

Sintesis turunan asam risinoleat teroksidasi dengan glisin dan fenilalanin serta uji toksisitas bslt dan uji aktivitas antimikroba = Oxidized ricinoleic acid derivative synthesis with glycine and phenylalanine and the bslt toxicity and antimicrobial activity test.

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Abstrak

Pada penelitian ini dilakukan sintesis senyawa turunan asam risinoleat teroksidasi dengan asam amino glisin dan fenilalanin. Proses sintesis diawali dengan oksidasi ikatan rangkap membentuk diol menggunakan  $\text{KMnO}_4$  encer dalam suasana basa, esterifikasi dengan dry metanol dan katalis KOH, dan terakhir amidasi dengan asam amino glisin atau fenilalanin. Karakterisasi dilakukan menggunakan KLT dan FTIR. Hasil FTIR produk menunjukkan adanya pita serapan ulur N-H dan O-H yang overlapping pada bilangan gelombang  $3459,23 \text{ cm}^{-1}$  pada lipoamida glisin dan  $3467,55 \text{ cm}^{-1}$  pada lipoamida fenilalanin. Selain itu, terdapat puncak serapan medium C-N dan N-H bend masing-masing pada bilangan gelombang  $1047,98 \text{ cm}^{-1}$  dan  $787,99 \text{ cm}^{-1}$  pada lipoamida glisin serta  $1188,02 \text{ cm}^{-1}$  dan  $792,84 \text{ cm}^{-1}$  pada lipoamida fenilalanin. Uji Toksisitas BSLT terhadap *Artemia Salina L.* menghasilkan nilai LC50 dari produk lipoamida glisin dan lipoamida fenilalanin secara berurutan sebesar  $1494,73 \text{ ppm}$  dan  $2193,32 \text{ ppm}$ . Hasil tersebut menunjukkan nilai  $\text{LC}_{50} > 1000$ , sehingga dapat dikatakan produk yang dihasilkan memiliki toksisitas rendah. Uji aktivitas antimikroba dari kedua produk menghasilkan zona hambat terhadap pertumbuhan bakteri *E. coli*, tapi tidak memberikan zona hambat terhadap bakteri *S. aereus*. Zona hambat terhadap bakteri *E. coli* yang dihasilkan yaitu  $15 \text{ mm}$  untuk lipoamida glisin dan  $14 \text{ mm}$  untuk lipoamida fenilalanin.

.....In this research, the synthesis of oxidized ricinoleic acid derivative compounds with amino acids glycine and phenylalanine was carried out. The synthesis process began with the oxidation of the double bond to form a diol with dilute  $\text{KMnO}_4$  reagent in an alkaline condition, esterification with dry methanol and KOH catalyst, and finally amidation with the amino acid glycine or phenylalanine. Characterization was carried out using TLC and FTIR. The FTIR spectrum of the product showed that there were overlapping N-H and O-H stretching absorption bands at wave numbers  $3459.23 \text{ cm}^{-1}$  for glycine lipoamide and  $3467.55 \text{ cm}^{-1}$  for phenylalanine lipoamide. There were also absorption peaks of C-N and N-H bend medium at wave numbers  $1047.98 \text{ cm}^{-1}$  and  $787.99 \text{ cm}^{-1}$  for glycine lipoamides and  $1188.02 \text{ cm}^{-1}$  and  $792.84 \text{ cm}^{-1}$  for phenylalanine lipoamides respectively. BSLT Toxicity test against *Artemia Salina L.* resulted in the LC50 values of the lipoamide products glycine lipoamides and phenylalanine lipoamides  $1494.73 \text{ ppm}$  and  $2193.32 \text{ ppm}$ , respectively. These results showed that the value of  $\text{LC}_{50} > 1000$  so it can be said that the resulting product has low toxicity. The antimicrobial activity assay showed that both products inhibited the growth of *E. coli* but did not inhibit the growth of *S. aereus*. The inhibition zone formed was  $15 \text{ mm}$  for glycine lipoamide and  $14 \text{ mm}$  for phenylalanine lipoamide