

INTISARI

Pada penelitian ini akan disintesis senyawa 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion dari sikloheksana-1,3-dion dan 4-hidroksi-3-metoksibenzaldehida menggunakan katalis asam klorida. Penggunaan katalis HCl bertujuan untuk meningkatkan rendemen senyawa target dibandingkan dengan rendemen katalis kalium hidroksida sebesar 13%. Penggunaan katalis HCl memiliki keunggulan dibandingkan KOH yaitu dapat meningkatkan elektrofilitas dari 4-hidroksi-3-metoksibenzaldehida sehingga mempermudah terjadinya reaksi.

Penelitian ini merupakan penelitian non-eksperimental deskriptif non-analitik. Sintesis dilakukan berdasarkan kondensasi aldol silang dengan mereaksikan 4 mmol sikloheksana-1,3-dion dan 4 mmol 4-hidroksi-3-metoksibenzaldehida dengan katalis HCl menggunakan metode *solid phase reaction*. Senyawa hasil sintesis dianalisis dengan: pemeriksaan organoleptis, kelarutan, titik lebur, kromatografi lapis tipis (KLT) dengan fase diam silika gel F₂₅₄ dan fase gerak etil asetat : kloroform (1:5), kromatografi cair, dan elusidasi struktur dengan spektroskopi massa, spektroskopi inframerah (IR), spektroskopi proton resonansi magnet inti (¹H-NMR) dan dihitung jumlah rendemennya.

Senyawa hasil sintesis berupa kristal putih, tidak berbau dengan rerata rendemen sebesar 12,4% yang larut dalam kloroform, etil asetat, dan aseton. Kromatogram KLT menunjukkan adanya senyawa baru dengan *R_f* sebesar 0,30. Kromatogram kromatografi cair menunjukkan kemurnian senyawa hasil sintesis sebesar 100% dan jarak lebur sebesar 238,42 – 239,16°C. Hasil elusidasi struktur dengan spektroskopi massa, spektroskopi IR, dan ¹H-NMR menunjukkan senyawa hasil sintesis adalah 9-(4'-hydroxy-3'-methoxyphenyl)-3,4,5,6,7,9-hexahydro-1H-xanthene-1,8-dione.

Kata kunci : 2-(4'-hidroksi-3'-metoksibenzilidena) sikloheksana-1,3-dion, *solid phase reaction*, reaksi kondensasi aldol silang, 9-(4'-hydroxy-3'-methoxyphenyl)-3,4,5,6,7,9-hexahydro-1H-xanthene-1,8-dione

ABSTRACT

In this study, 2-(4'-hydroxy-3'-methoxybenzylidene) cyclohexane-1,3-dione was tempted to be synthesized from cyclohexane-1,3-dione and 4-hydroxy-3-methoxybenzaldehyde using hydrochloric acid as catalyst. Hydrochloric acid was used to improve the reaction yield compared to the reaction potassium hydroxide which give 13% of yield. This is due to the increasing electrophilicity of 4-hydroxy-3-methoxybenzaldehyde by the application of acid catalyst, thus make this starting compound more reactive.

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 hydrochloric acid as the catalyst, using the solid phase reaction method. The yield then weighted, and analyzed with organoleptic test, solubility test, melting point test, thin layer chromatography using silica gel F₂₅₄ as the stationary phase and ethyl acetate : chloroform (1:5) as the mobile phase, infrared spectrophotometry, mass spectroscopy, and proton nuclear magnetic resonance spectroscopy (¹H-NMR).

The yield of the reaction was white crystal with no specified odor and the yield values was 12.4%. The yield is soluble in chloroform, ethyl acetate, aceton. TLC analysis showed a new chemical substance with R_f value of 0.30. The 100% purity of the yield has been proven by liquid chromatography analysis. The melting point range were 238.42 – 239.16°C. The results of structure elucidation analysis by infrared spectrophotometry, mass spectroscopy, and ¹H-NMR spectroscopy concluded that the compound was 9-(4'-hydroxy-3'-methoxyphenyl)-3,4,5,6,7,9-hexahydro-1H-xanthene-1,8-dione.

Key words : 2-(4'-hydroxy-3'-methoxybenzilidene) cyclohexane-1,3-dione, solid phase reaction, crossed aldol condensation reaction, 9-(4'-hydroxy-3'-methoxyphenyl)-3,4,5,6,7,9-hexahydro-1H-xanthene-1,8-dione