Sintesis Turunan Asam Amino dari Asam Risinoleat Minyak Jarak serta Uji Sitotoksisitasnya pada Sel HeLa = Amino Acid Derivatives Synthesis from Risinoleic Acid Castor Oil And Its Cytotoxicity on HeLa Cell Line

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Abstrak

Pada penelitian ini, asam risinoleat diesterifikasi dengan dry metanol dan katalis KOH dengan sistem reflux. Metil risinoleat yang terbentuk dioksidasi pada ikatan rangkapnya membentuk diol menggunakan KMnO4 encer dalam suasana basa pada suhu 0oC. Metil risinoleat kemudian diamidasi menggunakan asam amino glisin dan asam amino fenilalanin untuk menghasilkan senyawa lipoamida. Hasil karakterisasi lipoamida yang terbentuk menggunakan FTIR menunjukkan adanya pita serapan ulur N-H dan O-H yang overlaping pada bilangan gelombang 3445,47 cm-1 untuk lipoamida glisin-risinoleat dan 3434,06 cm-1 untuk lipoamida fenilalanin-risinoleat. Selain itu, muncul puncak serapan medium vibrasi C-N pada bilangan gelombang 1217,90 cm-1 pada lipoamida glisin-risinoleat dan 1217,59 cm-1 pada lipoamida fenilalanin-risinoleat. Hal ini menunjukkan ikatan amida yang terbentuk dari proses amidasi. Hasil uji sitotoksik MTT senyawa lipoamida terhadap sel HeLa menunjukkan bahwa nilai IC50 lipoamida glisin-risinoleat sebesar 120 µg/mL yang termasuk ke dalam kategori cukup aktif, sedangkan IC50 lipoamida fenilalanin-risinoleat sebesar 250 µg/mL yang tergolong memiliki sifat sitotoksisitas yang lemah terhadap sel HeLa.
.....In this study, ricinoleic acid from castor oil was esterified with dry methanol and KOH catalyst using the reflux system. The methyl ricinoleate formed was oxidized on its double bonds to form a diol using dilute KMnO4 under alkaline conditions at 0oC. Methyl ricinoleate was then reacted through amidation process using amino acid glycine and amino acid phenylalanine to produce lipoamides. The results of characterization of lipoamides formed using FTIR showed that there were overlapping N-H and O-H stretch bands at wave numbers 3445.47 cm-1 for glycine-ricinoleate lipoamide and 3434.06 cm-1 for phenylalanine-ricinoleate lipoamide. In addition, the medium absorption peak of C-N appeared at the wave number 1217.90 cm-1 for glycine-ricinoleate lipoamide and 1217.59 cm-1 for phenylalanine-ricinoleate lipoamide. These showed that the amide bonds were formed from the amidation process. The results of the MTT cytotoxic assay of lipoamide compounds against HeLa cells showed that the IC50 value of glycine-ricinoleate lipoamide was 120 µg / mL which was considered quite active, while the IC50 value of phenylalanine-ricinoleate lipoamide was 250 µg / mL which was classified as having weak cytotoxicity properties against HeLa cells