Screening and Isolation of Chitinolytic Bacteria and Identification of Selected Strains Based on 16S RDNA Molecular Marker

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Background & Objectives: chitinase is one of the important industrial enzymes, which is used in the agriculture industry, food industry, insect control, pharmacology, medical and biotechnology. Chitinase enzymes were produced by different microorganisms which bacteria are one of the important chitinase producers. In this study we aimed to isolate and identify bacteria showing high chitinolytic activity.

Methods: Different samples including sediment, shrimp, wastewater shrimp and sea water were collected from different places from Persian Gulf in bushehr, Iran (1390). Initially 30 bacteria which showed higher zone / colony size ratio in the plate were selected and transferred to the liquid basal medium from measurement activity enzyme. Chitinase activity of isolates were measured using di-nitro salicylic acid (DNS) methods and in total , 11 isolates that high chitinolytic activity in liquid medium were selected and identified base on 16S rDNA as a molecular marker. The nucleotide sequence 16S rDNA of the tested isolate was compiled and compared with sequences in NCBI using a BLAST program.

Results: Ten isolates were belonging to Aeromonas genus and one of them was a member Actinobacter sp. The partial 16S rDNA gene sequence of the selected bacterial strain obtained in this study was deposited in the GenBank nucleotide sequence database under the accession number . A new Aeromonas sp. ZD_05 exhibited the high chitinolytic activity.

Conclusion: This microorganism may be useful for treatment of chitinous waste and also for production or different products of hydrolyze chitin for various application.

Keywords: Aeromonas; Chitinolytic Bacteria; 16S RDNA; Persian Gulf