

Enhanced Production of L-glutaminase from *Bacillus licheniformis* by Taguchi DOE

Hare Ram Singh* and Santosh Kumar Jha

Department of Bioengineering, Birla Institute of Technology, India

L-glutaminase (L-glutamine amidohydrolase, EC 3.5.1.2) is an important enzyme due to its property such as, it enhances the flavour of food and can also act as an anti-leukemic agent and as a biosensor. L-glutaminase is produced by micro-organisms like bacteria, fungi, yeast and including humans and animals. L-glutaminase hydrolyses glutamine to glutamic acid and ammonia. The objective of the present investigation is to qualitative and quantitative screening of potential L-glutaminase producers. The primary screening of L-glutaminase is performed by rapid plate assay method on the basis of pH dependent analysis. *Bacillus licheniformis* is observed as the maximum producer of L-glutaminase, which is then used for the further investigation. The secondary screening is performed under optimized conditions. Taguchi orthogonal method of optimization of six factors viz. Carbon source, Nitrogen source, Salts, Incubation period, pH and Temperature was used for the maximum production. The maximum enzyme production of L-glutaminase was observed at dextrose (2.5g/L), L-glutamine (0.9g/L), $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ (0.4 g/L), NaCl (0.35 g/L), KH_2PO_4 (2.5 g/L), $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ (0.9 g/L), $\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}$ (5 g/L), pH 7.0 at 37^o C. An optimized enzyme production ensures high profitability and authentic significance in terms of its usage.

Biography:

Dr. Hare Ram Singh having a long experience in the field of bioprocess engineering. He is actively engaged in the bioprocess development for the industrially important biomolecules using the microbial system. He has expertise in the process optimization, downstream processing and mathematical modelling of the bioprocess. By profession he is an academician cum researcher and presently serving as an Assistant Professor in the Birla Institute of Technology, Mesra, India.