INTISARI

Perkembangan kasus resistensi antibakteri menyebabkan perlunya perhatian dalam pengembangan obat antibakteri baru yang memiliki aktivitas potensi lebih aktif. Beberapa strategi mengatasi resistensi bakteri dengan salah satunya mengembangkan senyawa baru sebagai agen anti infeksi, dimana beberapa penelitian membuktikan bahwa senyawa analog kurkumin memiliki potensi dalam aktivitas antibakteri yang potensial. Kurkumin memiliki potensi dalam agen antibakteri namun terdapat permasalahan seperti rendahnya bioavailabilitas dan metabolisme dalam tubuh yang sangat cepat. Beberapa senyawa analog kurkumin seperti PGV-6, dan HGV-6 telah memiliki aktivitas antibakteri yang lebih baik daripada senyawa senyawa kurkumin. Penelitian ini memiliki tujuan dengan mensintesis suatu analog kurkumin, yaitu senyawa 2,6-bis-(5'-bromo-2'-metoksibenziliden)-sikloheksanon atau senyawa analog kurkumin A-115.

Senyawa A-115 disintesis dengan mereaksikan 5'-bromo-2'-metoksibenzilidehid dan sikloheksanon pada suasana asam. Selanjutnya, hasil sintesis dapat dihitung rendemennya dan melakukan analisis dengan tahap elusidasi struktur menggunakan *Infra-Red Spectrometry, Direct Inlet-Mass Spectrometry*, dan *Nuclear Magnetic Resonance*. Dari hasil sintesis tersebut dapat dilakukan uji aktivitas antibakterinya dengan metode mikrodilusi.

Senyawa A-115 menghasilkan rendemen sebesar 81,17% dengan waktu 9 menit, titik lebur 174,1 ºC – 174,9 ºC dan didapatkan senyawa murni yang ditunjukkan dengan adanya satu bercak senyawa pada uji KLT. Analisis uji aktivitas antibakteri menunjukkan bahwa senyawa hasil sintesis hingga konsentrasi maksimum 200 µg/mL memberikan aktivitas penghambatan pertumbuhan bakteri maksimum sebesar *Escherichia coli* (ATCC 25922) (69,061±0,366)%, dan *Staphylococcus aureus* (ATCC 25923) menunjukkan persen hambat (66,543±0,949)%.

Kata kunci : 2,6-Bis-(5'-bromo-2'-metoksibenziliden)-Sikloheksanon, A-115, antibakteri, mikrodilusi, sintesis.

ABSTRACT

The development of antibacterial resistance cases requires attention in developing new antibacterial drugs that have more active potential activity. Several strategies overcome bacterial resistance, one of which is developing new compounds as anti-infective agents, where several studies have proven that curcumin analogue compounds have the potential for potential antibacterial activity. Curcumin has potential as an antibacterial agent, but there are weaknesses such as low bioavailability and very fast metabolism in the body. Several curcumin analog compounds such as PGV-6 and HGV-6 have better antibacterial activity than curcumin compounds. This research aims to synthesize a curcumin analogue, namely the compound 2,6-bis-(5'-bromo-2'-methoxybenzylidene)-cyclohexanone or the curcumin analogue compound A-115.

Compound A-115 was synthesized by reacting 5'-bromo-2'-methoxybenzylidehid and cyclohexanone under acidic conditions. Furthermore, the yield of the synthesis results can be calculated and analyzed using the structure elucidation stage using Infra-Red Spectrometry, Direct Entry Mass Spectrometry and Nuclear Magnetic Resonance. From the results of this synthesis, its antibacterial activity can be tested using the microdilution method.

Compound A-115 produced a yield of 81.17% in 9 minutes, a melting point of 174.1 ºC – 174.9 ºC and a pure compound was obtained as indicated by the presence of one spot of the compound in the TLC test. Analysis of the antibacterial activity test showed that the synthesized compound up to a maximum concentration of 200 µg/mL provided maximum bacterial growth inhibition activity of Escherichia coli (ATCC 25922) (69.061±0.366)%, and Staphylococcus aureus (ATCC 25923) showed percent inhibition (66.543±0.949)%.

Key words: 2,6-Bis-(5'-bromo-2'-methoxybenzylidene)-Cyclohexanone, A-115, antibacterial, microdilution, synthesis.