THE ANTIOXIDANT PROPERTIES OF PECTIN OBTAINED FROM FRESH, FROZEN, AND DRIED APPLE POMACE

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Apple pomace, obtained after juice extraction, is an agro-industrial residue, but also a potential source of carbohydrates, fibres, phenolic compounds, vitamins, pectins, etc. Pectins are one of the most important substances found in apples and account for approximately 10% of the daily fibre requirement of the consumer. In industry pectin is obtained from apple pomace in aqueous solutions of mineral acids (hydrochloric acid, sulfuric acid), with a pH of 1-3, temperature of 50-90 ºC, and extraction time of 3-12 hours. The use of mineral acids leads to a lower extraction yield, further, due to a more advanced hydrolysis process of the glycosidic bonds, and rigorous purification, we assume that the commercial pectin has a lower antioxidant activity and a scant content of phenolic acids.

The aim of the conducted research was to spectrophotometrically measure the total polyphenol content (TPC) and determine the *DPPH•* antioxidant activity of commercial pectin, and of pectin that was obtained by conventional method from fresh (*P1*), frozen (*P2*), and dried (*P3*) apple pomace leftovers from" Floresti" juice factory. The pectic matter was extracted with an aqueous solution of citric acid, with a ~2.2 *pH*, temperature of 90℃, for 180 min, with the following sample: solvent ratios: *P1*- 1:8; *P2*- 1:8; *P3*- 1:12 (m/v).

Pectin was precipitated with 96% ethyl alcohol. The obtained pectin was dried at a temperature of 60℃ till a humidity of 9.31±0.62 %. For UV-Vis spectrophotometric analysis (DR5000 spectrophotometer), samples were prepared in triplicate by dissolving pectin in distilled water to a concentration of $5 \cdot 10^{-3}$ mg/ml. *TPC* was determined by the Folin-Ciocalteu method according to the calibration curve of the gallic acid standard, expressed in mf GAE/g of sample. The commercial pectin solution (*P*) was the reference sample.

According to the recorded results, TPC in pectin samples *P1, P2, P3* was higher than in sample *P*. The highest TPC was recorded in *P1* (5.015±1.07)*; P3* (4.34±0.14 mg GAE/g) had the second highest result. Negligible TPC was detected in *P*. The Trolox equivalent antioxidant capacity assay was carried out for the concentration of $5 \cdot 10^{-3}$ g/ml of pectin in water. Measurements determined that the % *DPPH•* inhibition of the pectin samples varied as follows: *P1*- 39.32; *P2*- 17.43; *P3*- 19.64, and 2% for the commercial pectin *P*.

The highest antioxidant activity was recorded for pectin *P1,* obtained from fresh pomace. The antioxidant activity largely depends on the content of phenolic acids, which contaminate the pomace.

Keywords: pectin, antioxidants, apple pomace, Trolox.

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