INTISARI

Senyawa analog kurkumin dengan gugus *α,β-unsaturated* keton diketahui memiliki aktivitas sebagai inhibitor protein NF-κB yang bertanggung jawab atas perkembangan sel kanker di dalam tubuh. Pada penelitian ini direaksikan 2-kloro-benzaldehida dan etil 3-oksobutanoat dengan katalis dimetilamin untuk mendapatkan senyawa analog kurkumin yang memiliki gugus *α,β-unsaturated* keton.

Penelitian ini merupakan penelitian non eksperimental deskriptif. Sintesis dilakukan dengan mereaksikan 4,439 mmol 2-kloro-benzaldehida dan 4,439 mmol etil 3-oksobutanoat dengan katalis dimetilamin berdasarkan reaksi kondensasi Knoevenagel. Senyawa hasil sintesis dianalisis dengan uji kualitatif yaitu organoleptis dan kromatografi lapis tipis dengan fase diam silika gel F_{254} dan fase gerak toluena, serta dilakukan elusidasi struktur menggunakan kromatografi gas - spektroskopi massa dan spektroskopi inframerah. Uji kuantitatif dilakukan dengan perhitungan rendemen senyawa hasil sintesis.

Senyawa hasil sintesis berbentuk cair berwarna kuning, berbau khas dan nilai rata-rata *crude product* sebesar 52,79 %. Kromatogram lapis tipis menunjukkan bahwa senyawa baru yang terbentuk memiliki nilai R_f sebesar 0,61 dan 0,72. Kromatografi gas menunjukkan senyawa yang dihasilkan merupakan senyawa campuran dan terdapat senyawa dengan komposisi terbanyak pada waktu retensi 16,110 menit. Hasil elusidasi struktur menggunakan spektroskopi massa dan spektroskopi inframerah menunjukkan senyawa hasil sintesis pada waktu retensi 16,110 menit adalah etil-2-[(2-klorofenil)metilidena]-3-oksobutanoat.

Kata kunci: 4-(2-Klorofenil)but-3-en-2-on, Kondensasi Knoevenagel, Etil-2-[(2-klorofenil)metilidena]-3-oksobutanoat

ABSTRACT

Analog compounds of curcumin with α,ß-unsaturated ketone group were known to have an activity as inhibitor of NF-κB protein that responsible for the growth of cancer cells in the body. In this research, 2-chloro-benzaldehyde and ethyl 3-oxobutanoic were reacted with dimethylamine catalyst to produce analog compound of curcumin that has α,ß-unsaturated ketone group.

This study was non-experimental descriptive. The synthesis was done by reacting 4.439 mmol of 2-chloro-benzaldehyde and 4.439 mmol of ethyl 3-oxobutanoic with dimethylamine as catalyst by Knoevenagel condensation reaction. The synthesized compound was analyzed by qualitative tests such as organoleptic and thin-layer chromatography using silica gel F_{254} as stationary phase and toluene as the mobile phase, and the elucidation of the structure was performed using gas chromatography-mass spectroscopy and infrared spectroscopy. Quantitative test was performed by calculating the yield of the synthesized compound.

The synthesized compound had the form of yellow liquid, characteristic odor and an average crude product of 52.79 %. Thin-layer chromatogram showed there were new compounds formed with R_f values of 0.61 and 0.72. Gas chromatography showed the synthesized compound was a mixture of compounds and there was a compound with the highest composition at a retention time of 16.110 minutes. The results of structure elucidation using mass spectroscopy and infrared spectroscopy showed the compound synthesized at the retention time of 16.110 minutes was ethyl-2 -[(2-chlorophenyl)metilidene]-3-oxobutanoat.

Keywords: 4-(2-Chlorophenyl)but-3-en-2-one, Knoevenagel condensation, Ethyl-2-[(2-chlorophenyl)metilidene]-3-oxobutanoic