

# **Interesterification of Fat Blends rich in Omega-3 Polyunsaturated Fatty Acids under High Pressure, Catalyzed by Immobilized Commercial Lipases and *Candida parapsilosis* Lipase/Acyltransferase**

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Interesterification (ester interchange) is a route to improve crystallization and melting properties of natural fats and to implement their nutritional value via the modification of the acylglycerol profile. This is particularly important for margarine and pharmaceutical industries. In this study, the effect of high pressure on (i) the kinetics of interesterification of fat blends, in solvent-free medium, catalyzed by commercial immobilized lipases from *Thermomyces lanuginosa* and *Rhizomucor miehei* ("Lipozyme TL IM" and "Lipozyme RM IM", from Novozymes, Denmark, respectively) and by immobilized *Candida parapsilosis* lipase/acyltransferase, as well as (ii) on the operational stability of each biocatalyst was investigated. Reaction media were blends of palm stearin (45.5%), palm kernel (45.5%) and a concentrate of triacylglycerols rich in omega-3 polyunsaturated fatty acids (9% EPAX 1050 TG, EPAX AS, Norway). Reactions were carried out at 60°C, under pressures of 0.1 MPa (atmospheric pressure) and 100MPa, for 6 consecutive batches of 3h duration each. The enzymatic preparations presented interesterification activity at 100 MPa, which was higher than that obtained at 0.1MPa, with no medium agitation, and even at 0.1MPa with agitation of reaction medium (for the lipase/acyltransferase). The observed decrease in solid fat content at 35°C values was accompanied by important changes in the acylglycerol profile.