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Pressure-driven membrane processes for the recovery of antioxidant compounds from winery effluents

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ABSTRACT

Winery effluents are substantial sources for the recovery of antioxidant compounds, namely polyphenols and polysaccharides. In this study, aqueous extraction associated with microfiltration was used as a pretreatment for the recovery, by membrane processes, of polyphenols and polysaccharides present in effluents (wine lees) from the first racking of red winemaking. The study was carried out in total recirculation mode using a flat-sheet membrane and in concentration mode using a hollow fiber membrane. Although the most diluted permeates presented lower contents of polyphenols and polysaccharides, the solutes recovery did not follow this behavior. Higher dilution factors of the effluent resulted in higher permeate fluxes as well as in higher polyphenols recovery. At the best conditions, a solution diluted 50 V/V followed by microfiltration led to the achievement of a limpid permeate, representing a recovery of 1 g of polyphenols and 1 g of polysaccharides per liter of raw effluent.

KEYWORDS

Winery effluents; Membrane separation processes; Microfiltration; Polyphenols recovery; Polysaccharides recovery; Antioxidant compounds

Nomenclature

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