

Statistical Optimization and Production of Rhamnolipid by *P. aeruginosa* PAO1 Using Prickly Pear Peel as a Carbon Source

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Abstract : Production of rhamnolipids by *Pseudomonas aeruginosa* has attracted a growing interest during the last few decades due to its high productivity compared with other microorganisms. In the current work, rhamnolipids production by *P. aeruginosa* PAO1 was statistically modeled using Taguchi orthogonal array, numerically optimized and validated. Prickly Pear Peel (*Opuntia ficus-indica*) has been used as a carbon source for production of rhamnolipid. Finally, the optimum conditions for rhamnolipid production were applied in 5L working volume bioreactors at different aerations, agitation and controlled pH for maximum rhamnolipid production. In addition, kinetic studies of rhamnolipids production have been reported. At the end of the batch bioreactor optimization process, rhamnolipids production by *P. aeruginosa* PAO1 has reached the worldwide levels and can be applied for its industrial production.

Keywords : rhamnolipids, *pseudomonas aeruginosa*, statistical optimization, tagushi, *opuntia ficus-indica*

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