

ABSTRAK

IDENTIFIKASI SENYAWA INHIBITOR ALFA GLUKOSIDASE DARI DAUN SUNGKAI (*Peronema canescens* Jack) DENGAN METABOLOMIK BERBASIS LC-MS/MS

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Tanaman sungkai (*Peronema canescens* Jack) adalah tanaman obat dalam famili Verbenaceae diketahui memiliki aktivitas antidiabetes dan mengandung senyawa fenolik, tanin, alkaloid, steroid, flavonoid dan saponin. Tujuan penelitian ini adalah mengidentifikasi senyawa inhibitor α -glukosidase ekstrak daun sungkai dengan pendekatan metabolomik berbasis LC-MS/MS. Daun sungkai diekstraksi dengan variasi pelarut, yaitu *n*-heksana, etil asetat dan etanol. Ekstrak diuji aktivitas antidiabetes dengan metode uji inhibisi α -glukosidase dan diidentifikasi menggunakan LC-MS/MS. Hasil analisis PCA didapatkan ketiga ekstrak dapat berkelompok dengan baik dengan total PC 87,3%. Hasil analisis PLS-R menunjukkan ekstrak etil asetat merupakan ekstrak paling aktif terhadap aktivitas antidiabetes. Hasil analisis OPLS-DA terdapat metabolit penciri diduga berpotensi sebagai antidiabetes, yakni 592.26651 (Pheophorbide A); 462.11454 (Luteolin-7-O-glucuronide); 478.14619 (Calceolarioside); 344.16122 (Peronemin D1) dan 386.14823 (Coprostanone) . Kelima senyawa metabolit tersebut berada pada plot di daerah negatif , nilai Variable Influence on Projection (VIP) >1, pvalue < 0,05 dan FDR < 0,05 serta , log₂ fold change >1 yang menunjukkan bahwa senyawa metabolit tersebut berkontribusi major terhadap aktivitas antidiabetes.

Kata Kunci: *Peronema canescens*, antidiabetes, metabolomik, PCA, PLS-R, OPLS-DA

ABSTRACT

IDENTIFICATION OF ALFA GLUCOSIDASE INHIBITORS FROM SUNGKAI LEAF (*Peronema canescens* Jack) USING METABOLOMICS BASED ON LC-MS/MS

By

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Sungkai (*Peronema canescens* Jack) is a medicinal plant in the Verbenaceae family known to have antidiabetic activity and contains phenolic compounds, tannins, alkaloids, steroids, flavonoids and saponins. The purpose of this study was to identify α -glucosidase inhibitor compounds from Sungkai leaf extract using a metabolomics approach based on LC-MS/MS. Sungkai leaves were extracted with a variety of solvents, namely *n*-hexane, ethyl acetate and ethanol. The extract was tested for antidiabetic activity using the α -glucosidase inhibition test method and identified using LC-MS/MS. The results of PCA analysis showed that the three extracts could be grouped well with a total PC of 87.3%. The results of the PLS-R analysis showed that the ethyl acetate extract was the most active extract for antidiabetic activity. The results of the OPLS-DA analysis showed that the characteristic metabolites were suspected of having anti-diabetic potential, namely 592.26651 (Pheophorbide A); 462.11454 (Luteolin-7-O-glucuronide); 478.14619 (Calceolarioside); 344.16122 (Peronemin D1) and 386.14823 (Coprostanone). The five metabolites are in the plot in the negative area, Variable Influence on Projection (VIP) value > 1 , *p*value < 0.05 and FDR < 0.05 and log₂ fold change > 1 which indicates that these metabolites contribute majorly to activity. antidiabetic.

Keywords: *Peronema canescens*, antidiabetic, metabolomics, PCA, PLS-R, OPLS-DA