

## INTISARI

Pengembangan senyawa antibakteri terus dilakukan dalam upaya menurunkan angka kasus resistensi obat antibakteri. Salah satunya yaitu senyawa analog kurkumin. PGV-6, GVT-6, dan HGV-6 merupakan senyawa analog kurkumin yang memiliki aktivitas antibakteri dan diketahui lebih poten daripada senyawa kurkumin itu sendiri. Pada penelitian ini disintesis salah satu senyawa analog kurkumin yaitu 2,6-bis-(2'-metoksibenziliden)-sikloheksanon yang berbasis senyawa siklovalon HGV-6 dan diteliti aktivitasnya sebagai antibakteri.

Senyawa 2,6-bis-(2'-metoksibenziliden)-sikloheksanon disintesis dari 2-metoksibenzaldehid dan sikloheksanon dalam suasana asam melalui reaksi kondensasi aldol diikuti dehidrasi. Hasil sintesis dihitung rendemen dan dianalisis kemurniannya melalui pengukuran titik lebur, pengamatan profil KLT, dan elusidasi struktur menggunakan DI-MS, IR *Spectrometry*, dan NMR. Pengujian aktivitas antibakteri dilakukan terhadap bakteri Gram negatif dan Gram positif menggunakan metode mikrodilusi yang ditunjukkan dengan KHM dan KBM.

Senyawa hasil sintesis menghasilkan rendemen sebesar 73,94%, titik lebur 143,7-143,8°C dan dikategorikan murni yang ditunjukkan dengan adanya satu spot senyawa pada uji KLT dan hasil elusidasi struktur. Hasil uji aktivitas antibakteri menunjukkan bahwa senyawa hasil sintesis hingga konsentrasi maksimum 100 µg/mL memberikan aktivitas penghambatan pertumbuhan bakteri maksimum sebesar 20% terhadap bakteri *Klebsiella pneumonia*, *Escherichia coli* (ATCC 25922), sebesar 30% terhadap bakteri *Staphylococcus aureus* (ATCC 25923) *Enterococcus faecalis* (ATCC 29212), dan 50% terhadap bakteri *Bacillus subtilis* (ATCC 6633).

Kata kunci: 2,6-bis-(2'-metoksibenziliden)-sikloheksanon, kemurnian, antibakteri, mikrodilusi.

## ABSTRACT

Antibacterial agents has been developed to reduce the resistance cases of antibacterial drugs. One of them is curcumin analog. PGV-6, GVT-6, and HGV-6 are curcumin analog which have antibacterial activity and known more potent than the curcumin compound. The aim of this study is to synthesis of curcumin analog 2,6-bis-(2'-methoxybenzylidene)-cyclohexanone based on cyclovalone compound of HGV-6. In addition, the antibacterial activity was also studied.

2,6-bis-(2'-methoxybenzylidene)-cyclohexanone compound was synthesized through reaction aldol condensation followed dehydration of 2-methoxybenzaldehyde and cyclohexanone under acid condition. Then the yield was calculated and also its purity was determined by melting point measurement, TLC profile, and structural elucidation using DI-MS, IR Spectrometry, and NMR. Antibacterial activity was tested against Gram negative and Gram positive bacteria using microdilution method that indicated by MIC and MBC.

The coumpound gives the yield of 73,94%, melting point range of 143,7-143,8°C, and a purity which was indicated by one spot of compound on TLC test and all structure of the compound was confirmed by structure elucidation. The result of antibacterial activity test showed that the syntesis compound up to a maximum concentration of 100 µg/mL gives the activity of growth inhibition maximum is 20% against *Klebsiella pneumonia*, *Escherichia coli* (ATCC 25922), 30% against *Staphylococcus aureus* (ATCC 25923), *Enterococcus faecalis* (ATCC 29212), and 50% against *Bacillus subtilis* (ATCC 6633) bacteria.

Keywords: 2,6-bis-(2'-methoxybenzylidene)-cyclohexanone, purity, antibacterial, microdilution.