

## SINTESIS SENYAWA DIBENZALASETON, 4-DIMETILAMINO BENZALASETON, DAN DISINAMALASETON SERTA UJI AKTIVITAS SEBAGAI SENYAWA TABIR SURYA

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### INTISARI

Sintesis dibenzalaseton (senyawa A), 4-dimetilaminobenzalaseton (senyawa B), dan disinamalaseton (senyawa C), serta uji aktivitas sebagai senyawa tabir surya telah dilakukan. Tujuan penelitian ini melakukan sintesis senyawa A, B, dan C menggunakan metode konvensional dan sonokimia, membandingkan produk senyawa A, B, dan C antara metode konvensional dan sonokimia, dan menguji senyawa A, B, dan C sebagai senyawa tabir surya dengan metode *in vitro*.

Senyawa A, B, dan C masing-masing disintesis menggunakan perbandingan benzaldehida dan aseton (2:1), 4-dimetilaminobenzaldehida dan aseton (1:2), sinamalaldehida dan aseton (2:1) dengan pelarut etanol dan katalis NaOH 5 M secara konvensional dan sonokimia. Pada metode konvensional, senyawa A dan C dilakukan sintesis selama 1 jam namun senyawa B selama 24 jam. Pada metode sonokimia, semua senyawa direaksikan selama 10 menit. Ketiga senyawa yang terbentuk dan dilakukan pemurnian dilanjutkan karakterisasi dengan menggunakan spektrometer FTIR, GC-MS/DI-MS, dan <sup>1</sup>H NMR. Uji aktivitas senyawa sebagai tabir surya dengan metode *in vitro*.

Produk sintesis untuk masing-masing senyawa menghasilkan persen hasil, warna, dan titik leleh sebagai berikut: senyawa A secara konvensional 22,44%, padatan kuning, dan 105-107 °C sedangkan secara sonokimia 49,65%, padatan kuning, dan 104-106 °C; senyawa B secara konvensional 33,72%, padatan jingga, dan 128-129 °C sedangkan secara sonokimia 52,33%, padatan jingga, dan 127-129 °C; senyawa C secara konvensional 29,77%, padatan jingga, dan 119-121 °C sedangkan secara sonokimia adalah 27,47%, padatan jingga, dan 114-116 °C. Nilai SPF dari senyawa A, B, dan C berturut-turut sebesar 1,400-360,6; 1,070-4886; dan 7,050-6668.

Kata kunci : sonokimia, dibenzalaseton, disinamalaseton, tabir surya

## **SYNTHESIS OF DIBENZALACETONE, 4-DIMETHYLAMINO BENZALACETONE, AND DICINNAMALACETONE AND ACTIVITY TEST AS SUNSCREEN AGENTS**

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### **ABSTRACT**

Synthesis of dibenzalacetone (compound A), 4-dimethyl amino benzalacetone (compound B), and dicinnamalacetone (compound C) and their activity test as sunscreen agent have been carried out. The purposes of the research were to synthesize compound A, compound B, and compound C with conventional and sonochemistry method, to compare product of compound A, B, and C with conventional and sonochemistry method, and to examine compound A, B, and C as sunscreen compound using in vitro method.

All of the compound A, B, and C were synthesized through condensation benzaldehyde and acetone (2:1), 4-dimethylaminobenzaldehyde and acetone (1:2), and cinnamaldehyde and acetone (2:1) with 96% ethanol solvent and 5 M NaOH catalyst by conventional and sonochemistry method. In conventional method, compound A and B were synthesized for an hour while compound C was synthesized for 24 hours. But, all of the compounds were synthesized for 10 inutes by sonochemistry method. Three purified solid compounds are characterized by using spectrometer FTIR, GC-MS/DI-MS, and <sup>1</sup>H-NMR. Sunscreen activity test was carried out using in vitro method.

Synthesis product for each compound gave percentage yield, colour, and melting point as follows, compound A by conventional method was 24.44%, yellow precipitation, and 105-107 °C; compound A by sonochemistry method was 49.65%, yellow precipitation, and 104-106 °C. Compound B by conventional method was 33.72%, orange precipitation, and 128-129 °C; compound B by sonochemistry method was 52.33%, orange precipitation, and 127-129 °C. Compound C by conventional method was 29.77%, orang precipitation, and 119-121 °C. Compound C by sonochemistry method was 27.47%, orange precipitation, and 114-116 °C. SPF's value of compound A, B, and C continued were 1.400-360.6; 1.070-4886; and 7.050-6668.

Keywords : sonochemistry, dibenzalacetone, dicinnamalacetone, sunscreen