

OPTIMIZATION OF THE PRODUCTION OF RHAMNOLIPIDS BY  
*PSEUDOMONAS AERUGINOSA* DAUPE 614

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*Pseudomonas aeruginosa* DAUPE 614, a strain isolated from a petrochemical plant, produced rhamnolipids when cultivated in submerged culture on glycerol as the sole carbon source. The present study aimed to optimize the production of rhamnolipids by *P. aeruginosa* DAUPE 614, using a Box-Behnken factorial design. The test variables were the concentrations of glycerol; ammonium nitrate and ferrous sulfate, while the response variable was the concentration of rhamnose obtained after 168 hours of culture, which is related to the concentration of rhamnolipids. Good fit of the model to the experimental data was obtained, with a total determination coefficient ( $R^2$ ) of 88%. The best initial concentrations for the production of rhamnolipids were 90.0 g/L glycerol and 1.0 g/L ammonium nitrate, in the absence of ferrous sulfate. Under these conditions, 4.0 g/L of rhamnose was obtained at 168 h. The lack-of-fit value for the regression was not significant ( $p=0.3041$ ) indicating that the model can be used to predict the production of rhamnolipids by *Pseudomonas aeruginosa* for any combination of the test variables. Application of factorial design enabled us to increase the rhamnose concentration obtained at 168 two-fold: from our initial value of 2.0 g/L to 4.0 g/L.

Key words: rhamnolipids; biosurfactant; *Pseudomonas aeruginosa*; optimization; factorial design.