

SINTESIS PIRAZOLINA DARI NITROVERATRALDEHIDA DAN KOROASETOFENON SERTA UJI AKTIVITAS SEBAGAI ANTIBAKTERI

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INTISARI

Sintesis pirazolina dari nitroveratraldehida dan uji aktifitasnya sebagai antibakteri telah berhasil dilakukan. Reaksi diawali dengan nitrasi veratraldehida menggunakan asam nitrat dan asam sulfat pada suhu dibawah 5 °C. Kemudian reaksi kondensasi aldol dilakukan dengan mereaksikan nitroveratraldehida dengan kloroasetofenon menghasilkan kalkon. Sintesis pirazolina dilakukan dengan merefluks kalkon dan fenilhidrazina selama 4 jam. Produk hasil sintesis dianalisis dengan spektrometer FTIR, GCMS, ¹H dan ¹³C-NMR. Uji aktifitas antibakteri dilakukan dengan metode sumuran terhadap bakteri Gram positif (*Staphylococcus aureus*, *Bacillus cereus*, dan *Bacillus subtilis*) dan bakteri Gram negatif (*Eschericia coli* dan *Shigella flexneri*) dengan kontrol positif tetrasiklin, sedangkan kontrol negatif dimetil sulfoksida (DMSO).

Berdasarkan penelitian yang telah dilakukan diketahui bahwa nitrasi veratraldehida menghasilkan nitroveratraldehida dengan rendemen sebesar 70,17%, sedangkan kalkon dan pirazolina telah dihasilkan dengan rendemen berturut-turut sebesar 14,85% dan 33,84%. Hasil uji antibakteri menunjukkan bahwa senyawa pirazolin mempunyai potensi terbaik sebagai antibakteri terhadap bakteri *S. aureus* dengan nilai DDH 6,75 mm pada konsentrasi 500 ppm dan terhadap bakteri *B. subtilis* dengan nilai DDH 2,25 mm pada konsentrasi 1000 ppm.

Kata kunci : pirazolina, kalkon, nitroveratraldehida, antibakteri, DDH

SYNTHESIS OF PYRAZOLINE FROM NITROVERATRALDEHYDE AND CHLOROACETOPHENONE WITH ACTIVITY TEST AS ANTIBACTERIAL

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ABSTRACT

Synthesis of pyrazoline from nitroveratraldehyde and chloroacetophenone with activity test as antibacterial has been investigated. The first step, nitration of veratraldehyde was conducted with a mixture of nitric acid and sulfuric acid at 5 °C. Then, aldol condensation was performed by reacting nitroveratraldehyde with chloroacetophenone produced chalcone. Synthesis of pyrazolines was performed by reacting chalcone and phenylhydrazine under reflux method for 4 h. The product was analyzed by FTIR, GCMS, ¹H and ¹³C-NMR spectrometers. Antibacterial test was conducted by well-method against Gram positive (*Staphylococcus aureus*, *Bacillus cereus*, *Bacillus subtilis*) and Gram negative (*Eschericia coli* dan *Shigella flexneri*) bacteria, with tetracycline as positive control and dimethyl sulfoxide (DMSO) as negative control.

The result showed that nitration of veratraldehyde yield in 70.17%, chalcone and pyrazoline have been produced in 14.85% and 33.84% yield, respectively. Antibacterial test showed that pyrazoline has a best potential as antibacterial at 500 ppm against bacteria *Staphylococcus aureus* with DDH value 6.75 mm and at 1000 ppm against bacteria *Bacillus subtilis* with DDH value 2.25 mm.

Keywords : pyrazoline, chalcone, nitroveratraldehyde, antibacteria, DDH