Screening and Isolation of Uricase-Producing Bacteria and Identification of Selected Strains Bby Molecular Markers

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Background & Objectives: Uricase catalyses the oxidation of uric acid, a final product of purine catabolism, to allantoin, which is more soluble and easily excreted than the starting compound. It has beneficial uses both in vitro and in vivo. Uricase is useful for enzymatic determination of urate in clinical analysis by coupling with 4-aminoantipyrine-peroxidase system. It can be also used as protein drug for treatment of gout hyperuricemia. Uricase has effective role in prophylaxis and treatment of tumor lysis hyperuricemia. The aim of this work is to screen new source of bacteria for production of uricase with unique properties to expand its usefulness.

Methods: All strains investigated in this study were isolated from the soil samples collected from Shiraz, Iran. Each sample was suspended in distilled water and was diluted. Samples were cultivated on a production medium containing uric acid. The agar plates were incubated at 37C and monitored 24 h. A clear zone indicates the presence of uricase enzyme. Those strains forming bigger zone were selected and used to inoculate liquid production medium. Uricase activity was measured by special Methods of enzyme assay using a reactionsystem containing 4-aminoantipyrine, phenol and peroxidase as chromogen. The reaction was carried out at 37 C for 60 min. The increase in absorbance at 505 nm was determined for enzyme assay. Subsequently, samples with bigger clear zone and higher enzyme activity were collected and identified using molecular markers.

Results: Our works showed special species of Pseudomonas with high enzyme activity which can be used as a new source of uricase producing microorganism in industrial and pharmaceutical practices.

Conclusion: Some microrganism can be selected as important sources of some beneficial enzymes like uricase, but more and more study should be done for the best results.

Keywords: Uricase; Pseudomonas; Screening