

# **Effect of Extraction Solvents on the Extraction Phenolic Compounds and Antioxidant Capacities of Grape Seed**

Berrin Bozan

Anadolu University, Engineering Faculty, Chemical Engineering Department, Eskisehir, Turkey; Tel. +90 222 3213350/6500, e-mail: [bbozan@anadolu.edu.tr](mailto:bbozan@anadolu.edu.tr)

In recent years, there has been a growing interest in the use of grape seed extracts as a dietary antioxidant supplements. The antioxidant capacity of grape seed extracts are mainly due to their flavanols and proanthocyanidin (condensed tannin) contents. Proanthocyanidins constitute a complex mixture of monomers, oligomers and polymers which generally consists of (+)-catechin, (-)-epicatechin, (+)-gallocatechin, (-)-epigallocatechin and their 3-O-gallic acid esters.

In this study, effect of extraction solvents on the total phenolics and individual flavan-3-ol content, as well as, antioxidant activity (DPPH and ORAC) grape seed extracts were investigated. Extraction of phenolics were carried out with different solvent mixtures (water, ethylacetate, acetone, ethanol and mixtures of water and organic solvents) using constant extraction conditions (50°C, 1:10 solid/solvent ratio, 6 hours). Total phenolic content was between 135 and 464 mg GAE/g extract. While, 50% aqueous solutions of acetone and ethanol were best solvents for total phenolics, 50% aqueous ethyl acetate was rich in individual monomeric flavan-3-ols. EC<sub>50</sub> values for DPPH activities of extract were varied from 3.46 to 13.03 µg/ml. Similar to DPPH activity, most effective oxygen radical absorption capacity (ORAC) (5.65 mmol Trolox/g extract) was observed in the 70% aqueous ethanol extract.