Uji aktivitas hipoglikemik ekstrak etanol 90% kayu secang (Caesalpinia sappan L.) sebagai inhibitor enzim α-glukosidase secara in vitro dan in vivo = Hypoglichemic effect of 90 ethanolic extract of sappanwood (Caesalpinia sappan L.) as α-glucosidase inhibitor in vitro and in vivo

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Abstrak

Salah satu terapi pada penderita diabetes melitus adalah dengan obat-obatan penghambat enzim α-glukosidase. Penghambatan aktivitas enzim α-glukosidase dapat menunda penyerapan glukosa sehingga dapat mengendalikan hiperglikemia post-prandial. Tujuan penelitian ini adalah untuk membuktikan apakah ekstrak kayu secang (Caesalpinia sappan L.) dapat menginhibisi enzim α-glukosidase secara in vitro dan in vivo. Ekstrak etanol 90% kayu secang pada konsentrasi 250 ppm memberikan inhibisi alfa-glukosidase sebesar 15% dengan kinetika inhibisi bersifat kompetitif, sementara akarbosa 48% pada konsentrasi yang sama. Uji hipoglikemik dilakukan dengan metoda oral glucose tolerance test secara in vivo pada hewan tikus jantan galur Sprague Dawley yang dibagi secara acak menjadi 6 kelompok yaitu 3 kelompok dosis 50, 100 dan 200 mg/kg BB, kelompok kontrol positif acarbose, kontrol sakit dan kontrol normal. Ekstrak uji pada ketiga dosis uji mampu menekan peningkatan glukosa post-prandial dengan aktivitas bersifat dose dependent. Hasil penapisan fitomikian menunjukan terdapat senyawa golongan alkaloid, flavonoid, tannin, terpen, dan saponin. Ekstrak etanol 90% secang berpotensi untuk dikembangkan sebagai sediaan alternatif antidiabetes.

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One kind of the therapy for Diabetes Mellitus is by medicines that act as intestinal α-glucosidase inhibitor. Inhibition of this enzyme can directly delay the degradation and absorption of glucose so that the post-prandial hyperglichemia can be controlled. The aim of this study is to prove whether the 90% ethanolic extract of sappanwood (Caesalpinia sappan L.) showed the inhibitory activity against α-glucosidase in vitro and in vivo. The extract at the concentration of 250 ppm gave 15% of inhibitory activity and the type of inhibitory activity is competitive inhibition, while positive control acarbose was 48% at the same concentration. The hypoglichemic activity was evaluated by the oral glucose tolerance test in Sprague-Dawley male rats. The rats were randomly divided into six groups namely, normal control, negative control, positive control with acarbose, and three treated groups that each was supplemented with 50, 100, and 200 mg/kg BW of extract. The result showed that three level doses of sappanwood extract could suppress the increase of post-prandial glucose with dose dependent activity. The phytochemical screening demonstrated the presence of alkaloids, flavonoids, tannins, terpens, and saponins compounds. It could be concluded that 90% ethanolic extract of sappanwood (Caesalpinia sappan L.) is potential to be developed as an alternative agent for antidiabetes.