

## ASSESSMENT OF GRAPE POMACE PHENOLIC COMPOSITION AND ANTHOCYANIN PROFILE

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Grape pomace is the major solid by-product generated during winemaking process, representing a current environmental problem, its reintroduction into the food technology circuit being among the main objectives of sustainable horticulture. Among the recoverable compounds left from grape processing, phenolic compounds remain the most valuable. Grape pomace resulted from the winemaking of three *Vitis vinifera* L. cultivars for white (Pinot gris) and red (Cabernet Sauvignon and Merlot) wine was naturally dried (protected from direct sunlight, wind and moisture). The sugar content of grapes at harvest varied between 200 and 227 g/L (20.6–23.0 °Bx), while the pomace showed a sugar concentration of 74-78 g/kg. After 10-12 days pomace was considered sufficiently dry (8-10%) for conducting the polyphenolic extractions. The yield of dried pomace was on average 20%. Dried pomace was ground (< 0.2 mm) and successive extractions with acidified (0.1% HCl) 80% ethanol were performed, the fractions being subsequently cumulated. Total phenolic compound content (Folin-Ciocalteu reagent) ranged from 1.34±0.03 to 1.97±0.10 g GAE/100 g, while the anthocyanin content, determined by the pH differential method (520 nm), was between 327.58±1.52 (Pinot gris) and 890.32±3.81 mg/100 g (Cabernet Sauvignon). The polyphenolic index (DO 280 nm) varied widely depending on cultivar, between 26.66 and 47.28 (Cabernet Sauvignon). The proanthocyanidin content (vanillin reaction) was also determined (0.28-0.57 g/100 g). After vacuum concentration, aqueous polyphenolic extracts were purified by passing through SPE cartridges with C-18 octadecyl silane sorbent. Anthocyanin profile was obtained by HPLC, followed by identification and quantification of the main representatives (OIV method Oeno 22/2003). The calibration curve was obtained by integrating the absorption peaks of a series of dilutions of pure cyanidin-3-O-glucoside ( $y=67282 \cdot x-300,25$ ;  $r^2=0.9990$ ). Based on the chromatograms registered at 518 nm was obtained the anthocyanin profile of each sample. Nine monoglycosidic anthocyanins were identified in the profile, the main compound being malvidin-3-O-glucoside, which showed the largest chromatographic area in the extract obtained from dried pomace of Cabernet Sauvignon (up to 74.58%). Cyanidin-3-O-glucoside occupied the smallest proportion of the total anthocyanin-specific chromatographic area (<2.81%). The Cabernet Sauvignon pomace showed the highest anthocyanin concentrations (>1 g /100 g), including more stable acetylated and p-coumarylated pigments (malvidin-3-O-6''-acetyl-glucoside and malvidin-3-O-6''-p-coumaryl-glucoside). Also, a positive correlation was found between the spectrophotometric and chromatographic values ( $r^2=0.9965$ ). Significant quantities of phenolic compounds extracted, demonstrate that grape pomace, in fresh or dry state, is a valuable and accessible sources of useful compounds, with a huge functional potential still under-exploited.

**Keywords:** *anthocyanin, grapes, HPLC, phenolic compounds, sustainable viticulture.*

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