

SINTESIS N-(2-HIDROKSI-1,1-DIHIDROKSIMETIL)ETIL LAURAMIDA DAN N-(2-HIDROKSI-1,1-DIHIDROKSIMETIL)ETIL HEKSANAMIDA SERTA UJI AKTIVITASNYA SEBAGAI SENYAWA ANTIBAKTERI

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INTISARI

Telah dilakukan sintesis N-(2-hidroksi-1,1-dihidroksimetil)etil lauramida (N-HDMEL) dan N-(2-hidroksi-1,1-dihidroksimetil)etil heksanamida (N-HDMEH) serta uji aktivitasnya sebagai antibakteri. Lauroil klorida sebelumnya disintesis melalui reaksi antara asam laurat dengan tionil klorida (SOCl₂) dengan proses distilasi dan refluks pada suhu 60 – 65 °C selama 3 jam. Senyawa N-HDMEL dan N-HDMEH disintesis melalui reaksi antara lauroil klorida dan heksanoil klorida dengan tris(hidroksimetil) aminometana (THAM) dengan proses pengadukan pada suhu rendah yaitu 0 - 5 °C selama 2 jam. Produk hasil sintesis dianalisis menggunakan spektrometer FT-IR, GC-MS, *direct inlet*-MS dan ¹H-NMR. Uji aktivitas antibakteri dilakukan pada senyawa hasil sintesis terhadap bakteri Gram positif (*Bacillus subtilis* dan *Staphylococcus aureus*) dan bakteri Gram negatif (*Escherichia coli* dan *Salmonella tiphy*) dengan 4-isopropil-3-metilfenol 1% sebagai kontrol positif dan DMSO sebagai kontrol negatif.

Hasil penelitian menunjukkan bahwa produk yang diperoleh berupa lauroil klorida berupa cairan berwarna bening kekuningan dengan persen hasil 87,3%, N-HDMEL dan N-HDMEH berupa padatan berwarna putih dengan persen hasil berturut-turut 42,7% dan 36,7%. Senyawa N-HDMEL dan N-HDMEH menunjukkan adanya aktivitas sebagai antibakteri pada bakteri Gram positif (*B. subtilis*) dan bakteri Gram negatif (*E. coli* dan *S. tiphy*).

Kata kunci: Antibakteri, N-(2-hidroksi-1,1-dihidroksimetil)etil lauramida, N-(2-hidroksi-1,1-dihidroksimetil)etil heksanamida, THAM.

SYNTHESIS OF N-(2-HYDROXY-1,1-DIHYDROXYMETHYL)ETHYL LAURAMIDE AND N-(2-HYDROXY-1,1-DIHYDROXYMETHYL)ETHYL HEXANEMIDE AND THEIR ACTIVITIES AS ANTIBACTERIA

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ABSTRACT

Synthesis of *N*-(2-hydroxy-1,1-dihydroxymethyl)ethyl lauramide (*N*-HDMEL) and *N*-(2-hydroxy-1,1-dihydroxymethyl)ethyl hexanamide (*N*-HDMEH) and their activities as antibacterial had been conducted. Lauroyl chloride was synthesized by reacting lauric acid with thionyl chloride (SOCl₂) by distillation and reflux processes at 60- 65 °C for 3 hours. Synthesis of *N*-HDMEL and *N*-HDMEH were conducted by reacting lauroyl chloride and hexanoyl chloride with tris(hydroxymethyl) aminomethane (THAM) by stirring at low temperature, 0 – 5 °C for 2 hours. The products were analyzed by using FT-IR, GC-MS, direct inlet-MS and ¹H-NMR spectrometers. Antibacterial activities test were performed on *N*-HDMEL and *N*-HDMEH against Gram positive bacteria (*Bacillus subtilis* and *Staphylococcus aureus*) and Gram negative bacteria (*Escherichia coli* and *Salmonella tiphy*) using 4-isopropyl-3-methylphenol 1% as a positive control and DMSO as a negatif control.

The results obtained in this research were lauroyl chloride in the form of clear yellowish liquid with 87.3% of yields, *N*-HDMEL and *N*-HDMEH in the form of white solids with 42.7% and 36.7% of yields respectively. *N*-HDMEL and *N*-HDMEH showed the presence of antibacterial activities in Gram positive bacteria (*B. subtilis*) and Gram negative bacteria (*E. coli* dan *S. tiphy*).

Keywords : Antibacterial, *N*-(2-hydroxy-1,1-dihydroxymethyl)ethyl lauramide, *N*-(2-hydroxy-1,1-dihydroxymethyl)ethyl hexanamide, THAM.