SINTESIS TURUNAN KALKON DAN *N*-FENILPIRAZOLINA BERBAHAN DASAR 4-KLOROASETOFENON DAN 4-DIMETILAMINOBENZALDEHIDA SERTA UJI AKTIVITASNYA SEBAGAI ANTIMALARIA

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INTISARI

Sintesis dan uji aktivitas antimalaria senyawa *N*-fenilpirazolina dari bahan dasar 4-kloroasetofenon dan 4-dimetilaminobenzaldehida (DMAB) telah dilakukan. Penelitian ini dilakukan melalui tiga tahap, yaitu sintesis senyawa kalkon dari 4-dimetilaminobenzaldehida dan 4-kloroasetofenon, sintesis senyawa *N*-fenilpirazolina dari senyawa kalkon dan fenilhidrazin, dan uji aktivitas antimalaria senyawa kalkon dan *N*-fenilpirazolina hasil sintesis. Sintesis senyawa kalkon dilakukan dengan metode pengadukan pada suhu ruang selama 15 menit dengan penambahan katalis basa KOH 40%. Sintesis senyawa *N*-fenilpirazolina dilakukan dengan mereaksikan kalkon hasil sintesis dengan fenilhidrazin dalam pelarut etanol menggunakan katalis basa KOH/etanol 40% dengan metode sonokimia selama 6 jam. Elusidasi struktur semua produk dilakukan menggunakan spektrometer FT-IR, GC-MS, ^{1}H- dan ^{13}C-NMR. Senyawa kalkon dan *N*-fenilpirazolina hasil sintesis diuji aktivitas antimalarianya secara *in vitro* dengan metode penghambatan polimerisasi hem.

Sintesis kalkon menghasilkan produk (*E*)-3-(4-(dimetilamino)fenil)-1-(4-(klorofenil)-prop-2-en-1-on dengan rendemen 54%. Sintesis *N*-fenilpirazolina menghasilkan senyawa *N*-fenil-3-(4-klorofenil)-5-(4-(dimetilamino)fenil)-2-pirazolina dengan rendemen 67%. Uji antimalaria terhadap kalkon dan *N*-fenilpirazolina hasil sintesis memberikan nilai IC_{50} masing-masing sebesar 59,50 dan 34,60 mM. Hasil tersebut menunjukkan bahwa aktivitas antimalaria kedua senyawa tersebut tidak lebih baik dari aktivitas klorokuin difosfat sebagai senyawa standar (kontrol positif).

Kata kunci: antimalaria, kalkon, *N*-fenilpirazolina, 4-kloroasetofenon

SYNTHESIS OF CHALCONE AND *N*-PHENYLPIRAZOLINE DERIVATES FROM 4-CHLOROACETOPHENONE AND 4-DIMETHYLAMINOBENZALDEHYDE AND ITS ACTIVITY TEST AS ANTIMALARIAL

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ABSTRACT

Synthesis and antimalarial test of *N*-phenylpyrazoline compound from 4-chloroacetophenone and 4-dimethylaminobenzaldehyde (DMAB) had been carried out. The research was carried out through three steps, i.e., the synthesis of chalcone from 4-dimethylaminobenzaldehyde and 4-chloroacetophenone, synthesis *N*-phenylpyrazoline from chalcone and phenylhidrazine, and antimalarial test of the chalcone and *N*-phenylpirazoline compound. Synthesis of chalcone was carried out by strirring method at room temperature for 15 minutes with the addition of KOH 40% as a base catalyst. The synthesis of *N*-phenylpyrazoline was performed by reacting the resulted chalcone with phenylhydrazine in ethanol and KOH/ethanol 40% with sonochemical methods for 6 hours. Elucidation structures of all products were carried out using FT-IR, GC-MS, ^{1}H- and ^{13}C-NMR spectrometers. Chalcone and *N*-phenylpyrazoline compounds were tested for antimalarial activity *in vitro* by inhibition of heme polymerization methods.

The synthesis of chalcone compound produced [(*E*)-3-(4-(dimethylamino) phenyl)-1-(4-chlorophenyl)-prop-2-en-1-on] with a yield of 54%. Synthesis of *N*-phenylpyrazoline compound produced *N*-phenyl-3-(4-chlorophenyl)-5-(4-(dimethylamino)phenyl)-2-pyrazoline compound in 67% yield. The result of antimalarial activity test toward chalcone and *N*-phenylpyrazoline gave the IC_{50} values 59.50 and 34.60 mM, respectively. These result showed that the antimalarial activity of two compounds was lower than the activity of chloroquine diphosphate as a standard compound (positive control).

Keywords: antimalarial, chalcone, *N*-phenylpyrazoline, 4-chloroacetophenone