

Extracellular Phytase from *Lactobacillus fermentum* spp KA1: Optimization of Enzyme Production and Its Application for Improving the Nutritional Quality of Rice Bran

Authors : Neha Sharma, Kanthi K. Kondepudi, Naveen Gupta

Abstract : Phytases are phytate specific phosphatases catalyzing the step-wise dephosphorylation of phytate, which acts as an anti-nutritional factor in food due to its strong binding capacity to minerals. In recent years microbial phytases have been explored for improving nutritional quality of food. But the major limitation is acceptability of phytases from these microorganisms. Therefore, efforts are being made to isolate organisms which are generally regarded as safe for human consumption such as Lactic Acid Bacteria (LAB). Phytases from these organisms will have an edge over other phytase sources due to its probiotic attributes. Only few LAB have been reported to give phytase activity that too is generally seen as intracellular. LAB producing extracellular phytase will be more useful as it can degrade phytate more effectively. Moreover, enzyme from such isolate will have application in food processing also. Only few species of *Lactobacillus* producing extracellular phytase have been reported so far. This study reports the isolation of a probiotic strain of *Lactobacillus fermentum* spp KA1 which produces extracellular phytase. Conditions for the optimal production of phytase have been optimized and the enzyme production resulted in an approximately 13-fold increase in yield. The phytate degradation potential of extracellular phytase in rice bran has been explored and conditions for optimal degradation were optimized. Under optimal conditions, there was 43.26% release of inorganic phosphate and 6.45% decrease of phytate content.

Keywords : *Lactobacillus*, phytase, phytate reduction, rice bran

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