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SINTESIS ANALOG KURKUMIN DARI 5-BROMOVANILIN DAN UJI INHIBISINYA TERHADAP ENZIM ÃÂ½Â±-AMILASE SERTA EFEK SINERGISITASNYA DENGAN ASAM FERULAT
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SYNTHESIS OF CURCUMIN ANALOGS FROM 5-BROMOVANILLIN AND THEIR INHIBITION TEST TO α-AMYLASE ENZYME AND THEIR SYNERGISM (EFFECT) WITH FERULIC ACID

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ABSTRACT

Synthesis of curcumin analogs from 5-bromovanillin and their inhibition test to α-amylase enzyme and their synergism effect with ferulic acid have been performed. The synthesis involves Claisen-Schmidt condensation reaction with 5-bromovanillin and cyclohexanone to yield curcumin analog A (2,6-bis((E)-4-hydroxy-3-methoxybenzylidene)cyclohexa-1-on) and with cyclopentanone to yield curcumin analog B (2,6-bis((E)-4-hydroxy-3-methoxybenzylidene)cyclopenta-1-on) then catalyzed by an acid to yield curcumin analog. Inhibition test of curcumin analogs and its synergism effect with ferrulic acid against α-amylase enzyme were examined using iodine as reagent. Percentages of inhibition were calculated using the quantized absorbance results from microplate reader at wavelength of 550 nm.

Results of the study showed that curcumin analog A yield a yellow-green colored solid material with rendement of 70.61 % and melting point at 218-220 °C. Curcumin analog B yield a yellow-green colored solid material with rendement of 92.55 % and melting point at 280-282 °C. Inhibition test against α-amylase enzyme using curcumin analog A (0.0375 mM) showed inhibition percentage of 63.68 % and curcumin analog B (0.0750 mM) showed inhibition percentage of 78.77 %. Curcumin analog A and B indicated sinergism effect wih ferulic acid because they showed higher inhibition percentage against α-amylase enzyme. Inhibition percentage at concentration ratio of curcumin analog A: ferulic acid (8:1) was 79.76 % and curcumin analog B: ferulic acid (1:1) was 83.58 %.

Keywords: α-amylase enzyme, bromovanillin, curcumin analog, ferulic acid.