

Armaya Badi'atul Fitri, 2014. Uji Aktivitas Enzim Lipase Bakteri Hidrokarbonoklastik *Micrococcus sp.* LII 61 Terhadap Variasi Suhu, pH, dan Waktu Pendedahan. Skripsi ini di bawah bimbingan Dr. Ni'matuzahroh dan Tri Nurhariyati, S.Si, M.Kes. Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh suhu, pH, waktu pendedahan, dan kombinasi ketiganya terhadap aktivitas enzim lipase bakteri hidrokarbonoklastik *Micrococcus sp.* LII 61. Penelitian ini bersifat eksperimental menggunakan rancangan faktorial 5x5x3 dengan tiga ulangan. Variabel perlakuan merupakan kombinasi dari 5 level suhu (30°C, 40°C, 50°C, 60°C, 70°C), 5 level pH (5, 6, 7, 8, 9), dan 3 level waktu pendedahan (1 jam, 12 jam, 24 jam). Aktivitas enzim lipase diukur menggunakan *p*-nitrofenil palmitat (*p*-NPP). Data aktivitas enzim lipase dianalisis menggunakan uji *Kruskal-Wallis* dan dilanjutkan dengan uji *Tukey* ($p=0,05$). Hasil penelitian menunjukkan bahwa suhu memberikan pengaruh terhadap aktivitas enzim lipase. Aktivitas enzim lipase tertinggi dicapai pada rentang suhu 30°C, 40°C, dan 50°C. Perlakuan pH tidak memberikan pengaruh terhadap aktivitas enzim lipase. Waktu pendedahan tidak berpengaruh terhadap aktivitas enzim lipase. Kombinasi ketiga variabel perlakuan memberikan pengaruh terhadap aktivitas enzim lipase. Aktivitas enzim lipase tertinggi dicapai pada kombinasi suhu 60°C, pH 9, dan waktu pendedahan 24 jam, kombinasi suhu 30°C, pH 9, dan waktu pendedahan 12 jam, serta kombinasi suhu 40°C, pH 8, dan waktu pendedahan 24 jam.

Kata kunci: enzim lipase, *Micrococcus sp.* LII 61, suhu, pH, waktu pendedahan, aktivitas enzim

Armaya Badi'atul Fitri, 2014. The Lipase Enzyme Activity of Hydrocarbonoclastic Bacteria *Micrococcus sp.* LII 61 on Variation of Temperature, pH, and Incubation Time. This study was under the guidance of Dr. Ni'matuzahroh dan Tri Nurhariyati, S.Si, M.Kes. Departmen of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.

ABSTRACT

*This study was aimed to determine the effect of the temperature, pH, time incubation, and combination of them on lipase enzyme activity of hydrocarbonoclastic bacteria *Micrococcus sp.* LII 61. This study was an experimental study using 5x5x3 factorial design with three replications. The treatment variable was combination of 5 levels of temperature (30°C, 40°C, 50°C, 60°C, 70°C), 5 levels of pH (5, 6, 7, 8, 9), and 3 levels of incubation time (1 hour, 12 hour, 24 hour). Lipase enzyme activity was measured by using p-nitrofenil palmitat (p-NPP). The data of lipase enzyme activity were analyzed by using Kruskal Wallis test and continued with Tukey test ($p=0,005$). The result showed that temperature gave an effect on lipase enzyme activity. The highest lipase enzyme activity was attained at temperature of 30°C, 40°C, and 50°C. The treatment of pH didn't give an effect on lipase enzyme activity. Incubation time didn't give an effect on lipase enzyme activity. The combination of three variable treatment gave an effect on lipase enzyme activity. The highest lipase enzyme activity was attained at combination of temperature 60 °C, pH of 9, and 24 hour of incubation time, combination of temperature 30°C, pH of 9, and 12 hour of incubation time, and combination of temperature 40°C, pH of 8, and 24 hour of incubation time.*

Key word: *lipase enzyme, *Micrococcus sp.* LII 61, temperature, pH, incubation time, enzyme activity*