



Bioinformatics analysis on the physicochemical properties and structure of bacterial chitinase enzyme

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Abstract: Chitin is a linear polysaccharide and the second most abundant polymer in nature and is considered to be the most abundant biopolymer in the sea that is the main component of the cell wall structure of many creatures[1]. Chitinase is an enzyme that decomposes chitin into its monomeric and oligomeric components. And is mainly used in the fields of medicine, agriculture and various industries. recent studies suggest that the enzyme plays a defensive role against fungal pathogens. Also this enzyme in medicine, the production of protozoan proteins, production of chito oligosaccharides, isolation of protoplast, biological insecticides, insect control are available[2]. In this study, was investigated the enzyme in 30 bacterial species. To verify the physicochemical properties of the enzymes and the stability and thermal stability of the enzymes was used of the protparam server. Design and analysis of the second and tertiary structures were performed by psipred servers and swissmodel respectively and the phylogenetic tree was designed to evaluate the evolutionary relationships of these enzymes with the mega6 software. also the signalp server was used to check the presence of secretory peptide signal in these enzymes. Whole of the tested enzymes have an appropriate stability index (below 40) and among these, the enzymes that produce by *Clostridium argentinense*, *Colwellia psychrerythraea*, *Paenibacillus taiwanensis*, *Vibrio- coralliilyticus* had higher aliphatic index than others that respectively 79.15, 76.53, 77.39 and 76.78. And these enzymes also had a secreted peptide signal.

Keywords: chitinase, enzyme; chitin, bioinformatics; bacteria

References

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