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Partial purification and assessment of antifungal activity of an extracellular chitinase from an Iranian thermophile strain of *Cohnella* sp. A01

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A B S T R A C T

Chitin, poly-β-1,4-N-acetyl-D-glucosamine (GlcNAc), is the second most abundant organic polymer in nature after cellulose and it is the main part of insects cuticle and crustaceans that includes in cell walls of most fungi and some algae and nematodes. One of the enzymes that are responsible for disintegration of chitin is Chitinase. Bacteria produce Chitinase for digesting chitin, principally as a source of carbon and energy. With the objective of achieving the maximum production of Chitinase in an Iranian thermophile strain of *Cohnella sp*. A01, five different media were examined. We partially purified this enzyme from a native strain. Bacteria were transferred to a pre-culture media after an initial culture. After 24 hours, the bacteria were transferred to five different media containing colloidal chitin as the main component. Maximum enzyme production reached in a treatment that contained $(NH_4)_2SO_4$ 0.05% and Agar 0.1%. We performed Chitinase assay using the DNS (dinitrosalicylic acid) and precipitated proteins by Ammonium sulfate. After precipitation of proteins with Ammonium sulfate, enzyme activity was increased. Completely Randomized Design was used and statistical analysis was performed using SAS software. Anti-fungal effect of Chitinase partially purified in this study was tested on five plant fungal pathogens and was confirmed in four cases.

Key Words

Chitinase, Enzyme Activity, Purification of Enzyme, Anti-Fungal Effect.