

## Potential Applications of Biosurfactants from Corn Steep Liquor in Cosmetic

**Authors :** J. M. Cruz, X. Vecino, L. Rodriguez-López, J. M. Dominguez, A. B. Moldes

**Abstract :** The cosmetic and personal care industry are the fields where biosurfactants could have more possibilities of success because in this kind of products the replacement of synthetic detergents by natural surfactants will provide an additional added value to the product, at the same time that the harmful effects produced by some synthetic surfactants could be avoided or reduced. Therefore, nowadays, consumers are disposed to pay an additional cost if they obtain more natural products. In this work we provide data about the potential of biosurfactants in the cosmetic and personal care industry. Biosurfactants from corn steep liquor, that is a fermented and condensed stream, have showed good surface-active properties, reducing substantially the surface tension of water. The bacteria that usually grow in corn steep liquor comprises *Lactobacillus* species, generally recognized as safe. The biosurfactant extracted from CSL consists of a lipopeptide, composed by fatty acids, which can reduce the surface tension of water in more than 30 units. It is a yellow and viscous liquid with a density of 1.053 mg/mL and pH=4. By these properties, they could be introduced in the formulation of cosmetic creams, hair conditioners or shampoos. Moreover this biosurfactant extracted from corn steep liquor, have showed a potent antimicrobial effect on different strains of *Streptococcus*. Some species of *Streptococcus* are commonly found weakly living in the human respiratory and genitourinary systems, producing several diseases in humans, including skin diseases. For instance, *Streptococcus pyogenes* produces many toxins and enzymes that help to stabilize skin infections; probably biosurfactants from corn steep liquor can inhibit the mechanisms of the *S. pyogenes* enzymes. *S. pyogenes* is an important cause of pharyngitis, impetigo, cellulitis and necrotizing fasciitis. In this work it was observed that 50 mg/L of biosurfactant extract obtained from corn steep liquor is able to inhibit more than 50% the growth of *S. pyogenes*. Thus, cosmetic and personal care products, formulated with biosurfactants from corn steep liquor, could have prebiotic properties. The natural biosurfactant presented in this work and obtained from corn milling industry streams, have showed a high potential to provide an interesting and sustainable alternative to those, antibacterial and surfactant ingredients used in cosmetic and personal care manufacture, obtained by chemical synthesis, which can cause irritation, and often only show short time effects.

**Keywords :** antimicrobial activity, biosurfactants, cosmetic, personal care

**Conference Title :** ICREET 2016 : International Conference on Renewable Energy and Environmental Technology

**Conference Location :** London, United Kingdom

**Conference Dates :** July 28-29, 2016