

THE TOTAL POLYPHENOL CONCENTRATION IN GRAPE SEED OIL OBTAINED BY DIFERENT METHODS

Angela GUREV ^{1*}, ORCID ID: (0000-0001-8493-5257)

Veronica DRAGANCEA ¹, ORCID: (0000-0002-5938-0410)

Svetlana HARITONOV¹, ORCID: (0000-0002-9244-8982)

Valeriu PAPUC ²

¹ Technical University of Moldova, 9/9 Studentilor str., Chisinau MD-2068, Moldova

² SRL Aliment-ulei, s.Pârâta, Dubăsari

*Corresponding author: Gurev Angela, angela.gurev@chim.utm.md

According to the bibliographical study, grape seed oil contains approximately a thousand times less phenolic compounds than hydrophilic extracts of grape seeds. Polyphenols have antioxidant proprieties and contribute to the oxidative stabilization of vegetable oils. The low quantity of phenolic compounds in grape seed oil is due to the incompatibility of the lipophilic extracts with the hydrophilic character of the polyphenols. Consequently, attempts are being made to fortify vegetable oils with natural antioxidants, such as phenolic compounds.

The aim of the conducted research was to colorimetrically determine the total content of polyphenols (TPC) in 5 samples of grape seed oil, separated from pomace; as well as the TPC in olive oil. The oil samples were obtained through various methods, as follows: grape seed oil extracted with the organic hexane-n solvent (I); grape seed oil separated from hydrophilic phase of 70% aqueous ethyl alcohol (II); grape seed oil extracted with a mixture of solvents: hexane-n : ethyl alcohol (8:2, v/v) (III); pressed, unrefined grape seed oil (commercially purchased domestic product) (IV); pressed, refined grape seed oil (commercially purchased domestic product) (V). The TPC in virgin olive oil, produced in Greece, was also determined (VI).

TPC in oil samples was determined by the method described in literature, using the Folin-Ciocalteu reagent. Research has confirmed that the concentration of polyphenols in oil depends mostly on the obtaining method, thus the highest content of polyphenols being identified in samples II and III of grape seed oil, namely: 95.89 ± 1.86 and 102.97 ± 4.05 mg GAE per kilogram of oil. This is explained by the applied method, which uses hydrophilic solvents as well. Sample I, which was extracted only with hexane-n, has a TPC of $61,62 \pm 2.49$ mg GAE·kg⁻¹. Unrefined IV grape seed oil, obtained by pressing, has a lower content of polyphenols 24.54 ± 3.47 mg GAE·kg⁻¹, probably due to its subsequent purification. Refined V grape seed oil has the lowest content of polyphenols: 1.57 ± 0.15 mg GAE·kg⁻¹. The highest content of phenolic compounds was detected in olive oil VI, 245.41 ± 12.65 mg GAE·kg⁻¹.

The results of the conducted research confirm that the use of hydrophilic solvents in grape seed oil extraction is a method to increase the content of its antioxidants, which act as stabilizers and extend the shelf life of the final product.

Keywords: *grape seeds, oil, phenolic compounds, antioxidants, hydrophilic solvent*

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