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Screening, isolation and identification of potential phytase-producing bacteria from environmental samples

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Abstract

Today, enzymes are considered as an integral part of nutrition systems. One of these enzymes is phytase, which, by digestion of phytic acid, makes the inaccessible material available to the livestock. Phytase is extracted from plant, animal and microorganisms. In this research, native bacteria isolated from soil and other environmental samples were isolated and a number of species were selected based on the amount of enzyme production. The amount of enzyme produced in different media, pH and different temperatures was investigated. Finally, isolated bacterial strains were identified using molecular methods and detected by genetic analyzer. The results were evaluated using SPSS software. The bacterial strains identified in this study were *Erwinia carotovora*, *Bacillus subtilis* and *Klebsiella oxytoca*. The best screening environment was used to isolate bacteria, wheat bran medium and the highest amount of enzyme production on the fifth day after culture. Also, the maximum activity of *Bacillus subtilis* and *Klebsiella oxytoca* was at 50 °C and pH was 7.5 and 5.5 respectively. The maximum enzyme activity of *Erwinia carotovora* was 40 °C at pH 5/5.

Keywords: Phytase, Bacteria, Enzyme, Phytic Acid, Identification, Isolation, Wheat straw