

Enzymatic Activiity of Immobilized Lipase on Surfactant Binding Magnetite Nano Particles

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The Fe₃O₄ nanoparticles were prepared by coprecipitating Fe²⁺, Fe³⁺ and oxalate in an ammonia solution, and the next step was the binding of surfactant with nanoparticles. Surfactant bound Fe₃O₄ nanoparticles were characterized with Fourier transform infrared spectroscopy (FTIR), Transmissiion electron microscope (TEM), X-Ray diffraction methods. Fe₃O₄ nanoparticles showed superparamagnetic property. The analysis of Fourier transform infrared spectroscopy confirmed the binding of lipase onto magnetic nanoparticles. The activity of the immobilized lipase for the hydrolysis of olive oil was observed, indicating the lipase bound nanoparticles exhibited higher enzymatic activity than that of crude lipase. Moreover, the immobilized lipase could be reused for several times after recovered by magnetic separations.