SINTESIS DAN UJI AKTIVITAS ANTIMALARIA SENYAWA TURUNAN KALKON DARI 2-KLOROASETOFENON DAN TURUNAN BENZALDEHIDA

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INTISARI

Sintesis dan uji aktivitas antimalaria terhadap senyawa turunan kalkon dari bahan dasar 2-kloroasetofenon dan turunan benzaldehida telah dilakukan. Penelitian ini dilakukan dengan dua tahap yaitu sintesis senyawa turunan meliputi kalkon **A** (*E*)-1-(2-klorofenil)-3-fenil-2-propen-1-on dari 2-kloroasetofenon dengan benzaldehida, sintesis senyawa kalkon **B** (*E*)-1-(2-klorofenil)-3-(4-metoksifenil)-2-propen-1-on dari 2-kloroasetofenon dan 4-metoksibenzaldehida, sintesis senyawa kalkon **C** (*E*)-1-(2-klorofenil)-3-(3.4-metoksifenil)-2-propen-1-on dari 2-kloroasetofenon dan 3,4-dimetoksibenzaldehida, serta uji aktivitas antimalaria dari kalkon tersebut. Kalkon **A**, **B**, dan **C** disintesis dengan metode reaksi *Claisen-Schmidt* melalui teknik pengadukan 24 jam dalam pelarut etanol pada suhu kamar dengan penambahan katalis basa KOH 20%. Elusidasi struktur produk sintesis dilakukan dengan spektrometer FTIR, GC-MS, ^{1}H- dan ^{13}C-NMR. Senyawa turunan kalkon diuji aktivitas antimalaria secara *in vitro* terhadap *Plasmodium falcifarum* 3D7.

Berdasarkan hasil penelitian diperoleh produk kalkon **A**, **B**, dan **C** berupa padatan berwarna kuning pucat dengan rendemen berturut-turut 80,81; 98,40; dan 94,71%. Produk kalkon mempunyai titik leleh berturut-turut 190-200; 92-95; 100-103 ºC. Uji aktivitas antimalaria terhadap kalkon **A**, **B**, dan **C** dihasilkan IC_{50} berturut-turut 9,85; 944,49; 21,71 μM. Dapat disimpulkan bahwa senyawa kalkon **A** tergolong senyawa aktif terhadap antimalaria, kalkon **B** senyawa tidak aktif terhadap antimalaria, dan kalkon **C** tergolong senyawa dengan aktivitas sedang sebagai antimalaria.

Kata kunci: 2-kloroasetofenon, antimalaria, kalkon, *Plasmodium falcifarum* 3D7.

SYNTHESIS AND ANTIMALARIAL ACTIVITY ASSAY OF CHALCONE DERIVATIVES FROM 2-CHLOROACETOPHENONE AND BENZALDEHYDE DERIVATIVES

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ABSTRACT

Synthesis and test of antimalarial activity chalcone derivatives from 2-chloroacetophenone and benzaldehyde derivatives have been carried out. This research was conducted in two methods, namely the synthesis of chalcone **A** (*E*)-1-(2-chlorophenyl)-3-phenyl-2-propen-1-one from 2-chloroacetophenone and benzaldehyde, chalcone **B** (*E*)-1-(2-chlorophenyl)-3-(4-methoxyphenyl)-2-propen-1-one from 2-chloroacetophenone and 4-methoxybenzaldehyde, chalcone **C** (*E*)-1-(2-chlorophenyl)-3-(3,4-methoxysiphenyl)-2-propen-1-one compounds from 2-chloroacetophenone and 3,4-dimethoxybenzaldehyde, and the antimalarial activity test. Chalcone **A**, **B**, and **C** were synthesized by the *Claisen-Schmidt* reaction method using the 24-hour stirring technique with ethanol at room temperature with the addition of a 20% KOH base catalyst. Structure elucidation of products was performed using FTIR, GC-MS, ^{1}H- and ^{13}C-NMR spectrometers. Chalcone derivatives were tested for their antimalarial activity *in vitro* assay against *Plasmodium falcifarum* 3D7.

Based on the results, the products of chalcone **A**, **B**, and **C** were pale yellow solid with yields of 80.81; 98.40; and 94.71% respectively. The chalcone product has a melting point of 190-200; 92-95; 100-103 ºC. The antimalarial activity test against chalcone **A**, **B**, and **C** resulted in IC_{50} respectively 9.85; 944.49; and 21.71 μM respectively. It can be concluded that chalcone **A** was categorized as active compounds against antimalarials, chalcone **B** was categorized as inactive against antimalarials, and chalcone compounds **C** was categorized as moderate activity compounds against antimalarials.

Keywords: 2-chloroacetophenone, antimalarial, chalcone, *Plasmodium falcifarum* 3D7