

## Immobilized *Talaromyces thermophilus* lipase as an efficient catalyst for the production of LML-type structured lipids

### ABSTRACT

LML-type structured lipids are one type of medium- and long-chain triacylglycerols. LML was synthesized using immobilized *Talaromyces thermophilus* lipase (TTL)-catalyzed interesterification of tricaprylin and ethyl linoleate. The resin AB-8 was chosen, and the lipase/support ratio was determined to be 60 mg/g. Subsequently, the immobilized TTL with strict sn-1,3 regiospecificity was applied to synthesize LML. Under the optimized conditions (60 °C, reaction time 6 h, enzyme loading of 6% of the total weight of substrates, substrate of molar ratio of ethyl linoleate to tricaprylin of 6:1), Triacylglycerols with two long- and one medium-chain FAs (DL-TAG) content as high as 52.86 mol% was obtained. Scale-up reaction further verified the industrial potential of the established process. The final product contained 85.24 mol% DL-TAG of which 97 mol% was LML after purification. The final product obtained with the high LML content would have substantial potential to be used as functional oils.

**Keyword:** *Talaromyces thermophilus* lipase; Immobilization; Interesterification; Structured lipids; Functional oils