

## ABSTRACT

Lipase producing micro-organisms were isolated from the soil and food samples using a selective isolation medium. The isolated cultures were screened for maximum lipase production. The fungus *Rhizopus oligosporous* was found to produce maximum lipase. The fermentation medium M<sub>5</sub> consisting of (g/L) olive oil : 20, yeast extract: 1.0, ammonium sulphate: 5.0, K<sub>2</sub>HPO<sub>4</sub> : 0.5, MgSO<sub>4</sub>.7H<sub>2</sub>O: 0.25, CaCO<sub>3</sub> : 5.0 was found to be the best medium for lipase production by *Rhizopus oligosporous*. The fermentation conditions like medium composition, aeration rate and incubation temperature were optimized for the production of the intracellular lipase by *Rhizopus oligosporous* in shake flasks. The optimization of the fermentation conditions resulted in about three fold increase in lipase production. The optimized medium produced 3.2g/L fungal biomass with 322 lipase units per/g mycelium and about 2.2 units extracellular lipase per mL. The fungus was also cultured in solid substrate for extracellular lipase production. Different agricultural by-products such as wheat bran, gram bran, rice husk, soyabean meal and rice bran were evaluated for lipase production. A mixture of wheat bran and soybean meal, however, was found to be the best substrate for SSF. Additives like olive oil and the egg yolk emulsion increased lipase production. The extracellular lipase was partially purified by ammonium sulphate and acetone precipitation to produce 7100 lipase units per gram protein. Both intracellular and extracellular lipases were also purified by column chromatography using Amberlite IRC 50. It was found that *Rhizopus oligosporous* produced two different lipases which were present both inside the cell as well as in the broth.