

SYNTHESIS OF AMINOBENZALACETONE COMPOUNDS USING MICROWAVE ASSIST ORGANIC SYNTHESIS METHODS AND ITS POTENTIAL AS A SUNSCREEN

by Cornelia Budimarwanti, Indyah Sulisty Arty, Karim Theresih, Sri Handayani, Minandre Wiratama, Rika Yuanasri

ABSTRACT

This research aims to synthesized 1,3-bis- (4'-dimethylamino-benzylidene)acetone and 4-dimethylaminobenzalacetone compounds from cross aldol condensation reaction between 4-dimethylaminobenzaldehyde and acetone using the NaOH base catalyst with MAOS method and test its activity as UV light absorbent (sunscreen).

Synthesis of 1,3-bis- (4'-dimethylaminobenzylidene) acetone was carried out by reacting acetone (0.005 mole) and 4-dimethylaminobenzaldehyde (0.01 mole) with a mole variation of NaOH catalyst with ethanol solvent. Variations mole NaOH that used in this research were 0.0025 mole; 0.0050 mole; 0.0075 mole; 0.0100 mole and 0.0125 mole This synthesis reaction was done at a microwave with 40 seconds. Synthesis of 4-dimethylaminobenzalacetone was carried out by reacting acetone in mole variations, respectively 0.005 mol; 0.01 mol; 0.02 mol; 0.03 mol and 0.03 mol and 4-dimethylaminobenzaldehyde (0.005 mole) using NaOH catalyst with the number of moles which gave the greatest yield in previous experiments. Synthesized compounds were characterized using TLC, TLC scanners, IR spectroscopy and ¹H-NMR. The activity test was then carried out as an UV absorbent invitro by measuring the absorbance of several variations of the compound concentration from 1-50 ppm in ethanol solvent at maximum wavelength.

In this research successfully synthesized 1,3bis-(4'-dimethylamo-benzylidene) acetone in the form of solid red brick. Synthesis with variations NaOH 0.0025 mole; 0.0050 mole; 0.0075 mole; 0.0100 mole and 0.0125 mole have produce 64.326%; 60.321%; 60.523%; 98.676% dan 81.136 % in yield, respectively. The highest product was obtained by using 0.0100 mole NaOH as catalyst. In this research also successfully synthesized 4-dimethylaminobenzalacetone compounds from acetone and benzaldehyde compounds with variations in mole ratio of acetone:4-dimethylaminobenzaldehyde 1:1; 2:1; 4:1; 6:1; 8:1 by using 0.0100 mole NaOH as catalyst have produce 3.16%; 18.86%; 7.11%; 13.25%; 12.76% in yield, respectively. The activity test as UV absorbent were only carried out on 1,3-bis- (4'-dimethylaminobenzylidene)acetone compounds. 1,3-Bis- (4'-dimethylaminobenzylidene)acetone with a concentration of 5 ppm already has ultra-UV protection.

Kata Kunci: *MAOS method, 4-dimethylaminobenzaldehyde compound, 1,3-bis-(4'-dimethylaminobenzylidene)acetone compound, 4-dimethylaminobenzalacetone compound, sunscreen*