

The Use of Nixtamalization Waste Waters Clarified by Ultrafiltration for Production of a Fraction Rich in Phenolic Compounds

Waste and Biomass Valorization

October 2016, Volume 7, Issue 5, pp 1167–1176 | Cite as

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Original Paper

First Online: 10 March 2016

Received: 15 September 2015

Accepted: 22 February 2016

- 295 Downloads
- [9 Citations](#)

Abstract

Clarified nixtamalization waste waters rich in calcium and polyphenols were subjected to ultrafiltration. The effluent was analyzed for its concentration of soluble solids, total solids content, pH, conductivity, turbidity, density, polyphenols, carbohydrates, total organic carbon, calcium content, and antioxidant activity. The operating conditions were as follows: transmembrane pressure 172 kPa, feed flow rate 58 L h⁻¹, and temperature 25 °C. We analyzed the separation process for water permeability, fouling index, process resistance parameters, and flux recovery. A clear fraction rich in polyphenols (951.85 ± 6.99 mg L⁻¹) with antioxidant activity (1.56 ± 0.00 μM Trolox mL⁻¹) was produced from extract, while calcium compounds (3155.3 ± 5.24 mg L⁻¹) were concentrated in retentate. Finally, we determined the mass retention of the membrane for soluble solids (100 %), carbohydrates (80.05 %), polyphenols (20.25 %), total organic carbon (61.08 %), and calcium (82.91 %). We conclude that this membrane process is a realistic approach to recovery of bioactive components.

Keywords

Phenolic compounds Calcium content Membrane process Waste waters

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Notes

Acknowledgments

This work was financially supported by CONACyT (Grant # 439602/267705) and IPN (SIP 20150178, 20151298). We are grateful to Universidad Tecnológica de Tecamac (Mexico) for analytical measurements and to ITM-CNR (Italy) and Dr. Alfredo Cassano for research internship in their laboratories.

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Cite this article as:

Castro-Muñoz, R., Barragán-Huerta, B.E. & Yáñez-Fernández, J. *Waste Biomass Valor* (2016) 7: 1167. <https://doi.org/10.1007/s12649-016-9512-6>

- DOI (Digital Object Identifier) <https://doi.org/10.1007/s12649-016-9512-6>
- Publisher Name Springer Netherlands
- Print ISSN 1877-2641
- Online ISSN 1877-265X
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