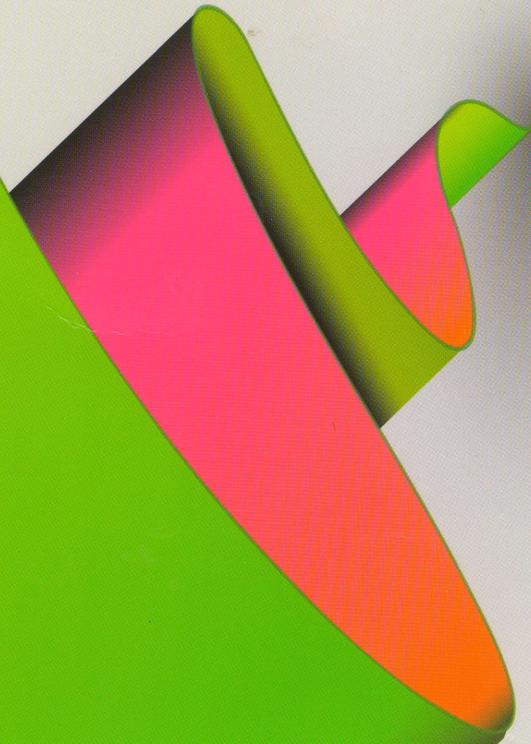


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**Book 6
Nano, Bio and Green -
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**MICRO & NANO TECHNOLOGIES
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ANIMALS & SOCIETY**

decreased antioxidant activity compared with the one of hydroalcoholic vegetal extracts mixtures.

➤ It highlights the mouthwash (*batch 1*) obtained from 10 % mixture of 50% hydroalcoholic extract BC:BM:CC (1:1:2), with the highest total antioxidant capacity and antimicrobial activity over microbial strains tested;

➤ The mouthwashes (*batches 1 - 8*) based on selected hydro-alcoholic extracts from bitter cherry (BC) : black mulberry (BM) : cornelian cherry (CC) fruits extracts mixtures present a significant antioxidant and antimicrobial activity and could be recommended in the treatment of oral cavity affections, gum inflammations, stomatitis, dental pains, preventing of bacterial plaque formation, halitosis, as local antiseptic and anesthetic.

REFERENCES

- [1] Pârvu, C., Universe of plants. Plants from Romanian Flora, vol. I, Second Edition Encyclopedic Publisher, Bucharest, 2002.
- [2] Temelie M., Encyclopedia of Medicinal plants cultivated in Romania, Romanian Publishers, Bucharest, 2008.
- [3] Duță V., Medication and treatments with medicinal plants, Ștefan Publisher, Bucharest, 2012.
- [4] Bojor O., Pop M., Phytotherapy for the benefit of all, Medical Publisher, Bucharest, 2010.
- [5] Negreanu-Pirjol T., Negreanu-Pirjol B. S., Popescu A., Bratu M.M., Udris C., Bușuricu F., Comparative Antioxidante Properties of some Romanian Foods. *Food Extracts, J. Environ. Prot. Ecol.*, vol. 15, no. 3 (2014), 1139 – 1148.
- [6] Popovici L., Lupuleasa D., Pharmaceutical Technology, vol. II, IIIrd Edition, Publisher, Bucharest, 2011.
- [7] European Pharmacopoeia 7.0 and 7th Edition Supplements, European Pharmacopoeia Commission, Council of Europe Directorate for the Quality of Medicines (2011-2013).
- [8] Shahidi F., Use of Chemiluminescence in Measurement of Antioxidant Activity. Oral Presentation at IFT-2003.
- [9] Shahidi F., Ho C.T., Phytochemicals and Phytopharmaceuticals, AACC Press, Champaign, USA, 1999, p. 153-162.
- [10] Popov L., Lewin G., Photochemiluminescent detection of antiradical activity and testing of lipid-soluble antioxidants, *J. Biochem. Biophys. Methods*, 31, 139-146.
- [11] EUCAST - European Committee on Antimicrobial Susceptibility Testing, 10.01.2013, at http://www.eucast.org/antimicrobial_susceptibility_testing/
- [12] CLSI - Clinical and Laboratory Standards Institute, Performance standards for antimicrobial susceptibility testing, Eighteenth Informational Supplement M7-A8, vol. 28, no. 1, January 2008.

ASPECTS CONCERNING OBTAINING INNOVATIVE FERMENTED DAIRY PRODUCT

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ABSTRACT

The paper proposes the obtaining of fermented dairy product without lactose and other ingredients for an improved taste and an increased nutritional quality of the finished product. The technological process of obtaining the products respects the classic process. The innovation consists in using enzyme lactase, to obtain a 100% lactose free product, being the first Romanian yogurt to use this innovation. This procedure allows for lactose intolerant persons to consume 10% fat yoghurt with berries. Cranberries are an important amount of proanthocyanidins with anticancer effects that block bacteria and prevent infections. Cranberries are an important source of vitamins E, K, C and B. Bilberries contain anthocyanidins which help DNA repair and stimulates metabolism, for which reason they are recommended to diabetics. The product is a natural organic food that uses no preservatives, additives or genetically modified ingredients. The product was subjected to sensory and physicochemical analysis for the determination of its shelf life. Finally, a way of packaging and marketing the finished product was proposed.

