SINTESIS SENYAWA ALIL VANILIN EPOKSIDA DAN UJI AKTIVITASNYA SEBAGAI ANTIMALARIA TERHADAP *Plasmodium falciparum*

MEFI NUR FADZILA
20/459313/PA/19974

INTISARI

Penelitian ini bertujuan untuk mensintesis senyawa alil vanilin dan alil vanilin epoksida menggunakan bahan dasar berupa vanilin. Senyawa hasil sintesis kemudian diuji aktivitas antimalaria terhadap *Plasmodium falciparum* FCR-3.

Sintesis senyawa alil vanilin dilakukan dengan mereaksikan vanilin dan alil bromida menggunakan basa K_2CO_3 dalam pelarut dimetilformamida (DMF). Reaksi berjalan menggunakan metode pengadukan 48 jam pada suhu ruang. Sementara itu, sintesis alil vanilin epoksida dilakukan dengan mereaksikan alil vanilin hasil sintesis dan *meta-chloroperbenzoic acid* menggunakan metode pengadukan selama 6 jam pada suhu 70 °C dan dilanjutkan 18 jam pada suhu ruang dalam pelarut kloroform. Senyawa hasil sintesis dilakukan karakterisasi menggunakan beberapa instrumen yakni GC-MS, FTIR, ^{1}H-NMR, dan ^{13}C-NMR. Uji aktivitas antimalaria dari senyawa alil vanilin epoksida (3-metoksi-4-(oksiran-2-ilmetoksi)fenil format) hasil sintesis dilakukan dengan metode *in vitro* terhadap *Plasmodium falciparum* FCR-3.

Sintesis alil vanilin dan alil vanilin epoksida menghasilkan produk dengan persen hasil masing-masing sebesar 92,4 dan 59,8%. Hasil uji aktivitas alil vanilin epoksida terhadap *Plasmodium falciparum* FCR-3 menghasilkan nilai IC_{50} sebesar 28,3 μM. Berdasarkan nilai IC_{50} yang diperoleh, maka alil vanilin epoksida digolongkan sebagai senyawa yang memiliki aktivitas antimalaria yang cukup baik.

Kata kunci: Antimalaria, epoksida, *Plasmodium falciparum*, vanilin.

SYNTHESIS OF ALLYL VANILLIN EPOXIDE AND ITS ACTIVITY TEST AS ANTIMALARIA AGAINST *Plasmodium falciparum*

MEFI NUR FADZILA
20/459313/PA/19974

ABSTRACT

This study aims to synthesize allyl vanillin and allyl vanillin epoxide using vanillin as starting material. The synthesized product was tested as antimalaria against *Plasmodium falciparum* FCR-3.

Synthesis of allyl vanillin was carried out by reacting vanillin and allyl bromide using K_2CO_3 base in dimethylformamide (DMF) solvent. The reaction was proceeded by stirring method at room temperature for 48 hours. Meanwhile, the synthesis of allyl vanillin epoxide (3-methoxy-4-(oxiran-2-ylmethoxy)phenyl formate) was carried out by reacting the product of allylation and *meta*-chloroperbenzoic acid in chloroform with two batch of stirring for 6 hours at 70 °C and 18 hours at room temperature. The synthesized compounds were characterized using by GC-MS, FTIR, ^{1}H-NMR and ^{13}C-NMR spectrometers. The antimalarial activity test was carried out through *in vitro* method against *Plasmodium falciparum* FCR-3.

The allyl vanillin and allyl vanillin epoxide were produced 92.4 and 59.8% yield, respectively. The activity test result of allyl vanillin epoxide against *Plasmodium falciparum* FCR-3 yielded IC_{50} value of 28.3 μM. Based on the IC_{50} value, allyl vanillin epoxide is categorized as compound with sufficiently good antimalarial activity.

Keywords: Antimalaria, epoxide, *Plasmodium falciparum*, vanillin.