Aktivitas Antimikroba dan Antikanker Produk Amidasi Langsung Asam Oleat dan Asam Stearat dengan Etanolamina = Antimicrobial and Anticancer Activity of Direct Amidation Products of Oleic Acid and Stearic Acid with Ethanolamine

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Abstrak

Pada penelitian ini dilakukan sintesis senyawaan lipoamida melalui reaksi amidasi langsung pada asam oleat dan asam stearat dengan etanolamina dan gel silika sebagai katalis. Rendemen reaksi sintesis senyawa lipoamida oleat dan lipoamida stearat secara berturut-turut sebesar 48% dan 30,10%. Kedua struktur lipoamida yang diperoleh telah dikonfirmasi dengan spektrum FTIR dan 1H-NMR. Kedua senyawa lipoamida tersebut diuji aktivitas antimikrobanya terhadap Staphylococcus aureus dan Escherichia coli menggunakan metode difusi cakram. Sementara uji aktivitas antikankernya terhadap sel HeLa menggunakan metode MTT. Hasil uji aktivitas antimikroba terhadap E. coli menunjukkan bahwa aktivitas tertinggi dimiliki oleh lipoamida oleat 1000 ppm dengan diameter zona hambat (DZH = 7,3 mm) dan lipoamida stearat 1000 ppm dengan (DZH = 7,5 mm). Sementara aktivitas antimikroba tertinggi terhadap S. aureus ditunjukkan oleh lipoamida oleat 1000 ppm (DZH = 6 mm) dan lipoamida stearat 1000 ppm (DZH = 7,9 mm). Aktivitas antikanker lipoamida stearat (IC50 = 37,55 µM) lebih tinggi dibandingkan dengan lipoamida oleat (IC50 = 83,35 µM). Berdasarkan data tersebut dapat disimpulkan bahwa keberadaan ikatan C=C pada lipoamida menurunkan aktivitas antimikroba dan antikankernya

.....In this research, the synthesis of lipoamide compounds was carried out through direct amidation reactions in oleic acid and stearic acid with ethanolamine and silica gel as catalysts. The yields of the synthesis reactions of oleic lipoamide and stearic lipoamide were 48% and 30.10%, respectively. Both lipoamide structures obtained were confirmed by FTIR and 1H-NMR spectra. The two lipoamide compounds were tested for their antimicrobial activity against Staphylococcus aureus and Escherichia coli using the disc diffusion method. While the anticancer activity test against HeLa cells used the MTT method. The results of the antimicrobial activity test against E. coli showed that the highest activity was possessed by lipoamide oleate 1000 ppm with a diameter of the inhibition zone (DZH = 7.3 mm) and lipoamide stearate 1000 ppm with (DZH = 7.5mm). While the highest antimicrobial activity against S. aureus was shown by 1000 ppm lipoamide oleate (DZH = 6 mm) and lipoamide stearate 1000 ppm (DZH = 7.9 mm). The anticancer activity of lipoamide stearate (IC50 = 37.55 µM) was higher than that of lipoamide oleate (IC50 = 83.35 µM). Based on these data it can be concluded that the presence of the C=C bond in lipoamide reduces its antimicrobial and anticancer activity