THE PRESENT STUDY
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Production of total biomass on earth has been estimated to be $1.8 \times 10^{12}$ tons annually and $1 \times 10^{11}$ tons of this quantity is replenished each year as a result of photosynthesis (Bassham, 1975; Stephens and Heichel, 1975). India's biomass sources mainly include agricultural and forest residues which account for about 321 million tons annually (Ramachandran and Sinha, 1993). Production of ethanol and other products from these vast renewable biomass is an attractive alternative to fuels and basic chemical feedstocks. One such technology is microbial conversion of lignocellulosics into ethanol. The biotechnology involves the discovery and subsequent optimization of the biological and biochemical processes needed to exploit the source of natural raw material. By virtue of their collective enzyme system (amylase, cellulase and xylanase), litter degrading fungi could convert biomass into fuel, via fermentation process. Furthermore, the enzymes produced by these organisms could be utilised for many industrial processes as biocatalysts. One such process is application of cellulase free xylanase enzymes in the prebleaching of kraft pulps in the pulp and paper industry. These biological processes are eco-friendly and could reduce or replace the hazardous chemicals used in these industries. Based on these observations, in the present study, litter degrading fungi have been isolated from the forest litter and their possible applications in production of ethanol, prebleaching of hardwood kraft pulp and deinking of waste papers were studied.

Litter degrading fungi were isolated from the forest soils of Western Ghats area by nylon net bag technique and screened for production of amylases, cellulases and xylanases. Based on the screening test, five fungi, *Aspergillus ficum*, *A. japonicus*, *A. oryzae*, *A. tamarii* and *Trichoderma koningii* were selected and used for saccharification of lignocellulosic wastes such as paddy straw, sugarcane bagasse, vegetable waste, municipal solid waste and leaf litter. *Aspergillus awamori* NRRL2276 was obtained from United States Department of Agriculture (USDA), Illinois, USA and used as reference fungus. The hydrolysate obtained after saccharification was further fermented by employing *Saccharomyces cerevisiae* and *Zymomonas mobilis* to obtain ethanol. The enzyme xylanase was purified from the culture filtrates of the selected fungi and its properties were characterised. Application of these enzyme preparations for bleaching of hardwood kraft pulp and deinking of waste papers were studied.