

## **Production of lipase by *Fusarium oxysporum* using Mee (*Madhuca longifolia*) oil cake substrate and its potential applications in detergent industry**

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Enzyme lipase was produced by *Fusarium oxysporum* under solid state fermentation using Mee (*Madhuca longifolia*) oil cake as the substrate. Conditions were optimized to obtain the maximum production of lipase by varying incubation time, pH, substrate level, and additional nitrogen source. Maximum production was obtained at pH 8, in 7 days at a substrate level of 330 g/L. For large scale preparation of the enzyme, cultures were grown under the optimized conditions, extracted enzyme was fractionated with ammonium sulphate, dialyzed and the potential of the enzyme to be used in detergent industry was evaluated. Substrate specificity, stability of the enzyme in the presence of commercial detergents and fatty stain removal ability were also investigated. This study revealed that the enzyme has a relatively higher substrate specificity towards castor, coconut and olive oils whereas relatively low substrate specificity towards the sunflower oil. Enzyme also showed relatively higher stability towards the detergents: Diva, Sunlight and Rin while comparatively low stability towards Surf excel. It was also found that the produced lipase possesses an ability to remove fatty stains.

**Keywords:** *lipase*, solid state fermentation, application in detergent industry, *fusarium oxysporum*, *mee (madhuca longifolia)* oil cake.

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