

## **Large scale production of liquid wax ester by immobilized lipase**

### **ABSTRACT**

Oleyl oleate, a liquid wax ester was synthesized by an immobilized *Candida antarctica* lipase B (Novozym 435) as biocatalyst using oleic acid and oleyl alcohol. The effects of various reaction parameters were optimized to obtain a high yield of liquid wax esters. Investigation in large scale production was performed in batch mode of stirred tank reactor (STR) with one multi-bladed impeller. The optimum condition to produce liquid wax ester was, reaction time (RT); 30 min, temperature (T); 50 °C, amount of enzyme (E); 90 g (900,000 PLU), agitation speed (A) of 400 rpm, number of impeller tip (N) of 2 and molar ratio of oleyl alcohol to oleic acid (M); 2:1. Analysis of the yield showed that at optimum condition, >90% liquid wax esters were produced. The stability of Novozym 435 showed at high percentage (>80%) up to 4 cycles.

**Keyword:** Liquid wax ester; Enzymatic; Esterification; Oleyl oleate