ABSTRACT

Optimization of Growth and Hydrolysis of Lignocellulose From Microalgae *Chlorella vulgaris* to Increase Glucose Yield as Bioethanol Raw Material

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Chlorella vulgaris is one of a high carbohydrate content of microalgae and renewable energy sources such bioethanol. The microalgae grow rapidly in a modified medium and under high light intensity. The aim of the research was optimization of microalgae growth and setting up hydrolysis conditions of it lignocellulose. Urea and ZA were the alternative nitrogen source then sunlight and 2000 lux fluorescence lamp varsed the light source. Optimal growth is obtained by using fertilizer ZA with fluorescent lamps in 2000 lux. Hydrolysis optimization is done to increase the levels of glucose in microalgae using sulfuric acid with a variation of temperature, time, and concentration of sulfuric acid. The best hydrolysis conditions were obtained at 120°C for 15 minutes using 2 N sulfuric acid to glucose level 926,582 mg/L

Keywords: Bioethanol; Glucose; microalgae; *Chlorella vulgaris*; Hydrolysis;