

INFLUENCE OF MEDICAL PLANT PHENOLIC EXTRACTS ON COLOR EVOLUTION IN ANTHOCYANIN EXTRACTS UNDER DIFFERENT LIGHT CONDITIONS DURING STORAGE

Bozidar Ristovski^{1*}, Donka Doneva Sapceska¹, Ivana Generalic Mekinic², Danijela Skroza², Ivica Ljubenkov³, Visnja Katalinic², Mirjana Bocevaska¹

¹Faculty of Technology and Metallurgy, University Ss Cyril and Methodius, Rudjer Boskovic 16, 1000 Skopje, Republic of Macedonia

²Faculty of Chemistry and Technology, University of Split, Teslina 10/V, 21000 Split, Republic of Croatia

³Faculty of Science, University of Split, Teslina 12, 21000 Split, Republic of Croatia

*e-mail: bozidarr@tmf.ukim.edu.mk

Abstract

Anthocyanins are natural, water soluble phenolic compounds responsible for the color of flowers, fruits, vegetables, and related products derived from them. They are deprived of toxicity, do not possess maximum for application in food and their use in practices as an alternative to artificial dyes are highly recommended. They are also known for their biological activity promoting health protecting effects. Excellent source of anthocyanins are red grape cultivars, but their stability depends on: temperature, pH, the presence of light and oxygen, and their chemical structure. The objective of this study was to investigate the effect of medical plant phenolic extracts on color evolution in anthocyanin extracts during storage under different light conditions.

Three types of anthocyanin extracts were prepared (from skins of Vranec grape variety, crushed and pressed skins, and pomace after alcoholic fermentation), using mixture of methanol and water (60 : 40) acidified by 1% (w/v) HCl and supported by sea sand. Phenolic extracts of medical plants *Mentha piperita* L. (peppermint), *Helichrysum arenarium* L. (immortelle), and *Thymus serpyllum* L. (wild thyme) were added (0.4%) to the anthocyanin extracts. Exact volumes of the extracts were placed in jars with caps. The samples were kept at room temperature (+21 °C) under daylight, fluorescent light and dark, at dark in refrigerator at +8 °C, and color values of the extracts were periodically measured during 21 weeks of storage.

Spectrophotometric color characteristics and CIE Lab parameters have shown that the addition of phenolic extracts from medical plants had positive impact on color stability of the anthocyanin extracts. Phenolic extract obtained from immortelle possesses a higher capacity to slow down changes of anthocyanin color in comparison to the other two. The most stable in color were the anthocyanin extracts stored at low temperature in dark, while under the daylight the changes were the most expressive.

Key words: Anthocyanins, Phenolic extracts, Storage, Light, Spectrophotometric, CIE Lab Color.