

## Acidolysis of several vegetable oils by mycelium-bound lipase of *Aspergillus flavus* link

### ABSTRACT

The ability of mycelium-bound lipase of a locally isolated *Aspergillus flavus* to modify the triglyceride structure of vegetable oils was studied. The catalysis involved the acidolysis of vegetable oils, such as palm olein, coconut oil, cotton-seed oil, rapeseed oil, corn oil and soybean oil, with selected fatty acids (FA). The reactions were followed against time, and the percentages of FA incorporated were determined by gas chromatography. Percentage of FA incorporated after 20-h reaction was in the range of 13 to 18%. Reaction between cottonseed oil with lauric acid gave the highest percentage of incorporation (18%), followed by soybean oil with lauric acid (16%) and coconut oil with oleic acid (16%). The results indicated that the hydrolytic affinity of *A. flavus* lipase demonstrates an acyl group specificity toward short-chain FA (C8-C10). Changes in triglyceride profiles of each oil were also monitored by reverse-phase high-pressure liquid chromatography. In all products, there were increases in the concentrations of several existing triglycerides and formation of new triglycerides. The melting points of all acidolyzed vegetable oils were determined by differential scanning calorimetry, and significant changes in melting profiles were noted.

**Keyword:** Acidolysis; *Aspergillus flavus*; Fatty acid incorporation; Melting point; Mycelium-bound lipase; Triglyceride profiles