SINTESIS DAN UJI AKTIVITAS SENYAWA TURUNAN IMIDAZOL SEBAGAI ANTIMALARIA

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INTISARI

Sintesis dan uji aktivitas senyawa turunan imidazol sebagai antimalaria telah dilakukan. Sintesis senyawa turunan imidazol berupa 4-(4,5-difenil-1*H*-imidazol-2-il)-2-metoksifenol (**1**), 4-(4,5-difenil-1*H*-imidazol-2-il)-1,2-dimetoksi benzena (**2**) dan 4-(4,5-difenil-1*H*-imidazol-2-il) metoksi benzena (**3**) dilakukan dengan mereaksikan benzil, ammonium asetat dan senyawa – senyawa aril aldehida dari anisaldehida, veratraldehida dan vanilin. Uji antimalaria dilakukan dengan metode penghambatan polimerisasi hem.

Sintesis imidazol diawali dengan mereaksikan aril aldehida dengan benzil dan ammonium asetat dalam pelarut asam asetat glasial. Sintesis dilakukan dengan cara diradiasi gelombang mikro selama 2 × 30 detik. Senyawa produk hasil sintesis dianalisis strukturnya menggunakan spektrofotometer FTIR, GC-MS, ^{1}H dan ^{13}C-NMR. Senyawa **1**, **2** dan **3** dihasilkan dengan rendemen masing-masing sebesar sebesar 64,33 %; 50,56 % dan 70,55 %. Tahap selanjutnya senyawa **1**, **2** dan **3** diuji aktivitas antimalaria dengan metode HPIA (*Heme Polymerization Inhibition Activity*) dengan kuinin hidroklorida dihidrat sebagai kontrol positif. Harga IC_{50} untuk masing – masing senyawa **1**, **2** dan **3** adalah 1,25; 1,04 dan 1,33 mg/mL. Harga - harga IC_{50} tersebut lebih rendah dari harga IC_{50} kuinin hidroklorida dihidrat (7,79 mg/mL). Senyawa **1**, **2** dan **3** memiliki aktivitas antimalaria lebih baik dari kuinin hidroklorida dihidrat.

Kata kunci : antimalaria, IC_{50}, imidazol, HPIA.

SYNTHESIS AND ACTIVITY ASSAY OF IMIDAZOLE DERIVATIVES AS AN ANTIMALARIA

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ABSTRACT

Synthesis and activity assay of imidazole derivative compounds as antimalarials have been carried out. The synthesis of imidazole derivatives of 4-(4,5-diphenyl-1*H*-imidazole-2-il) -2-methoxyphenol (**1**), 4- (4,5-diphenyl-1*H*-imidazole-2-il) -1, 2-dimethoxybenzene (**2**) and 4- (4,5-diphenyl-1*H*-imidazole-2-il) methoxy benzene (**3**) were carried out by reacting benzil, ammonium acetate and aryl aldehyde compounds from anisaldehyde, veratraldehyde and vanillin. Antimalarial activites were carried out by heme polymerization inhibition (HPIA) method.

Imidazole synthesis were begun by reacting aryl aldehyde with benzil and ammonium acetate in glacial acetic acid solvents. Synthesis were done by irradiating microwaves for 2 × 30 seconds. The synthesized products were analyzed for their structure using FTIR, GC-MS, ^{1}H and ^{13}C-NMR spectrophotometers. Compounds of **1**, **2** and **3** were produced with a yield of each 64.33 %; 50.56 % and 70.55 % respectirely. The compounds of **1**, **2** and **3** assigned for antimalarial activity by HPIA (Heme Polymerization Inhibition Activity) method with quinine hydrochloride dihydrate as a positive control. The IC_{50} for compound of **1**, **2** and **3** was 1.25; 1.04 and 1.33 mg/mL respectirely. This value is lower than IC_{50} of quinine hydrochloride dihydrate (IC_{50} = 7.79 mg / mL). So antimalarial activity of imidazole compounds **1, 2** and **3** are higher than that of quinine hydrochloride dehydrate.

Keyword: Antimalarial, IC_{50}, imidazole, HPIA.