits harvested from two natural areas.*

*For this study methanolic extracts of *Vaccinium* samples (fruits, leaves + shoots) collected from the Romanian Eastern Carpathians and 70% hydroethanolic extracts of *Crataegus* samples (fruits, leaves) collected from the limit of Danube Delta Biosphere Reserve obtained from the dried plant material were used. The TPC of extracts was determined by Folin-Ciocalteu method and expressed as mg/g gallic acid equivalents (mg GAE/g).*

*For *V. vitis idaea* extracts, the TPC varied between 37.9 – 40.6 mg GAE/g in fruits and between 59.9 – 64.5 mg GAE/g in leaves + shoots samples while for *V. myrtillus* extracts the TPC was lower and ranged from 18.0 – 20.5 mg GAE/g in fruits and from 35.9 – 37.3 mg GAE/g in leaves + shoots samples.*

*In *Crataegus* samples, the TPC was 14.8 mg GAE/g in fruits and 28.4 mg GAE/g in leaves for *C. monogyna* extracts, while for *C. pentagyna* extracts it was 11.0 mg GAE/g in fruits and 32.6 mg GAE/g in leaves.*

For all species, the fruits extracts showed lower Total Phenolic Content compared with leaves and leaves + shoots.

*The results of this study indicate that *Crataegus* and *Vaccinium* species can be considered as sustainable source of phenolic compounds for the food industry.*

Keywords: *Vaccinium spp., Crataegus spp., phenolic compounds, natural areas.*

Corresponding author: *Oana-Crina Bujor*

E-mail address: *oana_crin@yahoo.com*

Herbal Food Supplements for Weight Loss

Anca Mihaela Popescu,

Manuela Răscol, Șerban Eugen Cucu

*National Research and Development Institute for Food Bioresources – IBA Bucharest,
Bucharest, Romania*

Abstract

Herbal slimming food supplements have become a good alternative for synthetic drugs, being preferred by consumers because of the false impression that there are all natural, with no side effects and not harmful to human health. The effects of herbal slimming food supplements are much more slower compared to those of synthetic drugs.

For this reason, in order to increase efficiency, weight loss food supplements are frequently adulterated with active pharmaceutical ingredients such as sibutramine and its analogues, rimonabant, benzodiazepines, fluoxetine, furosemide, phenolphthaleine.

De Carvalho et al. in 2011 have classified possible types of encountered in adulterated herbal slimming food supplements in five different pharmacological classes: anorexics; anxiolytics; antidepressants; diuretics and laxatives.

Sibutramine was approved as a drug to treat obesity by the Food and Drug Administration (FDA) in 1997 (Meridia manufactured by Abbott's). Because of the side effects (excitation of the central nervous system: nervousness, xerostomia, headache, numbness and paraesthesia; cardiovascular events: increased blood pressure and pulse rate and increased risk of heart attack and stroke) it was withdrawn from the market in January 2010 by the European Medicines Agency (EMA), and in September 2010 by the FDA.

Weight loss food supplements adulterated with sibutramine have led to side effects like headache, vertigo, numbness to serious cardiovascular effects, depending on the amount of product consumed.

Keywords: *herbal food supplements, weight loss, adulterants, sibutramine, side effects.*

Corresponding author: *Anca Mihaela Popescu*

E-mail address: *anca.popescu@bioresurse.ro*

Promising Spicy and Aromatic Plant Species in the Collection of the Botanical Garden (I) of the ASM

L. Chisnicean,

M. Colțun, L. Dombrov

Gradina Botanică (Institut), Academia de Științe a Moldovei, Chișinău, Republica Moldova

Abstract

Currently, the introduction of new spicy-aromatic species and the improvement of the already existing ones are at the basis of solving the problems related to resources for food and perfume industries.

Over several years, the spicy and aromatic plant collections were enriched with numerous species and they currently include 253 taxa (77 and 156, respectively), well known and widely used species, as well as rare, unique species.

These species are very diverse in chemical composition, principle and degree of influence on living organisms. Horseradish, monarda, grindelia and mustard, due to their active principles, have antibiotic properties, lovage, marjoram, parsley, celery, coriander and hyssop improve kidney function, help eliminate excess fluid from the body, the fruit of anise, fennel, dill, caraway, nigella, fenugreek and blue fenugreek stimulate gastric acid secretion and digestion, chervil, dill, parsley, sorrel, aniseed, coriander, garden cress and tarragon normalize digestion, stimulate appetite.

