

AKTIVITAS INHIBISI ENZIM ALFA-GLUKOSIDASE INFUSA DAN KOMBUCHA KAYU SECANG (*CAESALPINIA SAPPAN .L*) SECARA *IN VITRO*

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ABSTRAK

Diabetes melitus termasuk kondisi gangguan metabolik yang ditandai dengan peningkatan kadar glukosa dalam darah akibat gangguan pada pelepasan insulin, respon tubuh terhadap insulin, atau keduanya. Salah satu pendekatan terapi yang umum disarankan adalah penggunaan inhibitor enzim alfa-glukosidase. Enzim ini berperan dalam proses pemecahan karbohidrat menjadi glukosa di bagian permukaan usus halus. Kayu secang secara empiris telah dimanfaatkan untuk pengobatan diabetes melitus. Penelitian ini bertujuan untuk menganalisis % inhibisi dan nilai IC_{50} enzim alfa-glukosidase dari infusa kayu secang dan kombucha kayu secang secara *in vitro*. Pengujian inhibisi enzim alfa-glukosidase dilakukan dengan menentukan aktivitas enzim pada panjang gelombang 410 nm. menggunakan *microplate reader* enzimatik. Nilai % inhibisi infusa kayu secang sebesar 27,806 % dan kombucha kayu secang sebesar 86,654 % dengan nilai IC_{50} sebesar 28,28 %. Aktivitas inhibisi enzim alfa-glukosidase kombucha kayu secang lebih baik dibandingkan infusa kayu secang. Analisis perbedaan aktivitas penghambatan enzim antara kedua sampel dilakukan menggunakan uji Kruskal-Wallis, lalu diikuti dengan uji post hoc One-Way ANOVA Kruskal-Wallis, hasilnya menunjukkan perbedaan yang signifikan ($p < 0.05$).

Kata Kunci: Diabetes melitus, Enzim Alfa-Glukosidase, IC_{50} , Kombucha kayu secang, % Inhibisi.

**IN VITRO INHIBITORY ACTIVITY OF ALPHA-GLUCOSIDASE
ENZYME BY INFUSA AND KOMBUCHA FROM SECANG
WOOD (CAESALPINIA SAPPAN L.)**

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ABSTRACT

Diabetes mellitus is a metabolic disorder characterized by elevated blood glucose levels due to disturbances in insulin release, the body's response to insulin, or both. One commonly suggested therapeutic approach is the use of alpha-glucosidase enzyme inhibitors. This enzyme plays a role in the process of carbohydrate breakdown into glucose at the surface of the small intestine. Sappan wood has been empirically utilized for the treatment of diabetes mellitus. This study aims to analyze the % inhibition and IC₅₀ value of alpha-glucosidase enzyme from secang wood infusa and secang wood kombucha in vitro. Alpha-glucosidase enzyme inhibition testing was carried out by determining enzyme activity at a wavelength of 410 nm. using an enzymatic microplate reader. The % inhibition value of secang wood infusa was 27.806% and secang wood kombucha was 86.654% with an IC₅₀ value of 28.28%. The alpha-glucosidase inhibitory activity of secang wood kombucha is better than secang wood infusa. Analysis of differences in enzyme inhibitory activity between the two samples was carried out using the Kruskal-Wallis test, then followed by the Kruskal-Wallis One-Way ANOVA post hoc test, the results showed significant differences ($p < 0.05$).

Keywords: Alpha-glucosidase enzyme, Diabetes mellitus, IC₅₀, Secang wood kombucha, % Inhibition