PENGARUH STERIK DAN INDUKSI BENZALDEHIDA TERHADAP SINTESIS TURUNAN BENZIL ALKOHOL MELALUI REAKSI REDUKSI MENGGUNAKAN METODE SONOKIMIA

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INTISARI

Telah dilakukan sintesis turunan benzil alkohol melalui reaksi reduksi dari turunan benzaldehida menggunakan metode sonikasi. Penelitian ini bertujuan untuk mempelajari pengaruh sterik dan induksi dari turunan benzaldehida terhadap sintesis turunan benzil alkohol.

Pengaruh efek sterik dipelajari dengan mereduksi 4-metilbenzaldehida, 3-metilbenzaldehida dan 2-metilbenzaldehida. Pengaruh efek induksi dipelajari dengan mereduksi 4-metilbenzaldehida, 4-klorobenzaldehida dan 3-nitrobenzaldehida. Karakterisasi produk sintesis dilakukan dengan spektrometer FTIR, ^{1}H-NMR, ^{13}C-NMR, dan GC-MS.

Reduksi 4-metilbenzaldehida, 3-metilbenzaldehida dan 2-metilbenzaldehida menghasilkan 4-metilbenzil alkohol, 3-metilbenzil alkohol dan 2-metilbenzil alkohol dengan persen hasil berturut-turut sebesar 92%, 93% dan 88%. Reduksi 4-metilbenzaldehida, 4-klorobenzaldehida dan 3-nitrobenzaldehida menghasilkan 4-metilbenzil alkohol, 4-klorobenzil alkohol dan 3-nitrobenzil alkohol dengan persen hasil berturut-turut sebesar 92%, 94% dan 95%. Hasil penelitian menunjukkan bahwa efek sterik dan induksi dari benzaldehida tidak berpengaruh terhadap sintesis turunan benzil alkohol melalui reaksi reduksi menggunakan metode sonikasi.

Kata kunci : benzil alkohol, reduksi aldehida, sonokimia.

EVALUATION OF STERIC AND INDUCTION EFFECTS OF BENZALDEHYDES ON SYNTHESIS OF BENZYL ALCOHOLS THROUGH REDUCTION REACTION USING THE SONICATION METHOD

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ABSTRACT

Synthesis of benzyl alcohols had been carried out through the reduction reaction from benzaldehyde derivatives using the sonication method. This research was aimed to study the steric and induction effects of benzaldehydes on the synthesis of benzyl alcohol derivatives.

Evaluation of the steric effect was studied by reducing 4-methylbenzaldehyde, 3-methylbenzaldehyde and 2-methylbenzaldehyde. The induction effect was studied by reducing 4-methylbenzaldehyde, 4-chlorobenzaldehyde and 3-nitrobenzaldehyde. Characterization of the products was carried out using ^{1}H-NMR, ^{13}C-NMR, FTIR, and GC-MS spectrometers.

The reduction of 4-methylbenzaldehyde, 3-methylbenzaldehyde and 2-methylbenzaldehyde gave 4-methylbenzyl alcohol, 3-methylbenzyl alcohol and 2-methylbenzyl alcohol in 92%, 93% and 88%, respectively. The reduction of 4-methylbenzaldehyde, 4-chlorobenzaldehyde and 3-nitrobenzaldehyde gave 4-methylbenzyl alcohol, 4-chlorobenzyl alcohol and 3-nitrobenzyl alcohol in 92%, 94% and 95%, respectively. The results showed that the steric and induction effect of benzaldehyde had no effect on the synthesis of benzyl alcohol through reduction reaction using the sonication method.

Keywords: aldehyde reduction, benzyl alcohol, sonication