Miguel Angel Hernandez Rivera, J Microb Biochem Technol 2016, 8:5(Suppl)
http://dx.doi.org/10.4172/1948-5948.C1.021

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Biosurfactant synthesized by *Azospirillum lipoferum* ALM1B2: Characterization and application for environmental protection

This study characterizes a biotensoactive produced by the bacterium *Azospirillum lipoferum*, which was isolated from the rhizospheres of contaminated plants with oil in the lower basin of the Tonala River, Villa Benito Juarez, municipality of Cardenas, Tabasco, Mexico. The following properties were analyzed: viscosity at 25 °C, elemental analysis (%mol) by scanning electron microscopy, density at different temperatures, molecular weight, acute toxicity, median lethal concentration (LC50) and saponification and acidity indices. The effects of pH (6.0, 7.0, 8.0 and 9.0) and temperature (25, 30, 35 and 40 °C) on the production of the biotensoactive and the effect of NaCl on the surface tension, density and emulsifying capacity were studied. The results showed that the viscosity remained stable between 1.0914 and 1.1276 mPa-s, so the biotensoactive was classified as low-molecular weight. Toxic effects on the population of *Eisenia foetida* began at surfactant concentrations above 55,000 ppm and the LC50 was 96695 ppm. The highest yield of biotensoactive production was obtained 48 hours after the beginning of the treatment at pH 8 and pH 9 and 25 °C. At 25 °C, the surface tension ranged from 44.60 mN/m.

Biography

Miguel Angel Hernandez Rivera has completed his PhD from National Autonomous University of Mexico (UNAM), Mexico. He has been the Head of the Chemistry Engineering of the Biotechnology Laboratory of the Autonomous Juarez University of Tabasco (UJAT) for 28 years and Principal of Autonomous Juarez University of Tabasco (UJAT) for 8 years. He has published various papers in reputed journals and developed patents.

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