Production, purification and kinetics of chitinase of *Stenotrophomonas maltophilia* isolated from rhizospheric soil

SS Shaikh[1], SJ Wani[1], RZ Sayyed[1]*, R Thakur[2] & A Gulati[2]

[1]Department of Microbiology, PSGVP Mandal's, Arts, Science & Commerce College, Shahada, Maharashtra-425 409, India

[2]Microbial Prospection Division, CSIR-Institute of Himalayan Bioresource Technology, Palampur, Himachal Pradesh-176 061, India

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Chitinases, through decomposition of chitin, have wide applications, and hence are in demand. Researchers over the period, are looking for potential microbial sources and for optimal production of chitinases. Here, we report isolation of three chitinolytic bacterial species belonging to three genera from different agricultural soil sample collected from Shahada, Maharashtra, India, on minimal agar plates containing colloidal chitin as source of chitin. *Stenotrophomonas* was found to be the most dominant species, followed by *Pseudomonas* and *Alcaligenes*. *Stenotrophomonas maltophilia* identified using 16s rRNA sequencing, Biolog and GC-FAME analysis showed optimum (1.5 U/mL) chitinase activity on chitin agar plates and in submerged culture broth with pH 6-7, incubation of 2 days at 37°C. Presence of $CaCl_2$ stimulated the enzyme production but EDTA was suppressive. The enzyme upon purification by using sephadex G-100 gel filtration showed improved chitinolytic activity, enzyme kinetics and 2.4 fold increase in purification yield. The molecular weight of purified chitinase as determined by SDS-PAGE was 50-55 kDa.

Keywords: Chitinase, Enzyme kinetics, Rhizosphere, SDS-PAGE