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Authors: Manish Kumar, Amandeep Brar, V. Vivekanand,

Nidhi Pareek

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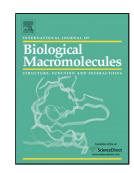
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Production of chitinase from thermophilic Humicola grisea and its application in

production of bioactive chitooligosaccharides

Manish Kumar^a, Amandeep Brar^a, V Vivekanand^b, Nidhi Pareek^{a*}

^aDepartment of Microbiology, School of Life Sciences, Central University of Rajasthan

Bandarsindri, Kishangarh, Ajmer 305801, Rajasthan, India

^bCentre 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

1

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