

ABSTRACT

THE EFFECT OF ADDITION OF METHANOL AND METHYL ESTER INHIBITORS ON LIPASE ENZYME ACTIVITY FROM OVER-RIPE PALM OIL FRUIT

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Overripe oil palm fruits contain a high amount of fatty acids, due to increased activity of lipase enzymes, on the other hand lipase enzymes can be used as biocatalysts in the reactions between tryglicerides and methanol to produce methyl esters. Methanol and methyl in excessive amount can act as inhibitors that affected the enzyme activity. The purpose of this study was to determine the effect of adding methyl ester and methanol on inhibition of lipase enzyme activity from overripe oil palm fruit. This study was conducted using a Completely Randomized Block Design (CRBD) with three repetitions. The independent variables used were methanol consisting of two levels, namely 0% and 2% and methyl ester consisting of four levels, namely 0%, 2%, 4%, and 6%. The data were analyzed by ANOVA followed by Orthogonal Polynomial (OP) analysis. The results showed that methyl ester and methanol inhibitors had a significant effect on inhibiting the activity of crude extracts of lipase enzymes from overripe oil palm fruit. The highest inhibitory power of lipase enzyme activity was obtained at a concentration of 2% methanol and 5.06% methyl ester, which produced the lowest lipase enzyme activity of 0.97 U/ml.

Keywords : crude extract activity of lipase enzyme, inhibitor, over ripe palm fruit

ABSTRAK

PENGARUH PENAMBAHAN INHIBITOR METANOL DAN METIL ESTER TERHADAP AKTIVITAS ENZIM LIPASE DARI BUAH SAWIT *OVER RIPE*

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Buah sawit *over ripe* mengandung asam lemak yang tinggi, karena enzim lipase yang meningkat. Enzim lipase yang tinggi, dapat digunakan sebagai biokatalis reaksi trigliserida dengan metanol untuk menghasilkan metil ester. Tetapi metanol dan metil ester dalam jumlah berlebih dapat menjadi inhibitor yang memengaruhi aktivitas enzim. Tujuan penelitian ini adalah mengetahui pengaruh penambahan inhibitor metil ester dan metanol terhadap penghambatan aktivitas enzim lipase dari buah sawit *over ripe*. Penelitian ini dilakukan menggunakan Rancangan Acak Kelompok Lengkap (RAKL) dalam 3 ulangan. Variabel bebas yang digunakan yaitu metanol terdiri dari dua taraf yaitu 0% dan 2% dan metil ester terdiri dari empat taraf yaitu 0%, 2%, 4%, dan 6%. Data hasil penelitian dianalisis dengan ANOVA dilanjutkan dengan analisis Ortogonal Polinomial (OP). Hasil penelitian menunjukkan inhibitor metil ester dan metanol berpengaruh nyata terhadap penghambatan aktivitas ekstrak kasar enzim lipase dari buah sawit *over ripe*. Daya hambat aktivitas enzim lipase tertinggi diperoleh pada konsentrasi metanol 2% dan metil ester 5,06%, yang menghasilkan aktivitas enzim lipase terendah sebesar 0,97 U/ml.

Kata kunci : aktivitas ekstrak kasar enzim lipase, buah sawit *over ripe*, inhibitor