KEYWORDS: functional foods, eco-innovative product, lactose-free product, forest fruits

INTRODUCTION

Changes in the group of fermented dairy products that are obtained from the reduction of lactose in milk by the lactic acid bacteria, resulting in lactic acid as the main product, which is responsible for increasing acidity in milk, leading to the formation of curd [1, 2].

The balance of the microbial flora of the gut, having beneficial effect on the health and integrity of the human body, given the fact that over 80% of our body weight is concentrated in the gastrointestinal tract [4, 5].

It is known that fermented dairy product with a high nutritional value because of the nutrients of the milk it was made of. Even more, economically it is an important advantage of having a longer shelf life than milk [6, 7, 8].

From all these special qualitative features, fermented dairy products are considered a "fountain of health", with an important curative role. For this reason, it is recommended in the dietary treatment of various diseases such as diabetes, illnesses of the liver and kidneys as well as obesity. It is recommended for daily consumption by children, youth and the elderly. Appropriate and complete nutrition that satisfies the physiological needs and maintains health [9, 10, 11].

During the manufacturing of this yogurt, legislation and regulations in place are respected. Organoleptic, physico-chemical and microbiological properties are presented in the tables 6, 7 and 8.

Table 6 Organoleptic properties of novelty yogurt

Characteristics	Conditions for eligibility
Aspect	Homogeneous and monophasic
Color	White with slight purple tint
Consistency	Compact coagulum with a suitable consistency
Smell	Pleasant, specific to cow's milk yogurt Not allowed foreign smell
Taste	Flavored, pleasant, sour Not allowed foreign flavor

Table 7 Physico-chemical properties of novelty yogurt

Characteristics	Value	Analyze method
Total dry substance, % min.	18.0	SR ISO 6731:2010
Fat/S.U. % min	10.0	SR ISO 9262-3:2009 SR EN ISO 8968:2004
Protein substance, % min	3.2	SR ISO 57651:2008
Acidity, °T max	120	SR ISO 17818:2010
Carbohydrates, % min	4.0	
- lactose, % max	0.01	

Table 8 Microbiological properties of novelty yogurt

Microorganisms	Allowable number of microorganisms ufc/g	Analytical methods
Yeasts and molds	<10 ufc/g	
Coliform bacteria	<10 ufc/g	
<i>Staphylococcus aureus</i>	<10 ufc/g	Regulation 1441/2007
<i>Salmonella</i>	negative in 25 g	
<i>Listeria monocitogenes</i>	negative in 25 g	

Sample collection. For laboratory examination, samples are harvested on the batch is meant the amount of up to 1000 kg. 1% of packages are collected in a batch, in case of small packages (not less than two and no more than five) and in case of large packages, samples are harvested from 10% of the batch with a sample of about 50 mL.

Shelf life. The shelf life is 21 days from the date of manufacture.

Packaging. Yogurt packaging was made using ecological glass jars with a capacity of 200 mL. The packaging used can be reusable, returnable and recyclable, ensuring the preservation of the components and the stability of the product, which is chemically inert. The packaging shows a suggestive image of the product, combining modernism and the market nowadays with traditionalism, both on the grounds on the label. The packaging is characterized by a pleasant and original both in form, use, concept and image.

Storage. Storage is allowed only in refrigerated places that are specially designated for this purpose, in terms of food safety, at a temperature ranging between 2-8°C.

Transportation. The product will be distributed only with refrigerated or isothermal vehicles, specially designated for this purpose, authorized, properly equipped, cleaned and sanitized.

The marketing strategy is innovative, aiming the implementing of new distribution channels for fermented dairy products. The distribution will be made in private supermarkets, bistros, hotels, restaurants, stands on the beach (in summertime) and vending machines placed in universities, railway stations. Yogurt vending machines will be a huge step forward in dairy product distribution, easily ensuring the purchase by consumers. The recovery of packaging will be ensured through partnerships with recycling companies. Family packs are designed to gather people together and to ensure the consumer through magnets with positive quotes.

The novelty yogurt is carefully produced in accordance with current legislation principles of good hygiene and working practices. This yogurt is "environmentally friendly" because it doesn't provide waste pollutants, on the contrary, it turns them to an advantage providing resulting benefits for both the consumer and the environment.

CONCLUSION

The production of dairy products in Romania is steadily increasing; manufacturers are diversifying product assortments, especially healthy products.

With special care to detail, using raw materials of the highest quality, this paper presents how dairy manufacturers an eco-innovative product designed to please all

consumers. Yogurt is an eco-innovative product, being a concept that provides the benefits to the body. The composition and recipe make a very interesting and bold product on the fruit yogurt market, being the first Romanian lactose-free yogurt with cranberries and bilberries with 10% fat content. The fruits are local, being easily available in all regions of Romania. The selection of the fruits aims to bring out the best in the product and to further exploit this sector.

