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### **Lipase Mediated Isoamyl Acetate Synthesis in Solvent-Free System Using Vinyl Acetate as Acyl Donor**

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#### **Summary**

Synthesis of isoamyl acetate, a flavour ester extensively used in food industry, has been carried out in a solvent-free system. In the present study, an attempt has been made to enhance the isoamyl acetate synthesis yield by transesterification of isoamyl alcohol with vinyl acetate using immobilized *Rhizopus oryzae* NRRL 3562 lipase. In the present synthesis, substrates had no inhibitory effect on immobilized lipase. The effects of various reaction parameters on isoamyl acetate synthesis were studied and maximum conversion was achieved at 16 % (by mass per volume) of immobilized lipase, 40 °C and 200 rpm. Under these conditions, 8-hour reaction time was sufficient to reach a high

ester conversion of 95 % with 0.5 mol/L of isoamyl alcohol. The structure of the transesterified product was confirmed by infrared and nuclear magnetic resonance spectroscopic studies. Immobilized lipase had  $K_m$  and  $v_{max}$  values of 306.53 mmol/L and 99  $\mu\text{mol}/(\text{h}\cdot\text{g})$  respectively, for isoamyl acetate synthesis in a solvent-free system.

*Key words:* isoamyl acetate, immobilized lipase, *Rhizopus oryzae* NRRL 3562, solvent-free system, transesterification, vinyl acetate

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