

BIOSURFACTANT TECHNOLOGY

Agriculture | Pharmaceuticals | Cosmetics | Petroleum



Biosurfactant

NEW GENERATION - MORE GREENER
ECO-FRIENDLY - BIO-FRIENDLY

Biologically synthesized surface active agents are known as Biosurfactants. They are synthesized by small sized organisms known as microorganisms. Biosurfactants are Amphiphilic compound that have hydrophilic and hydrophobic domains. The hydrophilic domains are usually consisting of carbohydrates, amino acids and phosphate groups. Hydrophobic domains. They are usually made up of long chain fatty acids widely used in the application of Agriculture, Cosmetics, Pharmaceuticals, Petroleum

Biosurfactants in Shampoos & Cosmetics

Cosmetic and personal care products including toothpaste, shampoo, creams, makeup, among others, are usually formulated with petroleum-based surfactants. In addition to their surfactant capacity biosurfactants act as good emulsifiers and substrate wetting properties.

Biosurfactants (BS) are amphiphilic compounds of microbial origin that have an advantage of biodegradability, low toxicity, better surface and interracial activity over conventional surfactants. Due to its antimicrobial activity and low toxicity, Biosurfactant has considerable role in anti dandruff shampoos.

In the presence of biosurfactant, maximum percentages of emulsion volumes ($EV=100\%$) are observed with droplets sizes about 199nm. The results are comparable and encouraging with the sodium dodecyl sulfate (SDS) a synthetic surfactant. Moreover, the biosurfactant and emulsions cytotoxicity has been evaluated using a mouse fibroblast cell line. The Solutions containing 5g/L of biosurfactant presented cell proliferation values of 97%, whereas 0.5g/L of SDS showed a strong inhibitory effect. Overall, the results of Biosurfactans are outstanding .

In Agriculture: Act as surface active compounds are used for hydrophilization of heavy soils to sustain its nutrient ability.

Biosurfactants in treating dandruff

The cosmetic industry provides a wide variety of shampoos to treat dandruff, containing insoluble ingredients such as Zn pyrithione. However, the solubility of this active ingredient is quite limited in both water and oil media; thus, anti dandruff formulations must include a large amount of chemically synthesized stabilizing ingredients to avoid their precipitation.

Conversely, biosurfactant (BS) is mainly composed of antioxidants, fatty acids, and lipopeptide biosurfactants, presenting an HLB values of 12 and good wetting activity in O/W formulations. It has been demonstrated to solubilize mica pigment particles due to the adsorption onto the surface of the material, providing it with hydrophobicity, being able to form a stable emulsion.

In-Petroleum: The degradation of hydrocarbon with in oil reservoir enzyme is made possible and act as a biocatalyst for up-grading of petroleum. It also helping to enhance oil recovery process by microbes.



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