Lipopeptide Biosurfactant Production by Bacillus Cereus Mfs16 Isolated From Mangrove Forest Soil Using Pineapple Juice As Substrates

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ABSTRACT

In the present investigation, the pineapple juice production has been tested for its suitability for biosurfactant production using Bacillus cereus MFS16 isolated from the crude oil enriched mangrove soil. The strain recorded maximum biosurfactant production (9.43 g L⁻¹) when cassava wastewater was used as a medium. Biosurfactant production was confirmed by standard screening methods include Hemolytic activity, Drop collapsing test, Oil displacement method and Emulsification index. The isolate Bacillus cereus MFS16 showed lowest surface tension reduction potential of 26.6 mN m⁻¹, an interfacial tension of 0.97 mN m⁻¹ and a CMC of 33 mg L⁻¹. The active compound was extracted with diethyl ether and fractionated by TLC and FT-IR to confirm the presence of functional groups of a lipopeptide compound. FT-IR spectrum revealed that the important adsorption bands at 3423.04, 2958.90, 1630.84, 1350.12 and 1091.92 cm⁻¹ indicate the chemical structure of lipopeptide. The results demonstrated that the pineapple juice can be a suitable medium for the biosurfactant production, which can improve the process economical.

Keywords: Bacillus cereus MFS16, Biosurfactant, pineapple juice, Lipopeptide, Mangrove forest soil.