The paper is completed with dried cranberries and bilberries, 10% fat was made from a natural yogurt, with added cranberries and bilberries obtaining a product with superior quality and nutritional psycho-sensorial properties.

The concept proposed in the paper is the use of glass jars for packaging. The authors are grateful for the acknowledgement of the multiple advantages of glass when used for packaging. To name one, the use of this type of packaging increases the

REFERENCES

- [1] Michael M., Phebus R.K. & Schmidt K.A., Impact of a plant extract on the viability of *Lactobacillus delbrueckii* ssp. *bulgaricus* and *Streptococcus thermophilus* in nonfat yoghurt, International Dairy Journal, 20, pp 665–672, 2010
- [2] Lee, W.J., Lucey, J.A., Structure and physical properties of yogurt gels: effect of inoculation rate and incubation temperature, Journal of Dairy Science, 87, pp 3153–3164, 2004
- [3] Lee, W.J., Lucey, J.A., Formation and physical properties of yogurt, Australian Journal of Animal Science, 23, pp 1127–1136, 2010
- [4] Routray, W., Mishra, H., Scientific and technical aspects of yogurt aroma and taste a review, Comprehensive Reviews in Food Science and Food Safety, 10, pp 208–216, 2011
- [5] Sodini, I., et al., The relative effect of milk base, starter, and process on yogurt texture: a review, Critical Reviews in Food Science and Nutrition, 44, pp 113–137, 2004
- [6] Soukoulis, C., et al., Industrial Yogurt Manufacture: Monitoring of Fermentation Process and Improvement of Final Product Quality, Journal of Dairy Science, 90, pp 2641–2654, 2007
- [7] Gahrue H.H., Eskandaria M.H., Mesbahi G. & Hanifpour M.A., Scientific and technical aspects of yogurt fortification: a review, Food Science and Human Wellness, 4, pp 1–8, 2015
- [8] Oliveira A., Alexandre E.M.C., Coelho M., Lopes C., Almeida D.P.F. & Pinheiro M., Incorporation of strawberries preparation in yoghurt: Impact on phytochemicals and milk proteins, Food Chemistry, 171, pp 370–378, 2015
- [9] Ayar A., Sert D.L., Kalyoncu H. & Yazici F., Physical, chemical, nutritional and organoleptic characteristics of fruit added yogurts, Journal of Food Technology, 4, pp 44–49, 2006
- [10] Desai, N.T. et al., Sensory properties and drivers of liking for Greek yogurt, Journal of Dairy Science, 96, pp 7454–7466, 2013
- [11] Hekmat, S., Reid, G., Sensory properties of probiotic yogurt is compared to standard yogurt, Nutrition Research, 26, pp 163–166, 2006
- [12] Jelen, P., Tossavainen, O., Low lactose and lactose-free milk and dairy products, technologies and applications, Australian Journal of Dairy Technology, pp 161–165, 2003
- [13] Koushik, A., et al., Sensory characteristics of commercial lactose free yogurt manufactured in the United States, LWT – Food Sciences and Technology, 43, pp 113–118, 2010
- [14] Harju, M., Kallioinen, H., Tossavainen, O., Lactose hydrolysis and conversions in dairy products: Technological aspects, International Dairy Journal, vol.22., pp 104–109, 2012

BACTERIAL COMMUNITY COMPOSITION OF OILY WASTE REMEDIA

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ABSTRACT

Oil wastes are considered to be one of the most dangerous types of environmental pollution. The development of an effective and environment-friendly method of their remediation still remains a challenge. Usage of bacterial remediation may be one of the effective methods. In this study, we estimated the changes of bacterial community composition of the oily sludge during bioremediation of the oily sludge by means of compost preparation. The results of municipal solid-waste, wastewater and compost were mixed in a ratio of 1:1:1. The total petroleum hydrocarbon (TPH) levels are reported to be a driver of the structure of bacterial community (10th day) of bioremediation (mainly, *Delfia* and *Alpha*) were detected in samples except oily sludge. The results were similar in the compost. *Bacteria* and *Fungi* were identified from 16S/18S analysis, bacterial community composition of the compost's one but not to 100%. The results of bioremediation of *Streptomyces*, *Alteromonas* and *Microbacterium* were identified. The results of bioremediation mixtures disappeared after 42 days of incubation. The results of bioremediation of the compost and in the 1st-day in the compost, bacterial community composition and processing cause of the bioremediation of the oily sludge. The results of bioremediation of the oily sludge by means of compost preparation are reported to be a driver of the structure of bacterial community (10th day) of bioremediation (mainly, *Delfia* and *Alpha*) were detected in samples except oily sludge. The results were similar in the compost. *Bacteria* and *Fungi* were identified from 16S/18S analysis, bacterial community composition of the compost's one but not to 100%. The results of bioremediation of *Streptomyces*, *Alteromonas* and *Microbacterium* were identified. The results of bioremediation mixtures disappeared after 42 days of incubation. The results of bioremediation of the compost and in the 1st-day in the compost, bacterial community composition and processing cause of the bioremediation of the oily sludge.