

Effect of a biosurfactant extract obtained from corn on probiotic bacteria

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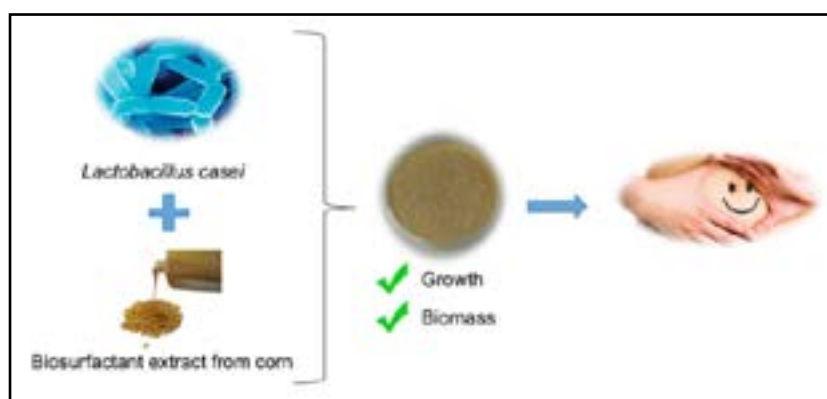
Statement of the Problem: Probiotics, prebiotics and nutraceuticals have been used over the years as supplements in several treatments and control of diseases providing important health benefits. Among the probiotic bacteria, *Lactobacillus casei* is one of the most important. On the other hand, there are some bioactive compounds produced by lactic acid bacteria or obtained from natural sources, with surfactant and antimicrobial pathogenic capacity, were named biosurfactants. These biosurfactants could increase the effect of probiotics when added to pharmaceutical formulations improving their adsorption and antimicrobial properties.

Aim: The aim of this study was to establish the effect of a biosurfactant extract obtained from corn, which is able to reduce the surface tension of water in more than 30 units, on the probiotic bacteria *Lactobacillus casei*.

Methodology & Theoretical Orientation: The biosurfactant extract was obtained from a corn milling industry stream by liquid-liquid extraction with ethyl acetate. After extraction, ethyl acetate was evaporated obtaining a concentrated biosurfactant extract that was added to an inoculum of *L. casei* at maximum concentrations of 0.5 g/L.

Findings: It was observed that the addition of the biosurfactant extract obtained from corn had a positive effect on the biomass of an inoculum of *L. casei*, maintaining and in some cases, favoring the growth of these probiotic bacteria, especially when this strain was under optimal temperature conditions.

Conclusion & Significance: This was the first study to assess the effect of a biosurfactant extract on probiotic bacteria. The positive effect of the evaluated biosurfactant extract on *L. casei* growth could open the door to the application of biosurfactants in pharmaceutical formulations although further studies will be necessary using other biosurfactants and probiotic bacteria.



Recent Publications

1. Banat I M, Makkar R S and Cameotra S S (2000) Potential commercial applications of microbial surfactants. App. Microb. Biotech. 53(5):495-508.
2. Kaur I P, Chopra K and Saini A (2002) Probiotics: potential pharmaceutical applications. Eur. J. Pharma. Sci. 15(1):1-9.
3. Rodríguez-López L, Vecino X, Barbosa-Pereira L, Moldes A B and Cruz J M (2016) A multifunctional extract from corn steep liquor: antioxidant and surfactant activities. Food Funct. 7(9):3724-3732.

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4. Vecino X, Barbosa-Pereira L, Devesa-Rey R, Cruz J M and Moldes A B (2014) Study of the surfactant properties of aqueous stream from the corn milling industry. *J. Agric. Food Chem.* 62(24):5451-5457.
5. Vecino X, Cruz J M, Moldes A B and Rodrigues L R (2017) Biosurfactants in cosmetic formulations: trends and challenges. *Crit. Rev. Biotech.* 37(7):911-923.

Biography

Alejandro López Prieto is a PhD student in the Department of Chemical Engineering at the University of Vigo, Spain. He has experience in food industry and in food and biotechnological research at Cranfield University, UK and the University of Vigo. He is currently focused on projects related with the application of biosurfactants extracted from agro-industrial residues in the food, environmental and pharmaceutical industries.

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