*As a result of the works concerning the improvement of spicy-aromatic species from the collections of the Botanical Garden (I) of ASM, carried out within several years, highly productive varieties, of outstanding quality, tolerant to diseases and pests have been selected and registered in the Catalogue of Plant Varieties of the Republic of Moldova. Among them: *Polymnia sonchifolia* Poepp et Endl. – variety “Savoare”, *Physalis ixocarpa* Jack.ex. Nees. variety Agat GB, two varieties of the species rich in essential oil: *Lavandula vera* Mill – variety “Lavinie de grădină”, *Foeniculum vulgare* Mill. – variety “Peren-1”, other two varieties of spicy-aromatic species: *Ocimum basilicum* L. – variety “Crețșor”, *Ocimum basilicum* L. – variety “Opal-mini”.*

Keywords: *spicy-aromatic species, Plant Varieties Catalogue.*

Corresponding author: *L. Chisnicean*

E-mail address: *chisniceanL@mail.ru*

**Authentication of Wild *Mentha Aquatica*, from Danube Delta, using
NMR spectroscopy
Valentin Ionescu¹,
Cristina Todasca², Fulvia-Ancuta Manolache¹**

¹National Research&Development Institute for Food Bioresources – IBA Bucharest,
Romania

²University “Politehnica” of Bucharest, Faculty of Applied Chemistry and Materials
Science, “C. Nenițescu” Organic Chemistry Department, Bucharest, Romania

Abstract

Essential oils and their separate components are widely used in medicine, food industry or cosmetics. The oil composition is determined mainly by the plant variety, although it can also be influenced by the distillation process. Some studies demonstrated that essential oils have antimicrobial effects.

*Mints (*Mentha* spp.) are one of the most popular essential oil crops, particularly in the Mediterranean area, where they are widely distributed. Many members of this genus are cultivated for ornamental purposes, but above all for their essential oils.*

*In this study was performed authentication of *Mentha aquatica* L. species in relation to other Romanian species, *Mentha piperita* L. and *Mentha spicata* L.*

*The main objective was to develop a new method of dosing major compounds from the essential oils using 1H-NMR spectroscopy. Markers for the identification and determination of major compounds in *Mentha aquatica*, using NMR spectroscopy, were established. Well defined peaks, easy to integrate, without any overlaps were selected for each major component. Based on an internal standard all major components identified were quantitatively measured.*

It has been confirmed that there are compositional differences between mint species depending on the variety and geographic region of culture.

Unlike other methods, NMR provides a short analysis time, is directly (without prior sample processing) and are showing general profile of the sample.

Keywords: essential oil, mentha, authentication, NMR spectroscopy.

Corresponding author: Valentin Ionescu

E-mail address: ionescu_i_valentin@yahoo.com

Active Packaging with Essential Oils Proposed to Enhance White Bread

Alina Alexandra Dobre,
Gabriel Mustăţea

National Research & Development Institute for Food Bioresources INCDBA-IBA
Bucharest, Romania

Abstract

Unpreserved white bread is highly perishable and requires protection from fungal spoilage during their storage and distribution. Nowadays consumers demand for high-quality, minimally processed and synthetic preservative-free food products, thus is a need for preservation techniques using natural compounds. This study investigated the antimicrobial efficiency of sachets containing 1000 ppm concentration of clove, oregano and thyme oil, known for their phenolic compounds with strong antimicrobial properties. Packaging system was obtained by BOPP and BOPP/EVOH barrier film and the sachets were prepared by incorporating EOs into a high absorption cellulose substrate. At the tested concentration, the reduction in mould growth was good, the bread preserved this way had a shelf life of 8 days in the case of clove oil in both films and for 12 days for oregano oil. The use of thyme oil BOPP active packaging has been proven to increase shelf life up to 20 days while in BOPP/EVOH film only for 14 days. All the breads preserved were tested microbiologically, physically and sensorial by panellist and hedonic acceptance test. Our research demonstrates the potential application of EOs in active packaging, this system representing a practical application for bread manufacturers looking for the increasing of the self-life and safety of bread.

Keywords: active packaging, essential oils, food preservation, shelf-life extension, bread.

Corresponding author: Alina Alexandra Dobre

E-mail address: alina.dobre@bioresurse.ro

Vanillin Extract Used as Active Compound in Packaging Films

Anicuța Stoica-Guzun,

Marta Stroescu, Gabriela Isopencu, Iuliana Jipa

Depart. Chem. Biochem. Eng., UPB, Bucharest, Romania

Abstract

Flavors are active ingredients in food which play an important role in consumer satisfaction. Food manufacturing, packaging and food storage could cause modification of the flavor compounds by reducing their intensity and their activity. For this reason different methods for flavor preservation are used. One of this is to preserve flavors properties by encapsulation in packaging materials. The new packaging materials could have antioxidant or/and antimicrobial properties and could increase the food shelf-life and the food safety.

