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## Phenolic extraction and mechanical properties of skins and seeds during maceration of four main Italian red wine grape varieties

**AIM:** Red grape varieties are characterized by different phenolic contents (prominently tannins and anthocyanins) found in skins and seeds. The extractability of these compounds varies during maceration, as well as the mechanical properties of skins and seeds. Four main Italian red winegrape varieties were tested to understand these differences during a simulated maceration process.

**METHODS:** *Vitis vinifera* L. cv. Aglianico, Nebbiolo, Primitivo, and Sangiovese grape skins, seeds, and joint skin+seeds were subjected to 10-day simulated maceration in a buffer solution (pH 3.40), with increasing contents of ethanol to simulate the fermentation trend. The phenolic extractable content (tannins and anthocyanins by spectrophotometry and HPLC) was evaluated during the simulated maceration. Mechanical-acoustic properties of skins and seeds were performed before and after maceration.

**RESULTS:** The combined total phenolics release during the maceration of separately-extracted seeds and skins were higher compared to the joint extraction (seeds+skins); in this latter case, the seeds contribution become significant ( $p < 0.05$ ) after 3 (Nebbiolo), 4 (Aglianico) or 10 days (Primitivo and Sangiovese). In three cases out of four the anthocyanin content was found slightly reduced when the seeds were jointly present: these appeared red-coloured at the end of the maceration, and a further extraction and quantitation of the colouring matter retained by seeds was conducted. Diverging effects on the skin or seeds mechanical-acoustic measurements were found with the maceration process, depending by the variety.

**CONCLUSIONS:** Varietal differences were highlighted in phenolic compounds simulated extraction from solid parts, particularly for seeds contribution and for their ability to hold colour pigments.

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