

## ABSTRACT

The present study is concerned with the optimization of cultural conditions for the biosynthesis of glucoamylase by *Aspergillus oryzae* GCB22 in shake flasks. Among six different fermentation media evaluated, M2 medium containing (g/l): soluble starch 10.0, MgSO<sub>4</sub>.7H<sub>2</sub>O 2.0, lactose 10.0, CaCl<sub>2</sub>.2H<sub>2</sub>O 0.6, NH<sub>4</sub>Cl 1.3, yeast extract 8.5, corn steep liqre 6.0 ml was found to be optimal for glucoamylase production (90.2±3.56 U/ml/min). The cultural conditions such as starch concentration (2.0 %, w/v), incubation period (72 h), initial pH (4.5), volume of the fermentation medium (25.0 ml, v/v), conidial inoculum level (4.0 %, w/v) and lactose concentration (1.0 %, w/v) were optimized. The volumetric rates i.e., Q<sub>p</sub> (2.860±0.125 U/ml/h) and Q<sub>x</sub> (0.232±0.014 g cells/l/h) were higher in the medium without corn steep liquor. However, there was an overall improvement of 2.94 fold (265.3±3.52 U/ml/min) in enzyme synthesis when medium was supplemented with (% w/v): yeast extract 1.0, peptone 0.75 and NH<sub>4</sub>Cl 0.14.