*The aim of this paper is to present the results obtained for vanillin extraction from vanilla ponds using different extraction methods. The extract was used in the composition of bio-polymeric films containing polyvinyl alcohol, bacterial cellulose and chitosan. Swelling properties and vanillin release from composite films were studied. The vanillin release is influenced by film compositions. The antimicrobial properties of the films were also studied against *E. coli*. The results obtained are encouraging and these films could be used as antimicrobial, and also as flavor release packaging biomaterials.*

Keywords: *extraction, vanillin, chitosan, bacterial cellulose, antimicrobial.*

Corresponding author: *Anicuța Stoica-Guzun*

E-mail address: *astoica.upb@gmail.com*

Safety and Tolerability of Calcium and Iron-enriched Oats Containing Gluten-free Diet

Denisa Eglantina Duță,

Alina Culețu, Gabriela Mohan, Elena Voinea

National Research & Development Institute for Food Bioresources INCDBA-IBA
Bucharest, Romania

Abstract

Oats (*Avena sativa* L.) are the highest-protein cereal-grain crop, contain a high amount of lipids and represent a good source of fiber and minerals. Oats have been traditionally viewed as a nutritious cereal for infants and adults, and there are evidences that oats may help to prevent or alleviate several chronic diseases. β -glucan is the most well-known health-promoting compound in oats, but fatty acids and sterols from lipids can enhance the healthy properties of oats too.

The aim of this paper is to present the results obtained using oats as a bio-resource with potential for bakery, in the production of gluten free biscuits. The study has envisaged the setting of a new technology for various types of bakery products based on oat, including Ca/Fe enriched assortments. Physicochemical and microbiological properties and sensory profile of prototypes were examined. The new products obtained were subject of clinical studies and technology transfer activities in the frame of the consortium of the project.

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNDI-UEFISCDI, project no. 111/2012.

Keywords: celiac disease, bio-resources, oats biscuits, β -glucan.

Corresponding author: Denisa Eglantina Duță

E-mail address: denisa.duta@bioresurse.ro

**Researches on the Capitalization Potential of Integral Oat Flour in
Bread Manufacturing
Ciprian Nicolae Popa¹,
Radiana-Maria Tamba-Berehoiu²**

¹Farinsan S.A., Giurgiu, Romania

²Faculty of Biotechnologies, USAMV Bucharest, Romania

Abstract

In recent years, evidences have been accumulated about the beneficial effects on consumer health, of the inclusion of oat in daily diets, namely: maintaining blood cholesterol, lowering postprandial glucose, cardiovascular risk reduction, reducing oxidative stress and so on. The fact that oat is a gluten-free cereal, with a significant amount of fiber, has limited its use in the baking industry only to products such as biscuits or some cookies. The increase of oat content in bakery products such as bread, was generally associated with a reduction in its volume and a worsening of its sensorial characteristics, motives that are guiding the consumer's decision to buy a particular product. Our researches have aimed to achieve a bakery product that contains a sufficient amount of oatmeal, without affecting the quality characteristics (volume, porosity, elasticity). Our results have shown that the ideal proportion between the oat flour and wheat flour was 30:70, in order to obtain a functional product attractive to the consumer. The bread obtained in this formula was characterized by a content of 8% fibers, 11% protein, 1.5% fat and 44% carbohydrates. It was also observed a significant increase of the yeast activity in dough with the addition of oatmeal, compared with the yeast activity in dough made exclusively from wheat flour. This was explained on account of large amounts of simple carbohydrates in oatmeal, formed after oat processing (due to hydrothermal treatment).

Keywords: bread, functional food, whole oat flour, yeast activity.

Corresponding author: Ciprian Nicolae Popa

E-mail address: cipnpopa@yahoo.com

Validation of ELISA Method to Support Detection and Quantification of Mycotoxins for the Traditional Romanian Sponge Cake “Cozonac”

Irina Smeu,

Alina Alexandra Dobre, Mirela Elena Cucu

National R&D Institute for Food Bioresources – IBA Bucharest, Bucharest, Romania

Abstract

The need for enhancing food safety has increased the interest in fast and accurate measurement methods for detection and quantification of food contaminants. “Cozonac” is a traditional Romanian sponge cake. The main ingredients of this bakery product are wheat flour, milk, sugar, eggs, butter and yeast, to which a cocoa cream that contains nuts and/or Turkish delight is added. The consumption of this traditional bakery product registered a significant growth in recent years, as well as its export to other EU countries. Because of its ingredients, the product is susceptible to a mycotoxin contamination. Currently, the commercial ELISA kits for a fast detection of mycotoxins do not include a protocol dedicated to bakery products. Therefore, the objective of this study was to test different sample preparation techniques and to propose an adequate mycotoxin detection method for the selected food matrix. Different spiking methods with different concentrations of mycotoxins were assessed in order to formulate quality control samples. The working protocols and the step-by-step validation model are provided.

