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Production of protease enzyme by isolated fungi and bacteria under solid state fermentation using low cost medium wheat bran

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Abstract : *The present study aimed to isolate microorganisms from soil samples which have the potential to produce protease enzyme on wheat bran media. Screening of the isolates were done on skimmed milk agar plates. A total of twelve strains were isolated. Upon initial identification, out of seven bacterial strains tested, only five showed proteolytic activity and out of five fungal strains tested, only three showed good proteolytic activity. Further extraction and optimization of protease enzyme at different temperature and after different time interval was done. On the fifth day of incubation maximum enzyme activity was observed by bacterial strains. On incubation at different temperatures, at 37°C strain II and IV and at 25°C strain I and III showed maximum enzyme activity. Among fungal strains, strain II showed maximum enzyme activity.*

Key Words: *Skimmed milk agar media, fungi, bacteria, wheat bran.*

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Introduction:

Enzyme is a biocatalyst which accelerates the rate of biological reaction. Proteases occur in all organisms. These enzymes are involved in a multiple of physiological reactions from simple digestion of food proteins to highly regulated cascades (Cai et al. 2008) Microorganisms are the most important sources for enzyme production. Selection of the right microorganism plays a key role in high yield of desirable enzymes. Among these, *Bacillus* genes gained importance at industrial scale. The first detergent containing bacterial enzymes was introduced in the market in 1956 under the trade name bio-40 and today alkaline protease. The *Aspergillus* species produces a large variety of extracellular enzymes, of which proteases are of significant industrial importance (Pandey et al. 2000). At present the overall cost of enzymes production is very high (due to high cost of substrate and medium used) and therefore development of novel processes to increase the yield of proteases with increasing the production cost is highly appreciable from the commercial point of view. To achieve these goals during the recent years, effects have been directed to expose the means to reduce the protease