

INFLUENCE OF HEAT TREATMENT ON THE YIELD OF EXTRACTION OF BIOACTIVE COMPOUNDS IN APPLE POMACE

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Apples are one of the most consumed fruits in the world and are the main source of biologically active substances (polyphenols, pigments, organic acids, vitamins, minerals, pectin, dietary fibers, etc.) necessary for a balanced diet. The program for the development of horticulture in the Republic of Moldova for 2019-2025 demonstrated that in 2018 the volume of horticultural production increased by about 730 thousand tons - of which 70 thousand tons were apples. About 50% of the total volume of apples is exported to the CIS countries, and half of the remaining production is used for the production of juice or other canned products. It has been calculated that an average of 1000 kg of peeled apples of medium succulence in the production of juice, produces approximately 300 kg of apple pomace. The chemical composition of apple pomace makes it possible to extract biologically active compounds and widely use them in the food industry. This agro-industrial waste has a homogeneous mass, consisting of skin, fruit pulp and seed chamber, light brown in color, with a pleasant apple smell and sour taste. The purpose of this research was to study the influence of the temperature of the heat agent in the convective drying of apple marc on the yield of bioactive compounds.

Apple pomace was obtained after squeezing apple juice of the "Gold Delicious" variety. The pomace was dried by convection method in the temperature range 60-80 °C to the final moisture of $12.0 \pm 0.13\%$. After convective drying the pomace was grind up to the granulosity of $140 \pm 10 \mu$ and sieved. The total content of polyphenols, tannins and carotenoids was determined by the spectrophotometric method. Two types of extracts were obtained: 60% (v/v) hydroethanolic to determine the content of phenolic compounds and extracts with a mixture of solvents methanol/ethyl acetate/petroleum ether (1:1:1, v/v/v) for the total carotenoid content.

It was found that by increasing the temperature of the thermal agent from 60 to 80 °C the highest extraction yield of the total content of polyphenols and tannins is attested at a temperature of 70 °C, and the lowest at a temperature of 80 °C. The high temperatures damaged to the cell wall and triggered the release of polyphenol oxidase and peroxidase enzymes, which helps to reduce the content of phenolic compounds. In the case of carotenoids, the highest yield was obtained in the dry samples at 80 °C and the lowest at 60 °C. This phenomenon can be explained by the fact that convective drying at low temperatures for a long time exposed the carotenoids to the action of oxygen, causing their extensive degradation. Also, the enzymes lipoxigenase and peroxidase are responsible for the oxidative degradation of carotenoids. Thus, drying apple pomace by the convection method at different temperatures has a significant effect on the composition of biologically active compounds.

Keywords: *apple pomace, convective drying, temperatures, extracts, biologically active compounds.*

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