

Antifungal Activity of Soil Chitinolytic Bacilli

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Abstract

Background and Objective: Chitin, which is a linear polymer of N-acetyl glucosamine residues, has been the most abundant polymer in nature after cellulose. In recent decades, Chitinases have received increased attention because of their wide range of applications, especially in biological control against fungi.

Material and Methods: the isolation of bacilli producing chitinolytic enzymes was performed by collecting 40 soil samples from various regions of Gorgan, northern of Iran. The chitinolytic potential of the isolates was indicated by observation of clear zone in colloidal chitin agar medium. Identification of selected strains was performed by polyphasic taxonomy, and subtler identification and sequencing were carried out by extraction DNA. Antifungal effect was evaluated by well method against *Candida albicans* (ATCC 10231) *Aspergillusniger* (ATCC 2029)•*Aspergillusflavus* (IR6) *Fusariumoxyporum* (PTCC 5115) and *Alternariaalternata* (PTCC 5224).

Results: Nine colonies of chitinase positive bacillus were isolated on choloidal Chitin Agar (CCA) and five of them had antifungal effect. R6 strain had the highest, and R2 and R3 had the lowest effect on fungi. The 16S rRNA sequence of these isolations in comparison with the known bacteria has 95-97% similarity.

Conclusion: Some of the soil bacteria can have antagonistic effects on human and phytopathogenic agents existed in soil.

Keywords: Bacillus; Chitinase; Soil; Antifungal