# LIPASE PRODUCTION BY *Aspergillus niger* STRAINS IN SOLID-STATE AND SUBMERGED FERMENTATIONS

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Lipases are hydrolytic enzymes that act in aqueous-organic interfaces, catalyzing the cleavage of ester bonds in triglycerides and producing glycerol and free fatty acids. However, in environments with low water availability, lipases are able to catalyze esterification, interesterification and transesterification reactions, being thus very versatile biocatalysts. There is a growing interest for lipases, especially for those of microbial origin. However, the industrial application of these enzymes depends mainly on the development of low-cost processes for their production. For this reason, lipase production was evaluated using solid-state (SSF) and submerged (SF) fermentations. A packed bed with aerated column was employed for SSF and shake flasks for SF using two different *Aspergillus niger* strains: a mutant 3T5B8 and a wild type C. Wheat bran was used as carbon source and ammonium sulphate as nitrogen source with a fixed molar carbon to molar nitrogen concentration of 14. The maximum lipase activities (19.0 U/mL and 18.4 U/mL) were obtained for SSF after 72 hours using *A. niger* 3T5B8 and *A. niger* C, respectively. When SF was used, the maximum lipase activities (3.2 U/mL and 6.1 U/mL) were obtained after 96 hours using *A. niger* 3T5B8 and *A. niger* C, respectively. The carbon source concentration was 10 times higher in SSF (300 g/L) than in the SF (30 g/L) and it was expected that the activity in the SSF was 10 times higher than SF. Therefore, lipase production was better when *A. niger* C was used with SF process.