SYNTHESIS OF ALKANON COMPOUNDS FROM ETHILASETOASETAT AND HALOALKANA USING ETHOKSIDE CATALYTS THROUGH THE ALKILATION, HYDROLYSIS AND DECARBOCSILATION REACTION

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ABSTRACT

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The present study aimed to synthesize alkanon compounds of ethyl acetoacetate and s-propyl bromide compounds using ethoxide catalysts via alkylation, hydrolysis and decarboxylation reactions and synthesize 3-ethyl-2-pentanone compounds of ethyl acetoacetate and ethyl bromide compounds using an ethoxide catalyst through an alkylation reaction. hydrolysis and decarboxylation.
Synthesis of 4-methyl-2-pentanone compounds, 1.4375 grams of Na metal and 25 mL of dry ethanol were mixed, stirred until Na all soluble metal After that, 8 ml of ethyl acetoacetate was added, and 5.87 mL of s-propyl bromide while stirred. The solution was refluxed for 3 hours at 69-76 ° C. After cold plus 15 mL of 7% NaOH subsequently refluxed 2 hours at temperature 90-100oC. Thereafter the solution was added 3 mL of 50% H_2SO_4 while stirring for 1 hour and refluxed for 2 hours at 98-105 ° C. Cold solution is taken from the oil layer. The oil layer was extracted with 25 mL diethyl ether. The diethyl ether layer was washed with 20 mL 10% $NaHCO_3$, dried with Na_2SO_4 anh overnight. Then evaporated to obtain the synthesis compound, then analyzed using FTIR and GC-MS. FTIR spectra, spectra at 3356, 14 cm-1 is an O-H group of alcohols. Spectra 2924,09 cm-1 presence of aliphatic C-H group. The sharp spectra at 1689.64 cm-1 are carbonyl groups (C = O). Spectra at 1149.57 cm-1 of a single C-O bond. GCMS spectra, retention time 24.220 minutes, 0.09% abundance. Spectra at m / z 99, 85, 57, 43. and by 0.0078048%. For 3-ethyl-2-pentanone Synthesis. Mixed 1.4375 grams of Na metal and 16 mL of dry ethanol and stirred. Added 7.97 mLethyl acetoacetate, stirred for 10 minutes, plus 4.66 mL of ethyl bromide while stirring. The solution was refluxed for 3 hours at 78 ° C. After the cold is separated to take the precipitate. The precipitate was added 15 mL of 7% NaOH and refluxed for 2 hours at 103 ° C. Added 3 mL of 50% H_2SO_4 while stirring for 1 hour. Then refluxed for 2 hours at 103oC. The solution is validated for the oil layer. The oil layer was extracted with 25 mL diethyl ether. Then washed with 20 mL 10% $NaHCO_3$, dried with Na_2SO_4 anh overnight. The diethyl ether layer was evaporated until the compound of the synthesis product was obtained. Further analyzed by FTIR and GCMS The FTIR spectra, the carbonyl group (C = O) was shown at 1695.48 cm-1 for the first experiment and spectra 1691.45 cm-1 for the second experiment. Spectra at 2967.39 cm-1 for the first experiment and spectra 2972, 19 cm-1 for the second experiment, showed aliphatic (C-H). The mass GCMS spectra are less suited to the 3-ethyl-2-pentanone structure, since they do not appear molecular ions m / z 116 but m / z 110. The peak m / z 83 is obtained from the release of methyl groups followed by the release of H_2O molecules. The yield of the synthesis compound is 0.001375%.
The conclusions of 4-methyl-2-pentanone compounds can be synthesized with a yield of 0.0078048%. While the 3-ethyl-2-pentanone compounds can not be synthesized but obtained a yield of 0.001375%.

Kata Kunci: *Etilasetoasetat, Senyawa keton, 4-metil-2-pentanon , 3-etil-2-pentanon*