

## **AKTIVITAS ANTIDIABETES EKSTRAK *n*-HEKSANA DAN EKSTRAK ETANOL DAUN GULMA SIAM (*Chromolaena odorata*) MELALUI INHIBISI ENZIM $\alpha$ -GLUKOSIDASE**

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### **INTISARI**

Telah dilakukan pengujian aktivitas antidiabetes ekstrak *n*-heksana dan ekstrak etanol daun *Chromolaena odorata* dengan menghambat aktivitas enzim  $\alpha$ -glukosidase dan penentuan tipe inhibitor terhadap aktivitas enzim  $\alpha$ -glukosidase. Penelitian ini diawali dengan dilakukan ekstraksi metabolit sekunder dengan metode maserasi menggunakan pelarut *n*-heksana dan etanol 96% secara berturut-turut. Kandungan metabolit sekunder yang terdapat pada ekstrak *n*-heksana (EH) dan ekstrak etanol 96% (EE) dianalisis secara kualitatif dengan cara uji fitokimia menggunakan metode uji warna. Enzim  $\alpha$ -glukosidase diisolasi dari beras lapuk dan dilakukan pemurnian parsial dengan pengendapan menggunakan ammonium sulfat dan dilanjutkan dengan dialisis. Enzim  $\alpha$ -glukosidase yang telah murni diuji aktivitas dan ditentukan kinetika reaksi enzimatisnya. Pengujian aktivitas penghambatan metabolit sekunder *Chromolaena odorata* yang bersifat non polar dan polar terhadap enzim  $\alpha$ -glukosidase dilakukan dengan menentukan persentase inhibisi serta tipe inhibitorynya.

Hasil penelitian menunjukkan bahwa ekstrak *n*-heksana (EH) dengan rendemen 2,92% mengandung senyawa golongan flavonoid sedangkan ekstrak etanol 96% (EE) dengan rendemen 10,15% mengandung senyawa golongan alkaloid, flavonoid, tanin, terpenoid, dan saponin. Pemurnian parsial enzim  $\alpha$ -glukosidase mampu meningkatkan aktivitas enzim sebesar 0,23 U/mL. Metabolit sekunder yang bersifat polar (EE) menunjukkan persentase inhibisi aktivitas enzim  $\alpha$ -glukosidase paling besar yaitu 56,77% pada konsentrasi 100 mg/L, sedangkan persentase inhibisi metabolit sekunder non polar (EH) adalah 3,92% pada konsentrasi 100 mg/L. Metabolit sekunder yang bersifat polar merupakan inhibitor non kompetitif.

Kata kunci: ekstrak *n*-heksana, ekstrak etanol, enzim  $\alpha$ -glukosidase, aktivitas, inhibisi.

**THE ANTIDIABETIC ACTIVITY OF *n*-HEXANE EXTRACT AND  
ETHANOL EXTRACT OF SIAM WEED LEAF (*Chromolaena odorata*)  
THROUGH  $\alpha$ -GLUCOSIDASE ENZYME INHIBITION**

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**ABSTRACT**

The antidiabetic activity of *n*-hexane extract and *Chromolaena odorata* leaf ethanol extract was done by inhibiting  $\alpha$ -glucosidase enzyme activity and determining the type of inhibitor on  $\alpha$ -glucosidase enzyme activity. This research was started with secondary metabolite extraction by maceration method using *n*-hexane solvent and ethanol 96% respectively. The content of secondary metabolites found in *n*-hexane extract (EH) and ethanol extract 96% (EE) was analyzed qualitatively by phytochemical test using color test method. The  $\alpha$ -glucosidase enzyme was isolated from the weathered rice and the partial purification was done by precipitation using ammonium sulfate and followed by dialysis. The purified  $\alpha$ -glucosidase enzyme is tested for activity and determined the kinetics of its enzymatic reaction. The testing of inhibitory activity of secondary metabolite *Chromolaena odorata* with non polar and polar characteristic against  $\alpha$ -glucosidase enzyme was performed by determining the percentage of inhibition and the type of inhibitor.

The results showed that the extract of *n*-hexane (EH) with a yield of 2.92% contained flavonoid compounds while ethanol extract 96% (EE) with yield of 10.15% contained alkaloid, flavonoid, tannin, terpenoid, and saponin compounds. Partial purification of enzyme  $\alpha$ -glucosidase can increase enzyme activity of 0,23 U/mL. The polar secondary metabolite (EE) showed the largest percentage of inhibition of enzyme activity of  $\alpha$ -glucosidase which was 56.77% at concentrations of 100 mg/L, whereas the percentage of non-polar secondary metabolite inhibition (EH) was 3.92% at concentrations of 100 mg/L. Polar secondary metabolites are non-competitive inhibitors.

Keywords: *n*-hexane extract, ethanol extract,  $\alpha$ -glucosidase enzyme, activity, inhibition.