

OPTIMIZATION OF THE EXTRACTION PROCESS OF BIOACTIVE COMPOUNDS FROM PEACHES

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Peach fruits have long been promoted for their ability to prevent various diseases, due to phytochemicals that include carotenoids, phenolic acids, organic acids, micro- and macroelements. In the Republic of Moldova, peach fruits are widely used both fresh and for processing in order to obtain a wide range of canned products. Pomace obtained as a result of peach processing, is rich in polyphenols, tannins, aromatic substances, etc., is of interest for subsequent exploitation in the food industry. The aim of this paper is to optimize the extraction process of bioactive substances from peach pomace in order to obtain the extract for use in the formulation of novel foods with high biological value.

Peach pulp dried at a temperature of 60 ± 1 °C and ground to a granularity of 70μ was used for research. To determine the optimal volume of solvent for the extraction of water-soluble compounds, distilled water, ethyl alcohol 96 % (v/v) and 50 % (v/v) hydroalcoholic solution were used. The extraction was performed at a temperature of 70 ± 2 °C with different volumes: 8, 12, 16, 20, 24 mL. The water-soluble substance content of the extract was determined by the refractometric method. The extraction of water-soluble substances was performed until the equilibrium concentration was reached. In the extracts obtained at optimal volumes of solvent, the total polyphenol content (TPC) was determined by the Folin Ciocalteu method, and the antioxidant activity (AA) of the extracts was assessed by reaction with the radical DPPH.

The results of the research showed that the best extraction in water took place when applying the solvent volume of 12 mL, in the case of the hydroalcoholic extractant of 50% (v/v) the most effective was the volume of 20 mL, and in the alcoholic solvent of 96% (v/v) - the volume of 16 mL was the most efficient. The study of the extraction kinetics of water-soluble substances from peach pomace showed that the degree of extraction is higher at first, later showing a slowing trend. Distilled water has been shown to contribute to better tissue separation and rupture of cell walls of peach pulp, facilitating the diffusion of water-soluble compounds. It was found that solvents have a major influence on the TPC, as follows: the lowest polyphenol content was recorded in the case of extraction in ethyl alcohol 96% (v/v), with a value of 13.84 mg GAE/g plant. In the case of 50% hydroalcoholic solution and distilled water, TPC increased approximately 6.4 times. It is known that polyphenols are responsible for the antioxidant activity in plant extracts. It has been shown that the extracts with the highest TPC are characterized by the highest value of AA. In the case of our extracts the AA varies between 63.69 % (ethyl alcohol of 96% (v/v)) and 71.13% - 50% (v/v) hydroalcoholic solution. Thus, it has been shown that the type of solvent can influence the extraction yield of polyphenolic compounds and antioxidant activity.

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