

# Biosurfactant Production by *Pseudomonas aeruginosa* BN10 Cells Entrapped in Cryogels

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Production of a rhamnolipid biosurfactant by cells of *Pseudomonas aeruginosa* strain BN10 immobilized into poly(ethylene oxide) (PEO) and polyacrylamide (PAAm) cryogels was investigated under semicontinuous shake flask conditions and compared to biosurfactant secretion by free cells. The biosurfactant synthesis was followed over 9 cycles of operation of the immobilized system, each cycle comprising 7 days at ambient temperature and neutral pH. Type and quantity of the carrier were optimized for the rhamnolipid production. The highest rhamnolipid yield of 4.6 g l<sup>-1</sup> was obtained in the 6<sup>th</sup> cycle for the immobilized system with 3 g PEO compared to 4.2 g l<sup>-1</sup> obtained for the free cells, thus immobilization provided physiological stability of the cells. Scanning electron microscopy revealed preservation of the cell shape and regular distribution of the cells under the matrix surface. The polymer matrices possessed chemical and biological stability and very good physico-mechanical characteristics which are a prerequisite for a high life span of these materials for the production of rhamnolipids.

*Key words:* *Pseudomonas aeruginosa*, Biosurfactant Production, Cell Immobilization, Cryogel