COMPARATIVE STUDY BETWEEN BIOBASED FATTY ACID EXTRACT OBTAINED FROM CORN STEEP LIQUOR AND "TSUBAKI" EXTRACT

Rodríguez-López L.,[1] Rincón-Fontán M.,[1] Vecino X.,[1,2] Bustos G.,[3] Moldes A.B.,[1] and Cruz J.M.[1]*

[1]Chemical Engineering Department, University of Vigo, Campus As Lagoas-Marcosende, 36310 Vigo, Spain.
[2]CEB-Centre of Biological Engineering, University of Minho, Campus de Gualtar. 4710-057 Braga, Portugal.
[3]Unidad Acadeémica Multidisciplinaria de Mante, Biochemical Industrial Engineering Area, University of Tamaulipas, Mante, México.

*Email address: jmcruz@uvigo.es

"Tsubaki" is a Japanese camellia oil extract, which is rich in palmitic and linoleic (Omega-6) fatty acids, as well as contain numerous anti-aging polyphenol antioxidants.
On the other hand, a bio-based surfactant composed by 64.2% of lipids and 21.9% of proteins can be extracted from corn steep liquor (CSL) following the methodology proposed by Vecino et al. (2015).
The aim of this work was to compare some biochemical properties of "Tsubaki" fatty acid extract, included in high-end cosmetic formulations of different brans, and the bio-based surfactant obtained from CSL, in terms of surface active capacity reduction as well as in terms of antioxidant activity and fatty acid composition.
The antioxidant activity of the extracts was determined by the DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging method; whereas the surface active properties was evaluated by the Wilhelmy plate method in a force tensiometer with a platinum plate (Easy Dyne K20, KRUSS GmbH), at room temperature. Fatty acid composition of extracts was analyzed by gas chromatography coupled to a mass spectrometer (Bruker Scion 451-GC).
Apparently both extracts have the same appearance, they consist of a viscous liquid with yellow color, and both are mainly composed by C16-C18 fatty acids. In addition, both extracts showed antioxidant properties. However, the Tsubaki commercial extract evaluated in this work is hydrophobic substance while the extract obtained from CSL, can be solubilized in both organic an aqueous solution. Bio-based fatty acid extract, extracted from CSL, has both an hydrophobic and hydrophilic domain, providing it surface active properties that could mark the difference in the formulation of cosmetic and personal care products in comparison with Tsubaki extract.

ACKNOWLEDGMENTS

The financial support from the Spanish Ministry of Economy and Competitiveness (FEDER funds under the project CTM2015-68904) and L. Rodríguez-López is grateful for her predoctoral fellowship supported by the University of Vigo (Spain).

References

Vecino, X., Barbosa-Pereira, L., Devesa-Rey, R., Cruz, J.M., & Moldes, A.B., Bioprocess and Biosystems Engineering, vol 38 (2015), 1629-1637.