

Effect of a Biosurfactant Extract Obtained From Corn Steep Liquor in The Properties of a Natural Orange Juice

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Abstract

From corn steep liquor is possible to obtain a biosurfactant extract with multifunctional properties that could be interesting to be used in the food industry in order to obtain more functional. It was demonstrated that this extract is able to inhibit pathogenic microorganisms (López-Prieto et al., 2020), whereas promote the growth of probiotic bacteria (López-Prieto et al., 2019). On the other hand, generally one of the main problems of orange juices is their presence of vitamin C, which is easily degradable making quite difficult to keep it as L-ascorbic acid form over time (Rincón-Fontán et al., 2020). In this work, a biosurfactant extract, with antioxidant properties was obtained from corn steep liquor, following the procedure described in previous works (López-Prieto et al., 2019) and added to orange juice. For this purpose, several conditions were tested: biosurfactant concentration (0, 0.5 and 1 g/L); storage time (1, 4 and 7 days) and temperature (4, 20 and 36°C), evaluating physicochemical parameters such as pH, lightness, color, as well as the microbial biomass growth, in order to detect changes promoted by the biosurfactant extract. The results obtained indicate that the presence of biosurfactant in the orange juice did not cause changes in pH and lightness, which remained constant. Otherwise, the growth of microbial biomass showed analogous values in presence and absence of the biosurfactant extract. This fact could indicate that biosurfactant extract, do not change the organoleptic properties of orange juice, and it could be included to prevent de degradation of vitamin C.

Keywords: biomass, physicochemical properties, biosurfactant, juices, corn stream

References

- López-Prieto, A., Rodríguez-López, L., Rincón-Fontán, M., Moldes, A.B., Cruz, J.M., 2019. Effect of biosurfactant extract obtained from the corn-milling industry on probiotic bacteria in drinkable yogurt. *Journal of the Science of Food and Agriculture*, 99 p. 824–830. doi: 10.1002/jsfa.9251
- 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
- Rincón-Fontán, M., Rodríguez-López, L., Vecino, X., Cruz, J.M., Moldes, A.B., 2020. Potential

application of a multifunctional biosurfactant extract obtained from corn as stabilizing agent of vitamin C in cosmetic formulations. Sustainable Chemistry and Pharmacy 16 p. 100248. doi: 10.1016/j.scp.2020.100248

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. Also, X. Vecino thanks Spanish Ministry of Science and Innovation for her financial support under the project PID2019-103873RJ-I00.