ABSTRAK

Danny Gunawan (00000020197)

AKTIVITAS ANTIOKSIDAN DAN INHIBISI α-GLUKOSIDASE MINYAK ATSIRI DAUN KEMUNING (*Murraya paniculata* (L.) Jack)
Skripsi, Fakultas Sains dan Teknologi (2022)

(xiii + 71 halaman; 19 gambar; 11 tabel; 14 lampiran)

Kemuning (*Murraya paniculata* (L.) Jack) merupakan tanaman hias yang memiliki bau harum dan memiliki potensi sebagai antioksidan dan inhibitor α-glukosidase. Penelitian ini menggunakan tiga jenis kemuning yang umum di Indonesia yaitu kemuning Jawa, kemuning Bali, dan kemuning Jepang. Penelitian ini bertujuan untuk mengetahui aktivitas antioksidan dan inhibisi α-glukosidase dari minyak atsiri daun kemuning. Penelitian ini dilakukan dalam dua tahap, tahap pertama dilakukan proses hidrodistilasi selama 1 jam dan suhu 100 ^{o}C untuk memperoleh minyak atsiri daun kemuning. Pada tahap kedua dilakukan uji aktivitas antioksidan dan inhibisi α-glukosidase dari minyak atsiri daun kemuning yang diperoleh. Massa jenis dari ketiga sampel minyak atsiri lalu diukur menggunakan piknometer memiliki rentang 0,9042-0,9508 g/mL. Warna dari minyak atsiri yang dihasilkan cenderung berwarna kuning sampai kuning kemerahan dengan rentang ^{o}Hue 61,72 sampai 71,01. Rendemen ketiga minyak atsiri yang didapat lebih kecil dari 1%. Dengan metode DPPH, aktivitas antioksidan minyak atsiri daun kemuning Jawa merupakan yang paling tinggi dengan IC_{50}: 9,11 ± 0,29 ppm, diikuti minyak atsiri daun kemuning Bali dengan IC_{50} :11,06 ±0,73 ppm, dan Jepang dengan IC_{50}: 12,42 ± 0,35 ppm, dengan total fenolik 20,16 ± 0,67 mg GAE/g, 13,81 ± 0,37 mg GAE/g, dan 11,26 ± 0,70 mg GAE/g berturut-turut. Uji antioksidan dengan metode bilangan peroksida dan bilangan asam tiobarbiturat menunjukan minyak atsiri daun kemuning Jawa memiliki aktivitas antioksidan tertinggi dengan bilangan peroksida: 9,40 ± 1,60 meq/kg dan bilangan TBA: 1,81 ± 0,13 meq MDA/kg. Pada uji inhibisi α-glukosidase, minyak atsiri daun kemuning Jawa menunjukan inhibisi IC_{50}: 59,90 ± 1,36 ppm terhadap pNPG dan menampilkan inhibisi *uncompetitive*. Hasil GC-MS mengungkapkan senyawa-senyawa berupa *eugenol, γ-terpinene, 2-methoxy-4-vinylphenol, citronellal*, dan *caryophyllene* merupakan senyawa-senyawa dominan dalam minyak atsiri daun kemuning Jawa.

Kata Kunci : α-glukosidase, antioksidan, daun kemuning, IC_{50}, inhibisi, minyak atsiri

Referensi : 255 (1953-2022)

ABSTRACT

Danny Gunawan (00000020197)

ANTIOXIDANT ACTIVITY AND α-GLUKOSIDASE INHIBITION OF KEMUNING LEAVES ESSENTIAL OIL (*Murraya paniculata* (L.) Jack)
Thesis, Faculty of Science and Technology (2022)

(xiii + 71 pages: 19 figures; 11 tables; 14 appendicss)

Kemuning (*Murraya paniculata* (L.) Jack) is an ornamental plant that has a fragrance and has potential as an antioxidant and α-glucosidase inhibitor. This study uses three types of kemuning that are common to find in Indonesia, namely Javanese kemuning, Balinese kemuning, and Japanese kemuning. The aim of this study is to determine the antioxidant activity and α-glucosidase inhibition of the essential oils from kemuning leaves. This research was carried out in two stages, the first stage is the hydrodistillation step for 1 hour and with temperature of 100 ^{o}C to obtain the essential oil of kemuning leaves. In the second stage, the antioxidant activity and α-glucosidase inhibition were tested from the obtained essential oil of kemuning leaves. The density of the three essential oil samples was then measured using a pycnometer with range from 0.9042 to 0.9508 g/mL. The color of the essential oil produced tends to be yellow to reddish yellow with an ^{o}Hue range of 61.72 to 71.01. The yield of the three essential oils obtained are less than 1%. According to the DPPH method, antioxidant activity of the essential oil of Javanese kemuning leaves is the highest with IC_{50}: 9.11 ± 0.29 ppm, followed by the essential oil of Balinese kemuning leaves with IC_{50}:11.06 ±0.73 ppm, and Japanese kemuning leaves IC_{50}: 12.42 ± 0.35 ppm, with total phenolic of 20.16 ± 0.67 mg GAE/g, 13.81 ± 0.37 mg GAE/g, and 11.26 ± 0.70 mg GAE/g respectively. Antioxidant test using peroxide number and thiobarbituric acid value method showed essential oil of Javanese kemuning leaves has the highest antioxidant activity with peroxide value of 9.40 ± 1.60 meq/kg and TBA value of 1.81 ± 0.13 meq MDA/kg. During α-glucosidase inhibition test, essential oil of Javanese kemuning leaves exhibited inhibition IC_{50}: 59.90 ± 1.36 ppm against pNPG and displayed uncompetitive inhibition. GC-MS result revealed that eugenol, γ-terpinene, 2-methoxy-4-vinylphenol, citronellal, and caryophyllene are the dominant compounds in the essential oil of Javanese kemuning leaves.

Keywords : α-glucosidase, antioxidant, essential oil, IC_{50}, inhibition, kemuning leaves

References : 255 (1953-2022)