

Characterization Transesterification Activity on Thermostable Lipase (LK1) From Local Isolate

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Abstract : The global energy crisis, triggered by declining fossil fuel reserves and exacerbated by population growth and increasing energy demand, was driven by the development of renewable energy sources. One of the green energy alternatives being developed is biodiesel. Transesterification is at the core of biodiesel production, where fatty acids in oil are converted into methyl esters with the aid of a catalyst. Lipases exhibit high activity and stability during catalysis, especially under harsh conditions. Lipase (Lk1) isolated from organic waste compost at the Bandung Institute of Technology, Bandung, West Java, shows promising potential in this field. Characterizing the transesterification activity of Lk1 is essential for assessing its effectiveness in converting oil into biodiesel, including methyl esters. The results of this study showed that Lk1 exhibited the highest activity on a methyl palmitate substrate, with an optimum temperature of 60°C, very stable activity in the non-polar solvent n-hexane, and was able to maintain its optimum activity for up to 1 hour. These characteristics make Lk1 highly suitable for biodiesel production, as it meets the main criteria for the transesterification process in producing renewable energy.

Keywords : biodiesel, lipase Lk1, transesterification, renewable energy, thermostability

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