

## **Lipase-catalyzed synthesis of a sugar alcohol-based nonionic surfactant.**

### **ABSTRACT**

Synthesis of three xylitol fatty acid esters, namely xylitol stearate, palmitate and caprate, was performed in hexane using lipase as the biocatalyst. Enzyme screening results indicated that novozym 435 had the highest catalytic activity in the synthesis of ester. The conversion of substrates was significantly increased by using molecular sieve for water removal. The maximum conversions of three fatty acids, stearic acid, palmitic acid and capric acid to xylitol esters were 96, 92 and 88 %, respectively, at the optimum reaction conditions including temperature, 60 °C; time, 18 h; substrate molar ratio, 1; enzyme amount, 0.12 g and molecular sieve amount 4 g in 30 mL solvent. Subsequent analysis by GC-MS indicated that the amount of produced diesters was significantly more than mono, tri and tetra esters.

**Keyword:** Xylitol; Fatty acid; Sugar alcohol ester; Novozym 435.