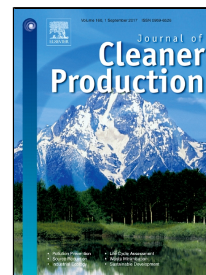


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Hydrophilic modification of polyester fabric by synergetic effect of biological enzymolysis and non-ionic surfactant, and applications in cleaner production

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ABSTRACT

A significant trend in textile manufacturing is the improvement in cleaner production processes using new biotechnological techniques. The biological enzyme lipase was used to improve the surface hydrophilicity of polyester fabric. The activity of a lipase (triacylglycerol hydrolase, EC 3.1.1.3) from *Pichia pastoris* and the effects of various parameters were investigated. The surface morphology of the modified polyester fiber was examined using reflectance spectroscopy and scanning electron microscopy. The synergetic effects of lipase combined with each of the five surfactants, namely JFC, AEO-9, HMA-474B, Tween-80, and sodium dodecyl sulfate (SDS), were investigated. The surfactants AEO-9, HMA-474B, and SDS significantly inhibited the lipase activity. Tween-80 decreased the lipase activity slightly. A combination of the non-ionic surfactant JFC and the lipase gave excellent synergy and significantly

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