



Statistical optimization of the recombinant L-asparaginase from *Pseudomonas fluorescens* by Taguchi DOE

Rati Kumari Sinha, H. R. Singh*

Department of Bio-Engineering, BIT Mesra, Ranchi-835215, Jharkhand, India

Abstract: L-Asparaginase has been one of the naturally occurring enzymes which are known for its anti-tumor potential. It has proven to be an effective curative agent in the treatment of acute lymphocytic leukemia. In the present report, optimization of the concentration of media components of the recombinant L-asparaginase from *Pseudomonas fluorescens* was done by applying Taguchi Design of Experiment (M-9) method based on orthogonal array. The four factors at three concentration levels were considered for the optimization. The interaction pair of Lactose and MgSO_4 showed the most significant interaction effect. The ANOVA data revealed maximum F ratio of 274.108 in case NH_4Cl and hence proved to be the most influential factor with percentage contribution of 71.259%. The optimum condition for the enhanced production of recombinant L-asparaginase was found to be lactose at 1% (w/v), Tryptone at 1 % (w/V), Ammonium chloride at 0.25%(w/v) and magnesium sulphate at 0.25%(w/v). The expected enzyme production of 271.663 U/ml was proposed by the model. After validation, an enhanced enzyme production of 270.122U/ml was obtained with 35% increase in the yield.

Key words : L-asparaginase, *Pseudomonas fluorescens*, Taguchi, orthogonal array.

H. R. Singh *et al* /International Journal of PharmTech Research, 2016,9(4),pp 254-260.
