SINTESIS DAN UJI AKTIVITAS ANTIMALARIA SENYAWA ANALOG KURKUMIN DARI BAHAN DASAR VANILIN MELALUI REAKSI MANNICH

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INTISARI

Sintesis dan uji aktivitas antimalaria senyawa analog kurkumin dari bahan dasar vanilin melalui reaksi Mannich telah dilakukan. Penelitian ini diawali dengan reaksi Claisen-Schmidt pada vanilin. Vanilin direaksikan dengan sikloheksanon dengan perbandingan mol vanilin:sikloheksanon (2:1) dalam suasana asam. Produk reaksi tersebut kemudian direaksikan dengan formaldehid dan morfolin melalui reaksi Mannich. Senyawa hasil sintesis kemudian dianalisis dengan spektrometer FTIR, MS, ^{1}H-NMR, dan ^{13}C-NMR. Analog kurkumin hasil sintesis kemudian diuji aktivitasnya sebagai antimalaria menggunakan metode penghambatan polimerisasi hematin.

Hasil penelitian menunjukkan bahwa reaksi Claisen-Schmidt pada vanilin menghasilkan senyawa 2,6-bis((E)-4-hidroksi-3-metoksibenzilidin)sikloheksa-1-on dengan rendemen 83,79%. Reaksi Mannich menghasilkan senyawa 2,6-bis((E)-4-hidroksi-3-metoksi-5-(morfolinometil)benzilidin)sikloheksa-1-on dengan rendemen 31,03%. Kedua senyawa ini memiliki aktivitas antimalaria dengan IC_{50} 19,85 mM dan 26,56 mM.

Kata kunci: Analog kurkumin, reaksi Mannich, antimalaria.

SYNTHESIS AND ANTIMALARIAL ACTIVITY ASSAY OF CURCUMIN ANALOGUES FROM VANILLIN THROUGH MANNICH REACTION

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ABSTRACT

Synthesis and antimalarial activity assay of curcumin analogues from vanillin through Mannich reaction have been conducted. The product of curcumin analogues was obtained with Claisen-Schimdt reaction of vanillin with cyclohexanone. Product was then reacted with formaldehyde and morpholine through Mannich reaction. The synthesized compounds were then analyzed by FTIR spectrophotometer, MS, ^{1}H NMR and ^{13}C-NMR. The antimalarial activity test was performed by hematin polymerization inhibition method.

The Claisen-Schmidt reaction of vanillin produced 2,6-bis((E)-4-hydroxy-3-methoxybenzylidine)cyclohexa-1-one in yield of 83.79%, and the Mannich reaction produced 2,6-bis((E)-4-hydroxy-3-methoxy-5-(morpholino-methyl)benzylidine)cyclohexa-1-one with 31.03% of yield. Both compounds have antimalarial activity with IC_{50} 19.85 mM and 26.56 mM, while chloroquine as positive control give IC_{50} 6.03 mM.

Keywords: Mannich reaction, curcumin analogues, antimalarial activity.