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Screening and production of phytase from *Phytophthora infestans*-J3

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Phytases are the most important and essential potential industrial enzymes hydrolyzing phytic acid (exists in the form of phytate) which are recognized as an anti-nutritional factor to less phosphorylated myo-inositol derivatives, releasing inorganic phosphate. To alleviate the detrimental effects of high concentrations of phytate, swine and poultry feed has been supplemented with phytase which is key biocatalyst for phytate degradation. The phosphate pollution can be reduced in the environment by using the phytases. The removal of phytic acid from plant might be important in the paper and pulp industry. A thermostable phytase could have potential or capable as a novel biological agent to degrade the phytate content or phytic acid during pulp and paper processing. Therefore enzymatic degradation of phytic acid would not produce highly toxic and carcinogenic by-products. Therefore, the exploitation of phytases in the pulp and paper process could be environmentally friendly and would assist in the development of cleaner technologies. In this research, the emphasis has been focused on the isolation of potential phytase from natural sources and production. A microorganism with a thermostable phytase activity was screened from a total of 12 isolates, which were isolated from 6 poultry samples collected from yarayana poultry farm tarihal Hubli, Karnataka, India. Phytase-producing microorganisms were primarily selected by size and colour of the colony on the plate with modified phytase screening medium (MPSM) and their phytase activities were measured by PS liquid assay method. An isolate J3 was finally selected among some fungal with a high phytase activity by determining a thermostability of phytase. This isolate was identified as *Phytophthora infestans*-J3 by morphological observation, and 18s rDNA sequencing similarity analysis. Attempts have been made in the production of phytase by submerged fermentation and solid substrate fermentation system. In the present investigation effect of different agricultural substrates on phytase production by the *Phytophthora infestans*-J3 revealed that the maximum amount of phytase was produced with saw dust as a substrate than other substrates used in the study. In SMF different media were optimized for the maximum production of phytase, and it was produced with the MSS5 as compared to the other media used in this study. Different fermentation parameters, including incubation time, temperature, pH, carbon source and nitrogen sources were optimized to enhance phytase production.

Biography

B S Gowrishankar is Professor and Head of the Department of Biotechnology at Siddaganga Institute of Technology, Karnataka, India. He received his PhD degree from Indian Institute of Technology Chennai in 2006. His research interests are focused on production and purification of esterases from microorganisms.

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