Isolation and Molecular Identification of Some Amylase Producing Bacteria from the Kitchen Waste Water of a Sweet Shop

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Background & Objectives: Amylases are important glycosyl hydrolases, which break down starch molecules to give low molecular weight products, such as glucose, maltose and maltotriose units. They have been found in many species of animals, plants, microbes. The enzymes from microorganisms are most interesting because of their potential applications in various industries such as food, pharmaceutical, detergents, textile, paper and fuel alcohol production.The aim of this study is to isolate and molecular identify some novel local bacterial strains that are capable of producing amylase from the kitchen waste water of a sweet shop.

Methods: The isolation was done through direct methods using starch agar. To determine the amylase activity, starch digestion was measured using the 3, 5 dinitrosalicylic acid methods. The amylase producing bacteria were identified according to biochemical and molecular methods.

Results: 19 strains formed large and clear halos after staining starch agar plates with Gram's iodine. After the amylase assay, the bacterium *Pseudomonas stutzeri* ML-18 was selected as the highest amylase activity. Analysis of 16S rDNA sequences of isolated bacteria and comparison them with other 16S rDNA sequences of known bacteria in Genbank data box (NCBI), showed that bacteria had 98-100% similarity to the other known bacteria. The DNA sequences were published in the NCBI under specific accession numbers.

Conclusion: Results indicate that 16s rDNA gene is accurate target for molecular identification of bacteria. The bacterium *Pseudomonas stutzeri* ML-18 with the highest activity in this study, can be a good candidate for the conversion of starch to glucose.

Keywords: Amylase; 16S rDNA; *Pseudomonas stutzeri*; Starch Agar