SINTESIS TURUNAN KALKON DAN PIRAZOLINA DARI 2,4 DIMETOKSIASETOFENON SERTA UJI AKTIVITASNYA SEBAGAI SENYAWA ANTIMALARIA

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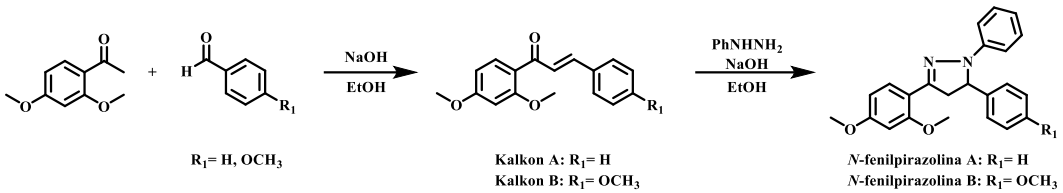
INTISARI

Telah dilakukan sintesis turunan kalkon dan pirazolina berbahan dasar 2,4-dimetoksiasetofenon serta uji aktivitasnya sebagai antimalaria. Turunan kalkon disintesis melalui reaksi kondensasi *Claisen-Schimdt*. Sintesis kalkon **A** dan **B** dilakukan dengan mereaksikan benzaldehida atau *p*-anisaldehida dengan 2,4-dimetoksiasetofenon, dalam pelarut etanol menggunakan katalis NaOH 20% dan pengadukan selama 24 jam pada suhu ruang. Sintesis *N*-fenilpirazolina **A** dan **B** dilakukan dengan mereaksikan kalkon **A** atau kalkon **B** dengan fenilhidrazina dalam pelarut etanol dengan katalis NaOH 20% dan direfluks selama 24 jam. 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 *Plasmodium falciparum* 3D7.

Berdasarkan hasil penelitian diperoleh kalkon **A** dan **B** berupa padatan berwarna kuning pucat dengan rendemen berturut-turut 87,96 dan 86,70% dan titik leleh 76-77 dan 86-87 ℃. Reaksi siklokondensasi menghasilkan *N*-Fenilpirazolina **A** berupa padatan berwarna coklat muda dengan rendemen 55,80% dan titik leleh 154-155 ℃, sedangkan *N*-fenilpirazolina **B** berupa padatan berwarna putih dengan rendemen 68,22% dan titik leleh 132-133 ℃. Uji aktivitas antimalaria terhadap senyawa kalkon **A** dan **B** serta senyawa *N*-fenilpirazolina **A**, dan **B** menghasilkan nilai IC_{50} berturut-turut 2,89; 1,29; 4,13; dan 29,18 µM. Dapat disimpulkan bahwa kalkon **A**, kalkon **B** dan *N*-fenilpirazolina **A** dikategorikan sebagai senyawa yang aktif sebagai antimalaria sedangkan *N*-fenilpirazolina **B** dikategorikan sebagai senyawa dengan aktivitas sedang sebagai antimalaria.

Kata kunci: 2,4-dimetoksiasetofenon, antimalaria, kalkon, *N*-fenilpirazolina, *Plasmodium falciparum* 3D7.



SYNTHESIS OF CHALCONE AND PYRAZOLINE DERIVATIVES FROM 2,4-DIMETHOXYACETOPHENONE AND THEIR ACTIVITIES TEST AS ANTIMALARIAL AGENTS

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ABSTRACT

Synthesis of chalcone and pyrazoline derivative from 2,4-dimethoxyacetophenone and their activities test as antimalaria has been carried out. Chalcone derivatives were synthesized via *Claisen-Schmidt* condensation reaction. The synthesis of chalcone **A** and **B** was conducted by reacting benzaldehyde or p-anisaldehyde with 2,4-dimethoxyacetophenone in ethanol in the presence of NaOH 20% as a catalyst and it was stirred for 24 hours at room temperature. The synthesis of *N*-phenylpyrazoline **A** and **B** was carried out by reacting chalcone **A** or **B** with phenylhydrazine in ethanol using NaOH 20% as a catalyst under refluxed for 24 hours. Structure elucidation of all products was performed using FTIR, GC-MS, ^{1}H- and ^{13}C-NMR spectrometers. The synthesized products were tested for its activity as antimalarial compounds by *in vitro* assay against *Plasmodium falciparum* 3D7

The results showed that chalcone **A** and **B** were yielded as pale yellow solid in 87.96 and 86.70% with m.p of 86-87 and 86-87 ℃, respectively. The cyclocondensation reaction produced *N*-phenylpyrazoline **A** as light brown solid in 55.80% with m.p 154-155 ℃, while *N*-phenylpirazoline **B** was obtained as a white solid in 68.22% yield with m.p 132-133 ℃. The antimalaria activity test of chalcone **A**, chalcone **B**, *N*-phenylpyrazoline **A**, and *N*-phenylpyrazoline **B** gave IC_{50} values of 2.89; 1.29; 4.13; dan 29.18 µM, respectively. It can be concluded that chalcone **A**, chalcone **B**, and *N*-phenylpyrazoline **A** were categorized as good antimalarial agents, while *N*-phenylpyrazoline B was categorized as a compound with moderate activity as antimalaria.

Keywords: 2,4-dimethoxyacetophenone, antimalaria, chalcone, *N*-phenylpyrazoline, *Plasmodium falciparum* 3D7.