Keywords: *mycotoxins, bakery products, ELISA method.*

Corresponding author: *Irina Smeu*

E-mail address: *irina.smeu@bioresurse.ro*

Physical-chemical Properties of Wheat Flour Influenced by Ginger Powder Addition

Nicoleta Vartolomei¹,

Maria Turtoi¹, Alina Mihaela Moroi²

¹ Dunarea de Jos University of Galați, Romania

² Vasile Alecsandri University of Bacau, Faculty of Engineering,
Bacău, Romania

Abstract

In order to fulfil the consumer demands for bread quality and to meet their purchase criteria new bread varieties were continuously developed. Thus, different new ingredients were added to bread dough and their influence on bread was determined. The purpose of this work was to study the influence of ginger powder addition on the physical-chemical properties of wheat flour. Materials used were wheat flour 550 type (water content 14.23%, protein 11.71%, fat 1.32%, and ash 0.49%) and ginger powder (water content 8.70%, protein 10.12%, fat 3.78%, and ash 5.77 %) purchased from the market. Different amounts of ginger powder were added to the wheat flour: 1%, 2%, 3%, 4% and 5% then the physical-chemical characteristics of the samples were analysed in terms of water content (%), protein (%), fat (%), ash (%), fibres, carbohydrates (%), and energetic value (kcal/100 g). While the physical-chemical characteristics of the samples vary with the amount of added ginger powder, bread dough and bread behaviour cannot be assumed without research. Therefore, investigations are currently in progress in order to determine the influence of ginger powder addition on the rheological behaviour of bread dough, and the quality characteristics and sensory attributes of bread.

Keywords: wheat flour, ginger powder, physical-chemical properties.

Corresponding author: Alina Mihaela Moroi

E-mail address: moroia@ub.ro

The Health of the Locomotor System and Food

Diana Zaharescu

„Tereziarium” Technical College for Food Industry, Sibiu, România

Abstract

The locomotor system comprises the bones, joints, and muscles. The main diseases related to the locomotor system are: infectious rheumatic diseases, autoimmune rheumatic diseases (polyarthritis, rheumatoid arthritis, spondylitis, etc.), degenerative joint diseases (arthrosis and osteoporosis), collagenosis (mixed collagenosis, sclerodermitis, polymyositis), etc.

An appropriate diet for such diseases should be as alkaline as possible, vegetarian (without meat, eggs, cheese, dairy products), with mushrooms, spinach, chocolate. In order to ameliorate and treat these diseases, extracts of Aloe Vera and Evening Primrose are also recommended.

The Aloe Vera plant contains over 240 active substances, among which there are 18 amino acids, vitamins, minerals (calcium, magnesium, phosphorus, potassium, zinc, and copper), mineral salts, phytosterols – which have an anti-inflammatory effect, bradykinin - an inflammatory mediator, a real cocktail of vegetal hormones that stimulates cellular growth and cicatrize, as well as the muco-polysaccharides, which are responsible for cellular hydration.

Aloe Vera juices are marketed by various companies. The Aloe Vera juice or flavor extract can also be used as an ingredient for pastry and confectionery products, in order to enhance their nutritional value.

Used as an ingredient in doughs, Aloe Vera juice enhances their resistance and elasticity, being recommended for the preparation of puff pastry and sweet doughs with different fillings such as nuts and poppy seeds. Added to creams, the Aloe Vera juice makes them more tasty and colorful.

Keywords: locomotor system, vegetarian diet, Aloe Vera.

Corresponding author: Diana Zaharescu

E-mail address: zaharescudiana@yahoo.com

Allergic Diseases - Treated by an Adequate Diet

Daniela Bicher

„Terezanum” Technical College for Food Industry, Sibiu, Romania

Abstract

The present paper makes a short presentation of the sources or allergens that can produce allergies. The allergens appear in our living environment from cosmetic products, cleaning products and mostly from food products which contain a chemical compound to which we are allergic, or they are produced from foods that contain various additives, food colors, preservatives, emulsifiers, and gelatins.

