

Isolation and characterization of SDS-degrading *Pseudomonas aeruginosa* sp. strain D1

ABSTRACT

Surfactants are synthetic organic chemicals that are formulated to have cleansing or solubilisation properties. With the development of the industrial economy and increase in population density, surfactants have become one of the most widely disseminated xenobiotics to enter the aquatic environment, creating a serious environmental problem. Their toxicities to organisms have been demonstrated previously. The main objective of this study was to isolate and characterize local bacteria with the potential to degrade Sodium Dodecyl Sulphate (SDS), a widely used anionic surfactant. Screening was carried out by the enrichment culture technique and the isolate was tentatively identified as *Pseudomonas aeruginosa* sp. using BiologTM GN plates and partial 16S rDNA phylogeny. The optimal growth conditions in minimal medium and for degradation of SDS by *Pseudomonas aeruginosa* sp. were at 30°C and at pH 6.5 using phosphate buffer system. Sodium nitrate; at 8.0gL⁻¹ was found to be the best nitrogen source. The isolated strain exhibited optimum growth at SDS concentration of 1gL⁻¹ but can tolerate up to 14gL⁻¹ SDS, indicating that this isolate was able to survive in a relatively high concentration of SDS. 100% of 1.0gL⁻¹ SDS was completely degraded after 5 and 2 days of incubation before and after optimization respectively.

Keyword: SDS; Biodegradation; MBAS assay; *Pseudomonas aeruginosa* sp.