SINTESIS SENYAWA TURUNAN KALKON BERBAHAN DASAR 6-NITROVERATRALDEHIDA DAN UJI AKTIVITASNYA SEBAGAI ANTIMALARIA

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INTISARI

Penelitian ini bertujuan untuk mensintesis senyawa turunan kalkon dari 6-nitroveratraldehida dan mengevaluasi aktivitasnya sebagai agen antimalaria. Sintesis senyawa 3,4-dimetoksi-6-nitrokalkon (kalkon **1**) dan 4'-amino-3,4-dimetoksi-6-nitrokalkon (kalkon **2**) dilakukan dengan metode kondensasi Claisen-Schmidt secara konvensional dan sonokimia. Senyawa 6-nitroveratraldehida direaksikan dengan asetofenon dan 4-aminoasetofenon dalam etanol dan katalis NaOH. Hasil reaksi dimurnikan dengan metode rekristalisasi dan struktur senyawa dikarakterisasi menggunakan spektrometer IR, GC-MS, ^{1}H- dan ^{13}C-NMR. Uji aktivitas senyawa sebagai antimalaria dilakukan secara *in vitro* terhadap *Plasmodium falciparum* galur 3D7.

Hasil penelitian menunjukkan bahwa sintesis kalkon **1** dengan metode konvensional maupun sonokimia menghasilkan senyawa padat berwarna hijau dengan titik lebur 183-186 ºC dengan rendemen masing-masing 40,41% dan 38,54%. Senyawa kalkon **2** berupa padatan berwarna kuning kunyit dengan titik lebur 266-269 ºC dihasilkan dari metode konvensional maupun sonokimia dengan rendemen berturut-turut 20,11% dan 9,71%. Hasil uji antimalaria senyawa kalkon **1** dan **2** menghasilkan nilai IC_{50} berturut-turut sebesar 4,12 dan 4,66 µM sehingga senyawa kalkon **1** dan **2** termasuk golongan senyawa yang aktif sebagai antimalaria.

Kata kunci: senyawa antimalaria, kalkon, sonokimia.

SYNTHESIS OF CHALCONE DERIVATIVES FROM 6-NITROVERATRALDEHYDE AND THEIR ANTIMALARIAL ACTIVITY TEST

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ABSTRACT

This study aims to synthesize chalcone derivatives from 6-nitroveratraldehyde and then to evaluate their activity as antimalarial agents. Synthesis of 3,4-dimethoxy-6-nitrochalcone (chalcone **1**) and 4'-amino-3,4-dimethoxy-6-nitrochalcone (chalcone **2**) was carried out by conventional and sonochemical methods. The 6-nitroveratraldehyde was reacted with acetophenone or 4-aminoacetophenone in ethanol with NaOH as a catalyst. The reaction products were purified by recrystallization method, and the structure characterization was performed using IR, GC-MS, ^{1}H-, and ^{13}C-NMR spectrometers. The activity test of the compound as antimalarial agents was done by *in vitro* method against *Plasmodium falciparum* 3D7 strain.

The results showed that chalcone **1** obtained by conventional and sonochemical methods produced a solid green compound with a melting point of 183-186 ºC and 40.41% and 38.54% yields, respectively. Chalcone **2** was yielded by conventional and sonochemical methods as a turmeric yellow solid with a melting point of 266-269 ºC in 20.11% and 9.71%, respectively. Chalcone **1** and **2** had IC_{50} values of 4.12 and 4.66 µM, respectively, so chalcone **1** and **2** were classified as active antimalarial compounds.

Keywords: antimalarial agent, chalcone, sonochemistry.