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Hydroalcoholic extraction of polyphenol compounds assisted by a microwave digester from residues of vine pruning

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The interest on the valorization of by-products from the wine industry has significantly increased over the years due to environmental and economic issues¹. Among these by-products, residues obtained from the pruning of vine are lignocellulosic materials with an important percentage of extractives composed by bioactive compounds as phenolic compounds¹⁻³. In this context, the objective of this work was the extraction optimization of phenolic compounds from vine pruning residues (VPR) using microwave heating. For that, the variables studied were: temperature (60-120 °C), extraction time (5-40 min) and ethanol concentration (0-60 %) at fixed solid/solvent ratio of 40:1 (mL/g). The Total phenolic contents were quantified following the Folin-Ciocalteu method. The phenolic compounds were also identified and quantified by UHPLC. In addition, antioxidant activity of VPR extracts was determined by the following methods: FRAP, DPPH and ABTS expressed as Trolox equivalents (TE). For the extraction of total phenolic compounds, the most significant variable was the percentage of ethanol. At optimized conditions (120°C, 5 min, and 60% ethanol-water) 2.26 g/100g of phenolic compounds were obtained. Under these conditions, the phenolic acids, stilbenes and flavanols were found in higher concentration achieving a concentration of 185.15 and 118.15 mg per 100 g of VPR for ellagic acid and apigenin, respectively. The antioxidant activity was 7.53, 4.33 and 3.41 g per 100 g of VPR for FRAP, DPPH and ABTS, respectively, which can be positively compared with values reported in literature^{3,4}. This work shows an environmentally friendly extraction technique to obtain bioactive compounds which could improve the integral valorization of VPR.

[1] Jesus et al. (2017) *J Clean. Prod.* 168: 74-86.

[2] Sánchez-Gómez et al. (2017) *Ind. Crops Prod.* 2017, 97, 120–127.

[3] Gullón et al. (2017) *Ind. Crops Prod.* 2017, 107, 105–113.

[3] Cebrián et al. (2017) *Ind. Crops Prod.* 2017, 109, 730–736

[4] Karacabey et al. (2012) *Food Bioprocess Technol.* 5: 359-371.