

## **Effect of a Biosurfactant Extract Obtained From Corn Steep Liquor on the Wettability of Grape Surface**

Ana Belén Moldes, Andrea Martínez-Arcos, Alejandro López-Prieto, Lorena Rodríguez-López, Benita Pérez-Cid, Xanel Vecino and José Manuel Cruz

*University of Vigo, 36310 Vigo, Pontevedra, Spain*

### **Abstract**

Biosurfactants are surface-active compounds produced by microorganisms. In addition, some of these biosurfactants possess an important bactericide and fungicide capacity (López-Prieto et al., 2020). Based on these antimicrobial properties biosurfactants are very interesting to be used in the food industry as preservatives, in order to increase the shelf-life of fruits, which are quickly spoiled. Therefore, the aim of this work was to evaluate the contact angle and wettability of grapes coated with biosurfactant extracted from corn steep liquor. Grapes were washed with water and submerged in an aqueous solution containing 1 g/L of biosurfactant using the methodology described in previous works (Rodríguez-López et al., 2016). Following, a drop of 3 mL of ultrapure water has been added on the grape surface and the contact angle measured using a See SYSTEM E instrument. For comparative purposes, in the study also were included non-coated grapes. The results showed that grapes coated with biosurfactant, after 1 day of storage, possess a contact angle of 89.6°, whereas grapes without treatment gave contact angles of 81.1°. Thus, the biosurfactant slightly increase the hydrophobicity of grape surface and decreased its wettability. Moreover, it was observed that grapes with more storage time, 11 days, gave higher contact angles (106.6°). This can be explained because grapes increase their roughness with the storage time, favoring the hydrophobicity of grape surface and thus decreasing the wettability.

**Keywords:** corn steep liquor, biosurfactant, grapes, hydrophobicity, contact angle

### **References**

- López-Prieto, A., Vecino, X., Rodríguez-López, L., Moldes, A.B., Cruz, J.M., 2020. Fungistatic and Fungicidal Capacity of a Biosurfactant Extract Obtained from Corn Steep Water. *Foods*, 9 (662) p. 1-13. doi:10.3390/foods9050662
- Rodríguez-López, L., Vecino, X., Barbosa-Pereira, L., Moldes, A.B., Cruz, J.M., 2016. A multifunctional extract from corn steep liquor: antioxidant and surfactant activities. *Food & Function*, 7 p. 3724-3732. doi: 10.1039/c6fo00979d

**Acknowledgments:** This research was supported by the Spanish Ministry of Science, Innovation and Universities under the project RTI2018-093610-B-100, and by the Xunta de Galicia under the project GPC-ED431B 2020/17. X. Vecino thanks Spanish Ministry of Science and Innovation for

her financial support under the project PID2019-103873RJ-I00. A. López-Prieto expresses his gratitude to the University of Vigo for his pre-doctoral scholarship. Also, authors would also like to acknowledge C. Serra-Rodriguez (CACTI) for her support in the surface analysis.