

ABSTRAK

Aileen Neysha Widyapranata (00000013793)

AKTIVITAS INHIBISI α -GLUKOSIDASE PADA MINUMAN FUNGSIONAL JAHE (*Zingiber officinale* Roscoe) DENGAN PENAMBAHAN EKSTRAK KULIT MELINJO KUNING (*Gnetum gnemon* Linn.)

Skripsi, Fakultas Sains dan Teknologi (2019)

(xviii + 75 halaman: 21 gambar, 8 tabel, dan 32 lampiran)

Ekstrak kulit melinjo (*Gnetum gnemon* Linn.) mengandung komponen-komponen aktif seperti resveratrol, tanin, steroid, flavonoid, dan saponin. Jahe (*Zingiber officinale* Rosc.) juga mengandung komponen-komponen aktif seperti *gingerol*, *paradol*, dan *shogaol*. Komponen-komponen aktif yang terdapat dalam jahe dan kulit melinjo dilaporkan memiliki aktivitas inhibisi α -glukosidase. Tujuan umum dari penelitian ini adalah untuk memanfaatkan ekstrak kulit melinjo kuning dan air seduhan jahe dalam pembuatan minuman fungsional yang diharapkan dapat memiliki aktivitas inhibisi α -glukosidase. Penelitian ini dibagi menjadi 2 tahap. Penelitian pendahuluan dilakukan untuk karakterisasi air seduhan jahe dan ekstrak kulit melinjo kuning melalui uji inhibisi α -glukosidase, total fenolik, total flavonoid, dan aktivitas antioksidan. Penelitian utama dilakukan untuk pembuatan minuman fungsional dengan menggunakan konsentrasi ekstrak kulit melinjo kuning (0,12%; 0,16%; dan 0,20%) dan konsentrasi pemanis stevia yang berbeda (0,3%; 0,4%; dan 0,5%). Semua formulasi minuman fungsional dilakukan uji organoleptik (skoring dan hedonik), uji warna, uji pH, dan uji total padatan terlarut. Minuman fungsional terpilih dianalisis aktivitas α -glukosidase, kinetika inhibisi α -glukosidase, total fenolik, total flavonoid, dan aktivitas antioksidan. Ekstrak kulit melinjo kuning memiliki aktivitas inhibisi α -glukosidase (IC_{50}) sebesar 99,87 ppm, total fenolik 21,36 mg GAE/g, total flavonoid 11,97 mg QE/g, dan aktivitas antioksidan (IC_{50}) sebesar 1386,80 ppm. Air seduhan jahe memiliki inhibisi α -glukosidase (IC_{50}) sebesar 247811,5 ppm, total fenolik 0,29 mg GAE/g, total flavonoid 0,08 mg QE/g, dan aktivitas antioksidan (IC_{50}) sebesar 60227,61 ppm. Minuman fungsional yang terpilih berdasarkan uji hedonik adalah dengan konsentrasi ekstrak kulit melinjo kuning 0,20% dan konsentrasi pemanis stevia 0,5%. Minuman fungsional terpilih memiliki aktivitas inhibisi α -glukosidase (IC_{50}) sebesar 194125 ppm, aktivitas antioksidan (IC_{50}) sebesar 55497,12 ppm, total fenolik sebesar 0,64 mg GAE/mL, dan total flavonoid sebesar 0,21 mg QE/mL. Mekanisme aktivitas inhibisi α -glukosidase dari minuman fungsional terpilih adalah kompetitif.

Kata kunci: α -glukosidase, ekstrak kulit melinjo, jahe, minuman fungsional, total fenolik, total flavonoid, aktivitas antioksidan

Referensi: 127 (2002-2018)

ABSTRACT

Aileen Neysha Widyapranata (00000013793)

ACTIVITY OF α -GLUCOSIDASE INHIBITION ON FUNCTIONAL DRINK OF GINGER (*Zingiber officinale* Roscoe) BY ADDING YELLOW MELINJO PEELS EXTRACT (*Gnetum gnemon* Linn.)

Thesis, Faculty of Science and Technology (2019)

(xviii + 75 pages: 21 figures, 8 tables, and 32 appendices)

The yellow melinjo (*Gnetum gnemon* Linn.) peels extract contains active components such as resveratrol, tannin, steroid, flavonoid, and saponin. Ginger (*Zingiber officinale* Rosc.) also contains active components such as gingerol, paradol, and shogaol. These components in ginger and yellow melinjo peels are reported to have the activity to inhibit α -glucosidase. This main research's aim was to utilize yellow melinjo peels extract and ginger steeps into functional drink that might have the activity to inhibit α -glucosidase. This research was divided into two stages. The preliminary stage was done to characterize yellow melinjo peels extract and the ginger steeps through activity inhibition of α -glucosidase, total phenolic, total flavonoid, and antioxidant activity test. Main research was done to apply yellow melinjo peels extract and ginger steeps into functional drink that use different concentration of yellow melinjo peels extract (0,12%; 0,16%; and 0,20%) and also using different concentration of stevia sweetener (0,3%; 0,4%; and 0,5%). All functional drinks' formula were analyzed in organoleptic (scoring and hedonic), color, pH, and total soluble solids tests. The chosen functional drink were analyzed for its activity of α -glucosidase inhibition, α -glucosidase inhibition kinetics, total phenolic, total flavonoid, and antioxidant activity. Yellow melinjo peels extract has activity inhibition of α -glucosidase (IC_{50}) 99.87 ppm, total phenolic 21.36 mg GAE/g, total flavonoid 11.97 mg QE/g, and antioxidant activity (IC_{50}) 1386.80 ppm. The ginger steeps has activity inhibition of α -glucosidase (IC_{50}) 247811.5 ppm, total phenolic 0.29 mg GAE/g, total flavonoid 0.08 mg QE/g, and antioxidant activity IC_{50} 60227.61 ppm. The chosen functional drink from the hedonic test is the one with 0,20% extract and 0,5% stevia sweetener. The chosen functional drink have inhibition of α -glucosidase IC_{50} 194125 ppm, antioxidant activity (IC_{50}) 55497.12 ppm, total phenolic 0.64 mg GAE/mL, and total flavonoid 0.21 mg QE/mL. The mechanism of α -glucosidase inhibition from the chosen functional drink is competitive inhibition.

Keywords: α -glucosidase, melinjo peels extract, ginger, functional drink, total phenolic, total flavonoid, antioxidant activity

References: 127 (2002-2018)