

F.71. OBTAINING AND STABILIZING DYES, ANTIOXIDANTS AND PRESERVATIVES OF PLANT ORIGIN FOR FUNCTIONAL FOODS

GHENDOV-MOSANU ALIONA

Technical University of Moldova, Chisinau, Republic of Moldova

Abstract. The purpose of the work is establishing the theoretical and practical principles of obtaining and stabilizing dyes, antioxidants and preservatives of natural origin by elucidating chemical, physicochemical and biochemical transformations that take place under conditions of extraction, storage and addition of plant matter in food, with the formulation of technology of some functional foods. Determination of the optimal hydromodule for the extraction of the BAC (minimum bactericidal concentration) complex and application of empirical mathematical models to describe the kinetics of the extraction process; the influence of conventional extraction conditions, of different “green extractions” techniques and heat treatments on the yield of BAC from berries and grape marc, of antioxidant activity and chromatic parameters; the influence of pH and the effect of metal ions present in food on the color stabilization of extracts and their antioxidant activity; determination of the microbiostatic activity of the vegetal matter, of the bioavailability BAC in vitro; elaboration of functional food manufacturing technologies, determination of quality and food safety indicators, of chromatic parameters and antioxidant activity and their evolution during storage. Scientific novelty and originality: For the first time, all stages of obtaining and stabilizing BAC from berries and grape marc with the use of secondary metabolites of plant matter with coloring, antioxidant and antimicrobial properties were examined in order to replace synthetic dyes, antioxidants and preservatives in the formulation of functional foods. ain results: The optimal hydromodule for the extraction of the water-soluble complex from berries and grape marc was determined, which ensures the obtaining of an important BAC content and an optimal solvent consumption; the influence of conventional extraction conditions, various “green extractions” techniques and heat treatments on the water-soluble and fat-soluble BAC yield of berries and grape marc, antioxidant activity and CIELab (three-dimensional space of color representation) chromatic parameters was elucidated; the influence of pH and the effect of metal ions present in food on the color stabilization of extracts and antioxidant activity has been demonstrated; the microbiostatic activity of the vegetal matter on the pathogenic microorganisms was determined; the bioavailability of carotenoids was determined in vitro; technologies for the manufacture of functional foods have been developed with the determination of quality indicators, chromatic parameters, in vitro antioxidant activity and their evolution during storage. Theoretical significance: For the first time, the methodology for determining the optimal hydromodule for the extraction

BACAU 2021 Conference Proceedings – ABSTRACTS

of the water-soluble complex in solid-liquid system was elaborated; for the first time various Informatics methods such as analysis of mutual information and sensitivity, canonical correlation, mathematical models as cubic spline function and fuzzy sets were applied to determine the influence of extraction conditions and technological parameters on the yield of BAC, quality, food safety and on biological value of functional foods.

Keywords: extracts, vegetable powders, biologically active compounds, dyes, antioxidants, preservatives, functional foods, quality.