

APPLICATION OF CENTRAL COMPOSITE DESIGN FOR THE DEVELOPMENT OF THE OPTIMIZED COMPLEX MEDIUM FOR PHENOL DEGRADATION USING *PSEUDOMONAS AERUGINOSA* (NCIM 2074)

M V V Chandana Lakshmi¹, V Sridevi² and M Narasimha Rao³

1 Associate Professor, Centre for Biotechnology, Department of Chemical Engineering, Andhra University, Visakhapatnam-03, Andhra Pradesh, India. Email: mahantilakshmi@yahoo.com

2 Associate Professor, Centre for Biotechnology, Department of Chemical Engineering, Andhra University, Visakhapatnam-03, Andhra Pradesh, India. Email: vellurusridevi@yahoo.co.in

3 Principal, Al-Ameer College of Engineering and Information Technology, College of Engineering, Gudilova, Anandapuram, Visakhapatnam, Andhra Pradesh, India. Email: mnrmd_au@yahoo.com

ABSTRACT

Statistics-based experimental design (central composite design) was applied to optimize the cultural conditions for phenol degradation by *Pseudomonas aeruginosa* (NCIM 2074). Single factor experiments were undertaken for determining the optimum range of each of three factors (pH, temperature and agitation speed) and these factors were subsequently optimized using the response surface methodology. The optimum conditions were found to be: pH (7.16), temperature (32.23°C), and agitation speed (161.12) rpm. Under these optimized conditions, the experimental values were in good agreement with the predicted values and the correlation coefficient was found to be 0.9795.

KEYWORDS: Biodegradation, Phenol, *P.aeruginosa*, Correlation coefficient