INTISARI

Senyawa analog kurkumin dalam bentuk enon dan dienon aromatis diketahui memiliki aktivitas sebagai inhibitor *NF-κB*. Dalam penelitian ini akan disintesis senyawa 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion yang merupakan analog kurkumin dan diperkirakan mempunyai aktivitas sebagai inhibitor protein *NF-κB*.

Penelitian ini merupakan penelitian non-eksperimental deskriptif non-analitik yang dilakukan berdasarkan kondensasi aldol silang dengan mereaksikan 4 mmol sikloheksana-1,3-dion dan 4 mmol 4-hidroksi-3-metoksibenzaldehida dengan katalis kalium hidroksida menggunakan metode *solid phase reaction*. Analisis senyawa hasil sintesis dilakukan dengan uji kualitatif: pemeriksaan organoleptis, kelarutan, titik lebur, KLT dengan fase diam silika gel GF_{254} dan fase gerak n-heksan:etil asetat (3:2), kromatografi gas, dan elusidasi struktur dengan spektroskopi massa dan inframerah. Sedangkan uji kuantitatif dilakukan dengan perhitungan rendemen.

Berdasarkan hasil perhitungan secara komputasional, diketahui bahwa 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion mempunyai aktivitas yang lebih baik dibandingkan kurkumin dengan skor $PLANTS_{PLP}$ sebesar -60.8375. Senyawa hasil sintesis berupa serbuk kering berwarna kuning, bau khas, dan rendemen sebesar 13,340%; 13,311%; dan 13,166%, dengan profil kelarutan larut dalam NaOH 3N. Hasil uji KLT menunjukkan adanya senyawa baru dengan R_f 0,230. Kromatografi gas menunjukkan kemurnian senyawa hasil sintesis sebesar 34,96% dengan jarak lebur sebesar 181,97–193,04°C. Hasil elusidasi struktur dengan spektroskopi massa dan inframerah memperkuat bukti bahwa senyawa hasil sintesis adalah 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion.

Kata kunci : 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion, *solid phase reaction*, inhibitor NF-κB, reaksi kondensasi aldol silang

ABSTRACT

Analog of curcumin in forms of enone and dienone aromatic is known for their activity as an NF-κB inhibitor. In this study, will be synthesize 2-(4'-hydroxy-3'-methoxybenzylidene) cyclohexane-1,3-dione as an analog that predicted has an activity as an NF-κB inhibitor.

It was a non-experimental descriptive non-analytical research which conducted based on the crossed aldol condensation reaction by reacting 4 mmole of cyclohexane-1,3-dione and 4 mmole of 4-hydroxy-3-methoxybenzaldehyde with pottasium hydroxide as the catalyst using solid phase reaction method. This research applied qualitative and quantitative tests. The qualitative tests consisted of organoleptic, solubility, melting point, TLC (with silica gel GF_{254} as stationary phase and n-hexane:ethyl acetate (3:2) as mobile phase), and structure elucidation with infrared and mass spectroscopy. Quantitative test involved the calculation of the yield.

Based on computational analysis, 2-(4'-hydroxy-3'-methoxybenzylidene) cyclohexane-1,3-dione showed a better interaction with NF-κB protein with $PLANTS_{PLP}$ score was -60.8375. The outcome of the reaction was yellow colored powder and specified smell (odor). The yield values were 13.340%; 13.311%; and 13.166%. Its soluble in sodium hydroxide 3N. TLC test shown the existence of new chemical substance with R_f value of 0.230. Gas chromatography showed 34.96% purity. The melting point range were 181.97–193.04°C. The results of structure elucidation by infrared and mass spectroscopy tests indicated the compound was 2-(4'-hydroxy-3'-methoxybenzilidene) cyclohexane-1,3-dione.

Key words : 2-(4'-hydroxy-3'-methoxybenzilidene) cyclohexane-1,3-dione, solid phase reaction, NF-κB inhibitor, crossed aldol condensation reaction