

عنوان مقاله:

Kinetic characterization of digestive lipase for the hydrolysis of olive and sunflower oils

محل انتشار:

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خلاصه مقاله:

This paper investigates the hydrolytic activity of digestive lipase (mixture of fungal lipases of *Rhizopus oryzae* and *Aspergillus niger*) on olive oil/water and sunflower oil/water emulsions under different reaction conditions such as temperature, pH, incubation time and substrate concentrations. The optimum lipase activity based on free fatty acid production capacity was observed at oil concentration of 100 mg.mL⁻¹, temperature 45 °C, pH=7 and 30 min incubation time. Using the Lineweaver-Burk plots, Michaelis-Menten rate constants were determined at 82.1 and 53.1 mg.mL⁻¹ for emulsions of olive and sunflower oils, respectively. Maximum reaction rates were found at 1.3 and 1.1 μmol free fatty acids (FFAs).min⁻¹.mL⁻¹ for olive and sunflower oils, respectively. Lipase showed its optimum activity at pH=7-8 and a temperature range between 40 and 55 °C for the hydrolysis of both oils. Maximum FFA production was found at 30.0-33.1 μmol.mL⁻¹ during 60-70 min of reaction at 45 °C and pH=7. In the current study, the specific lipase activities were determined at 43.3 and 36.7 U.mg⁻¹ for sunflower and olive oils, respectively. The combination of *Rhizopus oryzae* and *Aspergillus niger* lipases allowed the high stability to pH and temperature.

کلمات کلیدی:

Lipase, Olive oil, Sunflower oil, Free fatty acid, Activity, Hydrolysis

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