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

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INTISARI

Senyawa turunan kalkon berbahan dasar 6-nitroveratraldehida telah berhasil disintesis dan diuji aktivitasnya sebagai agen antimalaria terhadap *P. falciparum 3D7*. Senyawa turunan kalkon disintesis melalui reaksi kondensasi Claisen-Schmidt dengan mereaksikan 6-nitroveratraldehida dan kloroasetofenon menggunakan katalis NaOH 2 M dalam etanol dengan metode konvensional dan sonokimia menghasilkan produk (E)-1-(4-klorofenil)-3-(3,4-dimetoksi-6-nitrofenil)-prop-2-en-1-on (kalkon **1**) dan (E)-1-(2-klorofenil)-3-(3,4-dimetoksi-6-nitrofenil)-prop-2-en-1-on (kalkon **2**). Produk kalkon dimurnikan dengan metode rekristalisasi. Elusidasi struktur terhadap produk hasil sintesis dilakukan dengan spektrometer FTIR, GC-MS, ^{1}H- dan ^{13}C-NMR. Produk hasil sintesis diuji aktivitasnya sebagai senyawa antimalaria secara *in vitro* terhadap *P. falciparum 3D7*.

Sintesis senyawa kalkon **1** baik dengan metode konvensional maupun sonokimia menghasilkan produk padatan berwarna hijau muda dengan titik lebur 175-178 °C dengan rendemen masing-masing 32,29% dan 22,66%. Senyawa kalkon **2** yang dihasilkan menggunakan metode konvensional dan metode sonokimia berupa padatan berwarna kuning kehijauan dengan titik lebur 165-167 °C dengan rendemen masing-masing 45,95% dan 27,05%. Uji aktivitas antimalaria senyawa kalkon **1** dan **2** memberikan nilai IC_{50} berturut-turut sebesar 2,42 dan 1,93 μM sehingga kalkon **1** dan kalkon **2** dapat digolongkan sebagai senyawa aktif antimalaria.

Kata kunci : antimalaria, kalkon, *P. falciparum* 3D7, sonokimia.

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

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ABSTRACT

The chalcone derivatives from 6-nitroveratraldehyde had been successfully synthesized and the antimalarial agent activity of those compounds had been tested against *P. falciparum 3D7*. The chalcone derivatives were synthesized via Claisen-Schmidt condensation reaction by reacting 6-nitroveratraldehyde and chloroacetophenone in the presence of NaOH 2 M as a catalyst using conventional and sonochemical methods. These reaction produced (E)-1-(4-chlorophenyl)-3-(3,4-dimethoxy-6-nitrophenyl)-prop-2-en-1-one (chalcone **1**) and (E)-1-(2-chlorophenyl)-3-(3,4-dimethoxy-6-nitrophenyl)-prop-2-en-1-one (Chalcone **2**). The products were purified by recrystallization method and the structure elucidation was performed using FTIR, GC-MS, ^{1}H- and ^{13}C-NMR spectrometers. The antimalarial activity of this compound were tested by *in vitro* assay against *P. falciparum* strain 3D7.

The result showed that chalcone **1** was prepared using conventional and sonochemical methods was obtained as green solid with 175-178 °C melting points, 32.29% and 22.66% yields, respectively. Chalcone **2** was prepared using conventional and sonochemical methods was obtained as greenish yellow solid with 165-167 ºC melting points in 45.95% and 27.05% yields, respectively. The antimalarial activity test of chalcone **1** and **2** gave IC_{50} values of 2.42 and 1.93 µM. Chalcone **1** and **2** were classified as active antimalarial agents.

Keywords: antimalarial, chalcone, *P. falciparum* 3D7, sonochemistry