

Partial Purification and Characterization of a Low Molecular Weight and Industrially Important Chitinase and a Chitin Deacetylase Enzyme from *Streptomyces Chilikensis* RC1830, a Novel Strain Isolated from Chilika Lake, India

Authors : Lopamudra Ray, Malla Padma, Dibya Bhol, Samir Ranjan Mishra, A. N. Panda, Gurdeep Rastogi, T. K. Adhya, Ajit Kumar Pattnaik, Mrutyunjay Suar, Vishakha Raina

Abstract : Chilika Lake is the largest coastal estuarine brackish water lagoon in Asia situated on the east coast of India and is a designated Ramsar site. In the current study, several chitinolytic microorganisms were isolated and screened by appearance of clearance zone on 0.5% colloidal chitin agar plate. A strain designated as RC 1830 displayed maximum colloidal chitin degradation by release of 112 $\mu\text{mol/ml/min}$ of N-acetyl D-glucosamine (GlcNAc) in 48h. The strain was taxonomically identified by polyphasic approach based on a range of phenotypic and genotypic properties and was found to be a novel species named *Streptomyces chilikensis* RC1830. The organism was halophilic (12% NaCl w/v), alkalophilic (pH10) and was capable of hydrolyzing chitin, starch, cellulose, gelatin, casein, tributyrin and tween 80. The partial purification of chitinase enzymes from RC1830 was performed by DEAE Sephacel anion exchange chromatography which revealed the presence of a very low molecular weight chitinase(10.5kD) which may be a probable chitobiosidase enzyme. The study reports the presence of a low MW chitinase (10.5kD) and a chitin deacetylase from a novel *Streptomyces* strain RC1830 isolated from Chilika Lake. Previously chitinases less than 20.5kD have not been reported from any other *Streptomyces* species. The enzymes was characterized with respect to optimum pH, temperature, and substrate specificity and temperature stability.

Keywords : chitinases, chitobiosidase, Chilika Lake, India

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