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Production and application of lipase from Aspergillus tamarii JUCLF03

Lipases are the class of enzymes which catalyse the hydrolysis of long-chain triglycerides. The present study focuses on identification of a potent lipolytic fungus, production of lipase through optimization of nutritional and cultural conditions under submerged fermentation and application of lipase. Molecular characterization of the fungal isolate JUCLF03 by Internal Transcribed Spacer (ITS) rRNA sequencing revealed its identity as *Aspergillus tamarii* with 99.83% homology (GenBank accession PP565338). Maximum lipase production was noted in mineral salts medium supplemented with sesame oil (1%, v/v). Lipase assay was performed titrimetrically using olive oil and phenolphthalein as the indicator. A combination of ammonium chloride (2%, w/v) and yeast extract (1%, w/v) facilitated maximum lipase production (3800 U/ml) at initial pH 6 of the production medium. There was an increase in the enzyme production in the presence of surfactant cetyltrimethylammonium bromide (0.5%, w/v). Maximum lipase activity was recorded after 6 days of incubation at 25±2℃ on a rotary shaker at 120 rpm. Oil destaining activity of the lipase on the fabric pieces was determined using both cold and hot water in the presence and absence of commercial detergent. Treatment involving hot water (50℃) and lipase demonstrated maximum lipolytic activity after 30 min of fabric treatment. Further studies need to be conducted to characterize the fungal lipase for its industrial application.

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