

Sintesis Amida Asam Lemak dari Minyak Jarak dengan Anilina dan Sikloheksilamina serta Uji Aktivitas Antibakterinya = Synthesis of Fatty Acid Amides from Castor Oil with Aniline and Cyclohexylamine and Their Antibacterial Activity Test

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Abstrak

Minyak jarak merupakan minyak nabati dari biji tanaman *Ricinus communis* L. yang mengandung asam lemak spesifik, terutama asam risinoleat hingga mencapai 90%. Kandungan ini menjadikannya mampu membentuk produk bioaktif melalui reaksi kimia dan biokimia. Dalam penelitian ini, metil ester dari minyak jarak disintesis melalui transesterifikasi menggunakan metanol dan katalis NaOH 1,25% (b/b), lalu diamidasi dengan anilina dan sikloheksilamina membentuk amida asam lemak. Produk amida asam lemak diidentifikasi dengan Kromatografi Lapis Tipis dan dikarakterisasi menggunakan Fourier Transform Infrared Spectroscopy (FTIR). Hasil FTIR menunjukkan pita serapan ulur N-H dan O-H pada 3296,48–3530,84 cm^{-1} untuk amida asam lemak anilina dan 3291,66–3520,24 cm^{-1} untuk amida asam lemak sikloheksilamina, serapan C=O amida pada 1681,03 cm^{-1} dan 1676,21 cm^{-1} , serta C-N pada 1067,65 cm^{-1} dan 1061,85 cm^{-1} . Uji aktivitas antibakteri pada konsentrasi 1000 ppm dengan metode difusi cakram menunjukkan bahwa amida asam lemak anilina tidak aktif terhadap *Staphylococcus aureus* dan memiliki aktivitas antibakteri yang lemah terhadap *Escherichia coli*, sedangkan amida asam lemak sikloheksilamina memiliki aktivitas antibakteri yang lemah terhadap kedua bakteri uji.

.....Castor oil is a vegetable oil derived from the seeds of the *Ricinus communis* L. plant, which contains specific fatty acids, primarily ricinoleic acid, comprising up to 90%. This high content enables it to form bioactive products through chemical and biochemical reactions. In this study, methyl esters of castor oil were synthesized via transesterification using methanol and 1.25% (w/w) NaOH catalyst, followed by amidation with aniline and cyclohexylamine to form fatty acid amides. The fatty acid amide products were identified by thin-layer chromatography (TLC) and characterized using Fourier-transform infrared spectroscopy (FTIR). FTIR results showed N–H and O–H stretching bands at 3296.48–3530.84 cm^{-1} for aniline-derived fatty acid amide and 3291.66–3520.24 cm^{-1} for cyclohexylamine-derived fatty acid amide, with amide C=O absorptions at 1681.03 cm^{-1} and 1676.21 cm^{-1} , and medium C–N bands at 1067.65 cm^{-1} and 1061.85 cm^{-1} , respectively. Antibacterial activity tests at a concentration of 1000 ppm using the disc diffusion method showed that the aniline fatty acid amide was inactive against *Staphylococcus aureus* and had weak antibacterial activity against *Escherichia coli*, while the cyclohexylamine fatty acid amide exhibited weak antibacterial activity against both bacteria.