

Aktivitas Sitotoksik Produk Amidasi Metil 12-Hidroksistearat dengan Monoetanolamina terhadap Sel HeLa = Cytotoxic Activity of The Amide Product of Methyl 12-Hydroxystearate with Ethanolamine Against HeLa Cell Line

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Abstrak

Asam risinoleat merupakan komponen penyusun utama minyak jarak. Turunan asam risinoleat banyak dimanfaatkan untuk menghambat pertumbuhan sel kanker. Pada penelitian ini, salah satu turunan asam risinoleat yaitu metil risinoleat, direduksi lalu diamidasi dengan monoetanolamina berlebih dengan perbandingan mol 1:12. Diperoleh rendemen reaksi reduksi metil risinoleat sebesar 22,06% dan rendemen reaksi amidasi produk reduksinya sebesar 28,79%. Produk amidasi metil 12-hidroksistearat dengan monoetanolamina yang diperoleh dikarakterisasi dengan FTIR. Hasil spektrum FTIR menunjukkan bahwa terdapat gugus fungsi amida pada sampel, ditandai dengan adanya spektrum serapan ulur N-H dan O-H yang overlapping pada bilangan gelombang 3754 cm⁻¹ hingga 3105 cm⁻¹ dan serapan kuat pada puncak C=O amida sekunder pada bilangan gelombang 1646 cm⁻¹. Produk lipoamida, yaitu (R)-12-hidroksi-N-(2-hidroksietil)stearamida, diuji sitotoksitasnya terhadap sel HeLa dengan metode MTT dan dilakukan analisis data menggunakan software GraphPad Prism versi 9.5.0 untuk Windows. Hasil penelitian menunjukkan bahwa lipoamida ini memiliki aktivitas sitotoksik sedang terhadap sel HeLa dengan nilai IC₅₀ sebesar 17,23 M.

.....Ricinoleic acid is the main component of castor oil. Ricinoleic acid derivatives are widely used to inhibit cancer cell growth. In this study, methyl ricinoleate, one of the ricinoleic acid derivatives, was reduced, then amidated with excess monoethanolamine at mole ratio of 1:12. It was found that the yield of reduced methyl ricinoleate obtained was 22.06% and the yield of amidation product was 28.79%. FTIR was used to characterize the amide product of methyl 12-hydroxystearate and monoethanolamine. The FTIR spectra reveal that the sample contained an amide functional group in the presence of overlapping N-H and O-H stretching absorption from 3754 cm⁻¹ to 3105 cm⁻¹ and strong absorption of the C=O secondary amide peak at 1646 cm⁻¹. The lipoamide product, namely 12-hydroxy-N-(2-hydroxyethyl)stearamide, was tested for cytotoxicity against HeLa cells using the MTT method and data analysis was performed using GraphPad Prism software version 9.5.0 for Windows. According to the result, the inhibitory concentration (IC₅₀) of this lipoamide was 17.23 M, which was classified as moderate activity.