Evaluation of Polyphenols and Antioxidant Activity of Grape Pomace

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There is a growing interest in the food industry and in preventive health care in the development of natural antioxidants from plant materials. Consumption of a diet rich in antioxidant active polyphenol compounds has been linked with a beneficial health impact. Products from viniculture are an interesting source of bioactive polyphenol compounds which are well known for their antioxidant and radical scavenging properties.

The objective of this study was to quantify the content of total polyphenols, flavonoids, catechins and proanthocyanidins of grape pomace, a by-product from the vinification process, of different white and red grape varieties and to evaluate their antioxidant and free radical scavenging properties.

The grape pomace was dried, finely ground and extracted individually with aqueous ethanol. The obtained extracts were analyzed for their content of total polyphenols, flavonoids, catechins and proanthocyanidins by photometric methods. The antioxidant activity was determined with the DPPH* radical scavenging method in terms of their Efficient Concentration EC$_{50}$ and their Trolox Equivalent Antioxidant Capacity TEAC.

Above all grape pomace of the red grape varieties showed remarkable amounts of total polyphenols (117 – 138 mg/g), flavonoids (19 – 32 mg/g), catechins (13 – 24 mg/g) and proanthocyanidins (22 – 35 mg/g) compared to white grape pomace. Correlating with the content of polyphenol substances the highest antioxidant and radical scavenging capacity was observed in the red grape pomace (0,14 – 0,25 TE). White grape pomace showed relatively poor antioxidant capacity (0,03 - 0,05 TE).

The results indicate that grape pomace especially from red grape varieties has remarkable antioxidant and radical scavenging properties in correlation with the content of polyphenol substances. An application of the viniculture by-product as potent natural antioxidant additive for food products and as dietary supplement and functional food seems to be worth considering, particularly in consideration of their beneficial impact in maintaining and promoting health.

Keywords: grape pomace, polyphenols, antioxidant activity