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Abstract

Characterization of Polyphenolic Composition of Extracts from Winery Wastes by HPLC-UV-MS/MS †

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Abstract: Winery wastes are rich in polyphenols and have great added value when used in cosmetics, pharmaceuticals and agri-food products. Polyphenols display a wide range of positive health effects, thus helping with the prevention or treatment of some diseases because of their great antioxidant, anti-inflammatory, antimicrobial and antineoplastic properties. This work aims at characterizing the polyphenols recovered from various wastes generated during wine production processes using chromatographic techniques. Phenolic acids, flavonoids and related compounds have been extracted from different types of oenological residues, such as lees from malolactic fermentation and husks, by liquid extraction using aqueous or hydro-organic solvents. The resulting extracts have been further analyzed by liquid chromatography with UV/vis and mass spectrometric (MS) detection. The chromatographic separation was carried out by a reversed-phase mode on a core-shell C18 column using 0.1% formic acid in water and acetonitrile as the components of the mobile phase. Chromatograms were acquired with UV detection at 250, 280, 325 and 370 nm, whereas MS detection, with both low- and high-resolution analyzers, was performed using different acquisition modes, including full scan, data-dependent acquisition (DDA) and multiple reaction monitoring (MRM). The most abundant polyphenols in the extracts were identified as follows: caftaric acid with a concentration of 20 mg L^{-1}, and trans-coutaric acid, cis-coutaric acid, caffeic acid and p-coumaric acid with concentrations of 5 mg L^{-1} or less. Other minor polyphenols such as gallic acid, 3,4-dihydroxybenzoic acid, 2,5-dihydroxybenzoic acid, syringic acid, chlorogenic acid, ethyl gallate, ferulic acid, catechin, epicatechin, rutin, astilbin and resveratrol were also found.

Keywords: polyphenols; winery wastes; liquid chromatography; mass spectrometry

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Supplementary Materials: The following supporting information can be downloaded at: https://foods2021.sciforum.net/, Poster: Characterization of polyphenolic composition of extracts from winery wastes by HPLC-UV-MS/MS.

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