

Solvent-less approach for the recovery of palm-based sophorolipids biosurfactant via salting-out method

ABSTRACT

A suitable recovery process aimed at purifying the sophorolipids (SL) biosurfactant with eliminating of solvents was studied. Two routes of recovery strategies to extract the SL from the culture medium were investigated: (1) organic-solvent extraction, (2) non-solvent extraction via salting-out methods. The recovered SL produced by yeast culture *Starmerella bombicola* (ATCC 22214), supplemented with glucose and refined, bleached and deodorised (RBD) palm olein as the primary and secondary carbon sources, yielded in 53 g litre⁻¹ and 99 g litre⁻¹, respectively. The SL were produced as a mixture of lactonic and acidic forms, as qualitatively predicted by the appearance of seven spots on the thin layer chromatography plates. By high performance liquid chromatography (HPLC) analysis, salting-out via precipitation method successfully reduced acidic compounds and resulted in lactonic-rich SL in the final product in which the purity was approximately 75%. This was revealed by the identification of five major structures and diacetylated lactonic SL (688 g mol⁻¹) as the dominant compound. In conclusion, salting-out is recommended as a potential downstream processing for recovery of palm-based SL.

Keyword: Sophorolipids; Biosurfactant; Salting-out; RBD palm olein; *Starmerella bombicola*