In order to remove these sources that can produce allergies, it is necessary at first to detect the factor or allergen. If this is a case of diet, we need to take a food pause and gradually introduce the allergen foods. We should also ensure a living environment with the least possible chemical products and to avoid those food products containing additives from the supermarkets, and also to avoid exotic food.

*We can obtain the Evening Primrose Oil by cold pressing the seeds of Evening Primrose (*oenothera biennis*), which is rich in essential fatty acids – gamma linolenic 7%, alpha and beta linolenic 66%.*

In conclusion, the Evening Primrose Oil can be used to obtain pastry products, such as croissants, rolls, etc. Even if vitamin C is lost through processing, other chemical compounds from these extracts will remain, which can ameliorate or even prevent the effects of allergies produced from the above mentioned sources.

The Evening Primrose Oil added to the preparation of dough produces a finer and softer texture, and enhances its extensibility, so that it can be molded more easily. When it is used to prepare creams for fillings, this oil offers them a finer composition and a greater capacity to incorporate air while being beaten.

Keywords: *allergic disease, Evening Primrose Oil, diet.*

Corresponding author: *Daniela Bicher*

E-mail address: *danielabicher@yahoo.com*

Food Detoxification

Sanda Gîrjoabă

„Terezanum” Technical College for Food Industry, Sibiu, Romania

Abstract

A healthy diet for people should include good quality food products, in an adequate quantity, through a proper combination of food stuffs, to be done in due time and in a relaxed atmosphere.

The toxins inside the human body appear because of an incomplete digestion, the diverse food and environmental chemical compounds, infections and toxic products from our metabolism. Acting as barriers to toxins , there are: the intestines, the kidneys, the liver, the endocrine glands and the central nervous system. The toxins are stored in the bowels, kidneys, liver, lungs, joints, blood vessels, lymph, the adipose tissue.

A source of detoxification is represented by the grapes and their extracts, such as Stilbene (nonflavonoid polyphenol), a lipidsoluble substance with an anti-aging , antithrombotic, antibacterian and anticholesterolemic effect.

The grapes can be used to produce various pastry products (croissants, pies, marble cake, etc.), and especially confectionery products, such as cakes, cookies, etc.

Grape juice added to doughs enhances their sensorial properties (color and flavor), the dough becoming more stable for the preparation of large volume, fresh and aromatic products. Added to creams, the grape juice makes them more tasty, refreshing and firm.

Keywords: *Food detoxification, Stilbene, grape juice, diet.*

Corresponding author: *Sanda Gîrjoabă*

E-mail address: *sanda_girjoaba@yahoo.com*

LIST OF POSTERS

Title Name	P.
Design and Development of an e-Learning Course on Aromatic and Medicinal Plants	38
Satiety Innovation	39
Conception of Future Foods Enriched with Active Compounds, Polyphenols, obtained by the Valorization of Artichoke By-products	40
Use of Lemon Peel as Natural Ingredient in Elaboration of Fruit Jams Replacing Synthetic Pectin	41
Quinoa (<i>Chenopodium quinoa</i>) effects as an adjuvant in nutritional intervention in prediabetic subjects	42
The glycaemic index of quinoa (<i>Chenopodium quinoa</i>) tested in healthy subjects	43
Definition and development of functional barriers for the use of recycled materials in multilayer food packaging. BANUS project, 7 th FP, UE	44
Selection and application of a strain of <i>Chlorella vulgaris</i> in an industry of pastries and bakery products	45
Dietary lipids protection from oxidation by lingonberry phenolic extracts <i>in vitro</i> digestion conditions	46
Assessment of phenolic compounds content in <i>Vaccinium</i> and <i>Crataegus</i> species from natural areas in the Romanian Eastern Carpathians and Danube Delta	47
Herbal Food Supplements for Weight Loss	48

Promising Spicy and Aromatic Plant Species in the Collection of the Botanical Garden (I) of the ASM	49
Authentication of Wild <i>Mentha Aquatica</i> , from Danube Delta, using NMR spectroscopy	50
Active Packaging with Essential Oils Proposed to Enhance White Bread	51
Vanillin Extract Used as Active Compound in Packaging Films	52
Safety and Tolerability of Calcium and Iron-enriched Oats Containing Gluten-free Diet	53
Researches on the Capitalization Potential of Integral Oat Flour in Bread Manufacturing	54
Validation of ELISA Method to Support Detection and Quantification of Mycotoxins for the Traditional Romanian Sponge Cake “Cozonac”	55
Physical-chemical Properties of Wheat Flour Influenced by Ginger Powder Addition	56
The Health of the Locomotor System and Food	57
Allergic Diseases - Treated by an Adequate Diet	58
Food Detoxification	59

