Optimization of Glucoamylase Production by *Humicola grisea* MTCC 352 in Solid State Fermentation

Vinayagam Ramesh[1*] and Vytla Ramachandra Murty[2]

[1]Department of Chemical Engineering, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India
[2]Department of Biotechnology, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal 576104, Karnataka, India

**Corresponding author. E-mail: rameshvinayagam@gmail.com*

https://doi.org/10.12982/CMUJNS.2019.0018

Received: *July 16, 2018*
Revised: *October 25, 2018*
Accepted: *October 29, 2018*

ABSTRACT

In the industrial processing of starch, the thermostable glucoamylase is employed in saccharification step. The thermophilic fungi Humicola grisea has been used for the glucoamylase production in solid state fermentation. The extracellular glucoamylase is estimated using glucose oxidase – peroxidase assay method. The initial screening studies revealed that wheat bran is the best substrate among the studied agricultural residues. The fermentation parameters were optimized through the response surface approach. By using central composite design, the optimal values of four important parameters viz., mineral salt solution concentration, incubation period, initial moisture content and inoculum size for glucoamylase production were found to be 65 % (v/w), 80 h, 240 % (v/w) and 13 % (v/w) respectively. The experimental activity of 282 U/gds obtained was close to the predicted activity of 288 U/gds. A high R^2 value (0.9741), P values lesser than 0.05 and AARD values (1.98 %) indicate the accuracy of the proposed model.

Keywords: Glucoamylase, *Humicola grisea*, Response surface methodology, Solid state fermentation