

ABSTRAK

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AKTIVITAS INHIBISI α -GLUKOSIDASE MINUMAN FUNGSIONAL KAYU SECANG (*Caesalpinia sappan* L.) DAN EKSTRAK SERAI (*Cymbopogon citratus*)

Skripsi, Fakultas Sains dan Teknologi (2019)

(xviii + 81 halaman; 5 tabel; 27 gambar; 29 lampiran)

Kayu secang (*Caesalpinia sappan* L.) dan ekstrak serai (*Cymbopogon citratus*) memiliki aktivitas inhibisi terhadap α -glukosidase. Tujuan utama dalam penelitian ini yaitu untuk memanfaatkan kayu secang dan ekstrak serai dalam pembuatan minuman fungsional dengan penambahan pemanis stevia yang diharapkan memiliki aktivitas inhibisi α -glukosidase. Pada penelitian pendahuluan dilakukan proses ekstraksi serai, penyeduhan kayu secang, dan pengujian terhadap total fenolik, total flavonoid, aktivitas antioksidan, serta inhibisi α -glukosidase. Pada penelitian utama dilakukan pembuatan minuman fungsional yang terdiri dari tiga level berat ekstrak (0,4 g; 0,6 g; dan 0,8 g) dan 4 level berat pemanis stevia (2 g, 3 g, 4 g, dan 5 g). Minuman fungsional dianalisis pH, total padatan terlarut, warna, uji organoleptik, kandungan total fenolik, total flavonoid, aktivitas antioksidan, inhibisi α -glukosidase, dan kinetika inhibisi α -glukosidase. Seduhan kayu secang memiliki total fenolik sebesar $28,98 \pm 0,12$ mg GAE/ g sampel, total flavonoid sebesar $21,88 \pm 0,33$ mg QE/ g sampel, aktivitas antioksidan dengan nilai IC_{50} sebesar $6.206,58 \pm 193,12$ ppm, dan inhibisi α -glukosidase dengan nilai IC_{50} sebesar $30.148,13 \pm 1.128,72$ ppm. Ekstrak serai mengandung total fenolik sebesar $175,12 \pm 1,56$ mg GAE/ g sampel, total flavonoid sebesar $125,09 \pm 2,31$ mg QE/ g sampel, aktivitas antioksidan dengan nilai IC_{50} sebesar $203,49 \pm 7,50$ ppm, serta inhibisi α -glukosidase dengan nilai IC_{50} sebesar $140,16 \pm 4,33$ ppm. Berdasarkan uji organoleptik, didapatkan minuman fungsional terpilih yaitu dengan penambahan 0,8 g ekstrak serai dan 5 g pemanis stevia yang memiliki kandungan total fenolik sebesar $33,66 \pm 0,21$ mg GAE/ g sampel, kandungan total flavonoid sebesar $27,89 \pm 0,78$ mg QE/ g sampel, aktivitas antioksidan dengan nilai IC_{50} sebesar $4.210,59 \pm 142,09$ ppm, serta inhibisi α -glukosidase dengan nilai IC_{50} sebesar $10.932,50 \pm 273,25$ ppm. Kinetika inhibisi α -glukosidase minuman fungsional ini termasuk dalam jenis inhibisi campuran.

Kata kunci : α -glukosidase, kinetika inhibisi α -glukosidase, kayu secang (*Caesalpinia sappan* L.), ekstrak serai (*Cymbopogon citratus*), minuman fungsional, total fenolik, total flavonoid, aktivitas antioksidan

Referensi : 184 (1987-2018)

ABSTRACT

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α -GLUCOSIDASE INHIBITORY ACTIVITY OF SAPPANWOOD (Caesalpinia sappan L.) AND LEMONGRASS EXTRACT (Cymbopogon citratus) FUNCTIONAL BEVERAGE

Thesis, Faculty of Science and Technology (2019)

(xviii+ 81 pages, 5 tables, 27 figures, and 29 appendices)

Sappanwood (Caesalpinia sappan L.) and lemongrass extract (Cymbopogon citratus) can act as α -glucosidase inhibitors. This research was aimed to utilize sappanwood and lemongrass extract using stevia in the preparation of functional beverages that are expected to have the ability to inhibit α -glucosidase. In the preliminary research, lemongrass extraction process, infusion of sappan wood, and determining of total phenolic content, total flavonoid content, antioxidant activity, and α -glucosidase were conducted. In the main research, functional beverages were made using three levels of lemongrass extract (0.4 g; 0.6 g; and 0.8 g) and four levels of stevia (2 g, 3 g, 4 g, and 5 g). Functional beverages were assessed for their pH, total soluble solid, color, organoleptic, total phenolic, total flavonoid, antioxidant activity, α -glucosidase inhibition, and kinetics of α -glucosidase inhibition. Sappanwood has total phenolic content of 28.98 ± 0.12 mg GAE/ g sample, total flavonoid content of 21.88 ± 0.33 mg QE/ g sample, antioxidant activity with IC_{50} value of 6206.58 ± 193.12 ppm, and IC_{50} of α -glucosidase inhibition is 30148.13 ± 1128.72 ppm. Lemongrass extract has total phenolic content of 175.12 ± 1.56 mg GAE/ g sample, total flavonoid content of 125.09 ± 2.31 mg QE/ g sample, antioxidant activity with IC_{50} value of 203.49 ± 7.50 ppm, and IC_{50} of α -glucosidase inhibition is 140.16 ± 4.33 ppm. Based on the organoleptic test, the chosen functional beverage is the one with 0.8 g lemongrass extract and 5 g of stevia which has total phenolic content of 33.66 ± 0.21 mg GAE/ g sample, total flavonoid content of 27.89 ± 0.78 mg QE/ g sample, antioxidant activity with IC_{50} value of 4210.59 ± 142.09 ppm, and IC_{50} of α -glucosidase inhibition is 10932.50 ± 273.25 ppm. Kinetics of α -glucosidase inhibition of this functional beverage belongs to mixed-type inhibition.

Keyword : α -glucosidase, kinetics of α -glucosidase inhibition, sappanwood (Caesalpinia sappan L.), lemongrass extract (Cymbopogon citratus), functional beverage, total phenolic, total flavonoid, antioxidant activity

Reference : 184 (1987-2018)