

Mango kernel fat: Novel source for production of biosurfactant

Vishal Parekh, Prachi Kharkar and Vandana Patravale

Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, India.

Biosurfactants in broader sense are the surfactants which are synthesized from natural raw materials. They have attracted a great attention because they consist of inexpensive, renewable and easily accessible sugar and fat/oil as starting agricultural materials. They also have higher biodegradability and lower toxicity. In present study, biosurfactants are synthesized using indigenous mango kernel fat (MKF) as a natural source of stearic and oleic fatty acids. MKF has stearic acid content of 40-45%. Stearin fraction is separated by simple method of low temperature crystallization and was used to synthesize, a biosurfactant, namely glyceryl monostearate (GMS). Structural characterization of synthesized product was carried out using FTIR (Fourier Transform Infra Red) and NMR (Nuclear Magnetic Resonance) spectroscopy, etc. using commercially available GMS as a standard. Yield of chemically synthesized GMS was found to be 88%. Acid value, Saponification value and HLB value for surfactant were found to be 7.8, 167 and 3.707 respectively. For determination of critical micelle concentration (CMC), graph of surface tension vs. molar concentration of GMS was plotted and CMC was found to be 0.03 moles/lit. The interfacial tension of its aqueous solution at CMC was found to be 44.48 dynes/cm. The surface tension and the interfacial tension studies indicated that the synthesized surfactant had good surface and interfacial (emulsification) activity.

Biography

Prachi Kharkar has completed her Masters in "Downstream processing of Enzyme" from Institute of Chemical Technology. She is currently pursuing her Ph.D. from same institute and her work is based on nano drug delivery systems.