

Expression of Bacillus Species Isolated Phytase Gene from Soil by PCR Method

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Abstract

Background and Objective: Recognizing and using of isolated phytase in the soil microorganisms are paramount importance to produce the Phytase enzyme utilized commercially in different industries. This study was conducted to recognize different bacillus species which are Phytase producers and detection of the gene that can produce this enzyme.

Material and Methods: Soil samples were gathered through different parts of mountainous areas. The early isolation of bacillus was carried out in Bacillus Medium Agar. After isolating the bacteria and genome extraction, the responsible gene of enzyme producer recognized and amplified by PCR method. The size of this protein and the optimal production situation in supplemental exploitation such as SDS-PAGE and the enzymatic activity of its size were evaluated.

Results: Of 40 samples, one bacterium secreting Phytase enzyme was isolated. This bacterium was sequenced and recognized Bacillus Subtilis species that is classified in STR Genus. The size of protein phytase produced by this gene was about 45 KD and the enzyme activity at 55 degrees was measured about 5.65 in wavelength of 415 NM. The phytase gene with the size of 1200 bp was propagated.

Conclusion: the microorganisms, in natural conditions, produce Phytase enzyme in limited amount and with the quality appropriate to microorganisms. Thus, isolating the bacilli producing Phytase enzyme and purifying this protein are highly significant.

Key words: Bacillus Subtilis; Phytase; SDS-PAGE; Enzymatic Activity; Polymerization Chain Reaction