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DOI: 10.2478/auoc-2020-0016

Ovidius University Annals of Chemistry Volume 31, Number 2, pp. 88 - 92, 2020

Spectrophotometric indicators of the stability of anthocyanin-containing extracts depending on the color of plant materials

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Abstract. This paper aims at spectrophotometric determination of changes in stability of extractable anthocyanins during drying of plant materials depending on their color. Raw and dried colored parts of 50 plant species from 25 families were used for the study. The extracts were prepared over 95% ethanol acidified with hydrochloric acid (pH ~ 1). The absorption spectra were registered within the range of 210 to 680 nm. The extinction variability factor, coefficient of intensity absorption relative and generalized stability factor were used to determine the anthocyanin degradation. The highest values of the stability factor were obtained for the extracts from fruit shells of burgundy or violet color within the range of 0.934±0.024 to 0.973±0.024, while the extracts from flower petals of the same care featured the stability factor that was 1.19 to 1.44 times less. The values of the stability factor of the extracts from black, red and blue materials are 1.15 to 1.19 times, 1.74 to 2.48 times and 4.65 to 4.84 times less respectively than those of the extracts from violet-burgundy materials. It is appropriate to apply the spectrophotometric factors of anthocyanins stability used in this study to selection of promising plants for industrial cultivation as material of anthocyanin-containing herbal preparations. The most stable anthocyanins are those of burgundy-purple and black fruits.

Keywords: UV-visible spectrophotometry; anthocyanin-containing herbal extract; natural dyes; anthocyanin stability.

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