Studies on lipase productivity of *Candida albicans* and *Saccharomyces cerevisiae* using cheap substrates

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SUMMARY

In the presents study the lipase-producing organism were isolated from the soil sample using olive oil containing medium. The isolates were identified based on the morphological and biochemical characteristics. The isolated *Candida albicans* and *Saccharomyces cerevisiae* were inoculated in to inoculam medium and incubated at 37°C for 24hours used as the inoculum. The inoculums mixed with fermentative substrate like molasses and soybean, after incubation, the lipase was estimated. In the study high lipase activity (0.31±µ/ml/min) was observed in *Candida albicans* inoculated medium. Effect of physiochemical parameter was analyzed for optimum enzyme productivity in this study maximum productivity was noted in pH-7 and temperature 35-40°C. Lipase productivity also studied in the free immobilized cell. In this study lipase productivity was maximum noted in the immobilized cell (0.51± 0.09µ/ml/min).

Key words : *Candida albicans*, *Saccharomyces cerevisiae aereus*, Olive oil.

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Lipase has become one of the prominent industrial enzymes for their specificity in hydrolysis and interesterification. They catalyze both the hydrolysis of triglycerides and the synthesis of esters from glycerol and long chain fatty acids (Benjamin and pandy, 1997). In addition, they also serve as biocatalyst for alcoholysis, acidolysis, esterification and aminoacids (Dai *et al*., 2000). Lipase is produced by various microbes, such as bacteria, fungi, yeast, and also in the pancreas of mammals, like pigs and humans. They have also been reported in higher plants, such as castor bean (*Ricinus communis*) and rapeseed (*Brassica napus*) (Elad *et al.*, 1982).

Numerous lipases have been characterized and efforts have been made to improve their stability in organic solvents for varied applications (Elibol and Ozer, 2000; Faird *et al.*, 1994). The most important commercial use of lipases was added to 13 billion tonEs of detergents produced every year (Benjamin and pandy, 1997). Lipase are also emerging as important enzymes in the field of biopolymers. They are used in the synthesis of polymers (Faird *et al.*, 1994). Immobilized *Pseudomonas fluorescence* lipase has been used for the production of bio diesel fuel from triglycerides and alcohols (Fukuda *et al.*, 2001).

Transesterification of oils catalyzed by lipase have fuel (Gross *et al*., 2001). Use of organic solvents in transesterification reactions by lipase in producing methyl esters from sunflower oil showed improved conversion (Faird *et al.*, 1994). Another major industrial application of lipases is in resolving racemixtures (Hellyer *et al.*, 1999; Hung *et al.*, 2003; Kierstan and Bucke, 1977). Optimization of the enantioselective resolution reactions in various bioreactors, like biphasic enzyme membrane reactors (Nawani *et al*., 1998) and packed bed reactors (Paloma *et al.*, 2003) which favours large-scale production. Applications of lipases also extend to the field of waste management and improving tanning technique (Pandey *et al*., 1999) and in separation, which are difficult-to-separate mixtures of organic acids (Sakakai *et al.*, 2001; Jaeger and Reetz, 1998; Kamal *et al.*, 2002).

MATERIALS AND METHODS

One gram of soil sample was suspended in 10ml sterile water. After shaking, 5ml suspension was added in 250ml Erlenmeyer flask containing 25ml of enrichment medium. The medium was incubated at 30°C on a rotator shaker at 200 rev / min for 3-5days, and then aliquot was transferred to fresh medium and cultured again under the same condition. The above incubation and transfer operation were repeated for 5 to 6 times until microbial cells in the culture became nearly uniform (same were periodically observed under microbes). The enrichment cultivation on olive oil was carried out on the assumption that