

**Title** Extraction of soluble matter from grape pomace by high voltage electrical discharges for polyphenol recovery: Effect of sulphur dioxide and thermal treatments

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### Abstract

This study aims at investigating the effects of high voltage electrical discharges (HVED) on the aqueous extraction of polyphenols from grape pomace (*Vitis vinifera* L.) at constant temperature in the range 20–60 °C. HVED were applied on fresh, frozen-thawed and sulphured grape pomaces for 160 s and diffusion was then studied for 1 h. Then, the yield of extracted solutes from fresh grape pomace reached 70% after 40 min. This yield represented more than twice the yield obtained after 240 min without HVED ( $Y_{\text{solutés}} \approx 30\%$ ). HVED also increased the yield of polyphenols ( $Y_{\text{polyphenols}} = 0.44 \pm 0.07\%$ ) after 1 h of extraction compared to that obtained after 4 h of extraction without HVED ( $Y_{\text{polyphenols}} = 0.26 \pm 0.06\%$ ). The yields of solutes and polyphenols increased with temperature. For the preservation of grape pomace, the addition of sulphur dioxide was better than freezing. Finally, we found that the extraction of solutes was satisfactorily described by the well known Peleg's model ( $R^2 > 0.972$ ).