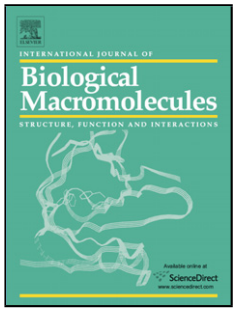


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# Production of chitinase from thermophilic *Humicola grisea* and its application in production of bioactive chitooligosaccharides

Manish Kumar[a], Amandeep Brar[a], V Vivekanand[b], Nidhi Pareek[a*]

[a]Department of Microbiology, School of Life Sciences, Central University of Rajasthan Bandarsindri, Kishangarh, Ajmer 305801, Rajasthan, India

[b]Centre for Energy and Environment, Malaviya National Institute of Technology, Jaipur 302017, Rajasthan, India

*Corresponding Author

E-mail: nidhipareek@curaj.ac.in; Tel: +91-1463-238651; Fax: +91-1463-238722

## Abstract

A novel thermophilic chitinase producing strain *Humicola grisea* ITCC 10,360.16 was isolated from soil of semi-arid desert region of Rajasthan. Maximum enzyme production (116 ± 3.45 U $l^{-1}$) was achieved in submerged fermentation. Nutritional requirement for maximum production of chitinase under submerged condition was optimized using response surface methodology. Among the eight nutritional elements studied, chitin, colloidal chitin, KCl and yeast-extract were identified as the most critical variables for chitinase production by Plackett–Burman design first. Further optimization of these variables was done by four-factor central composite design. The model came out to be significant and statistical analysis of results showed that an appropriate ratio of chitin and colloidal chitin had resulted into enhancement in enzyme production levels. Optimum concentration of the variables for enhanced chitinase production were 7.49, 4.91, 0.19 and 5.50 ($gl^{-1}$) for chitin, colloidal chitin, KCl and yeast extract, respectively. 1.43 fold enhancement in chitinase titres was attained in shake flasks, when the variables were used at their optimum levels. Thin layer chromatography revealed that enzyme can effectively hydrolyze colloidal chitin to produce