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Supplementary Materials

Kinetic analysis of the lipase-catalyzed hydrolysis of erythritol and pentaerythritol fatty acid esters: A biotechnological application for making low-calorie healthy food alternatives

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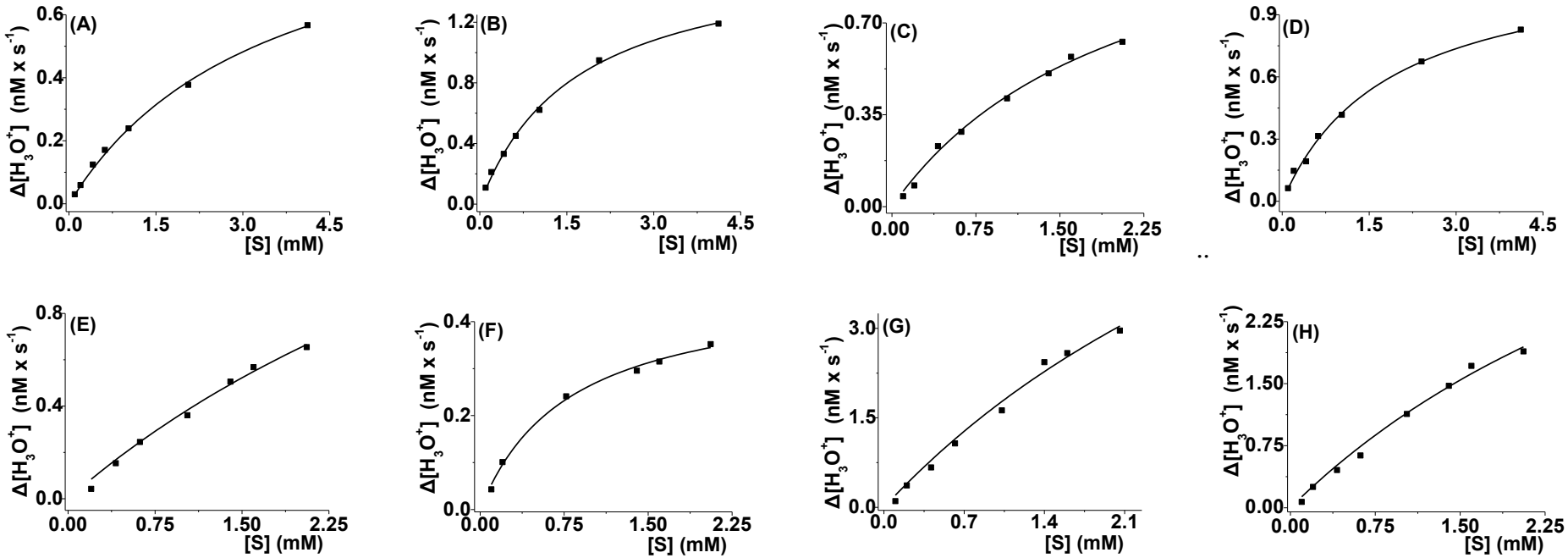

Figure S1. The best fitting (Michaelis-Menten) of the experimental kinetic data concerning the hydrolyses by both lipases, i.e., PPL (curves A, C, E, G) and CALB (curves B, D, F, H), of the tetraesters erythritol tetraoleate (A,B), erythritol tetrapalmitate (C,D), erythritol tetralaurate (E,F), and pentaerythritol tetrapalmitate (G,H), respectively. Due to the limited solubility of several tetraesters, in the reaction mixtures, the corresponding Michaelis-Menten curves did not reach saturation.

Revised synthesis of pentaerythritol palmitate: Acylation by palmitoyl chloride and pyridine

Pentaerythritol (272 mg, 2 mmol) was added In to an oven-dried 250 mL round-bottomed flask was added pentaerythritol (272 mg, 2 mmol) and re-dried in vacuum with warming for 30 min. Dry dichloromethane CH_2Cl_2 (100 mL) was then added followed by dry pyridine (0.71 mL, 8.8 mmol), and the flask was cooled at 0 °C. With a dry syringe, neat palmitoyl chloride (2.7 mL, 8.8 mmol) was added dropwise during over a period of 2 h, neat palmitoyl chloride (2.7 mL, 8.8 mmol) and it was stirred at 0C for 2 h, and then at room temperature for 6 days. The slightly opalescent solution was evaporated and dried to a solid (4.11 g), which was

recrystallized twice from acetone (3x50 mL and 1x80 mL) to yield the pure product (1.959 g, 90%), m.p. 69-71°C [6]; its IR (KBr) and 1H NMR ($CDCl_3$, TMS) are shown below.

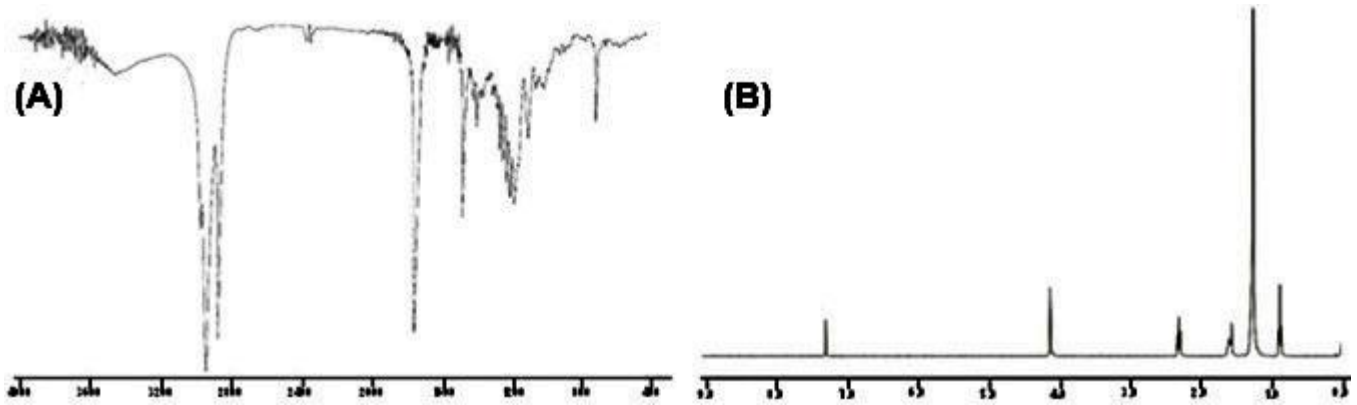

Figure S2. (A) IR (KBr), and (B) ^1H NMR ($CDCl_3$, TMS) spectra of pentaerythritol palmitate.