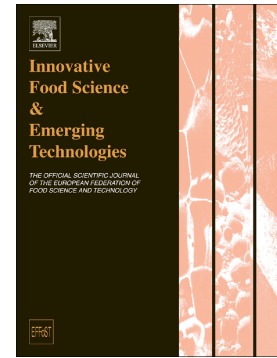


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Crossflow microfiltration coupled with diafiltration to concentrate and purify carotenoids and flavonoids from citrus juices

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ABSTRACT

This work aimed to evaluate an eco-friendly process based on microfiltration with a diafiltration stage in order to concentrate and purify the main carotenoids and flavonoids in citrus juices. Pilot plant scale trial parameters were: tubular ceramic membranes with 0.2 μm pore diameter, 40°C and 3 bar of transmembrane pressure. Different operating conditions were tested varying volumetric reduction ratio (VRR) from 2.5 to 10 and diavolume (DV) up to 1.7. Permeate flux ranged from 20 to 100 $\text{L h}^{-1} \text{m}^{-2}$ according to the VRR. The concentration was multiplied by 5 to 10 for carotenoids and hesperidin but only by 2 to 3 for narirutin. Diafiltration increased the purity of carotenoids and hesperidin from 8 to 20 times. A model was validated for prediction of the concentration and purification factors vs. VRR and DV and the retentions were 100 %, 97 % and 63 % for carotenoids, hesperidin and narirutin.

Keywords: crossflow microfiltration, concentration, diafiltration, carotenoids, flavonoids, citrus juice

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