Fraksinasi, identifikasi, dan uji aktivitas senyawa penghambat alfa-Glukosidase dari ekstrak Metanol Herba Meniran (Phyllanthus niruri L.) = Fractination, identification, and glucosidase inhibitory activity of Methanolic extract from aerial part (Phyllanthus niruri L.)

Natalia Christy, author

Abstrak

Diabetes melitus merupakan penyakit hiperglikemia kronis yang dapat menyebabkan komplikasi hipoglikemia, hiperglikemia, komplikasi makrovaskular dan mikrovaskular. Alternatif pendekatan terapi untuk menormalkan kadar gula darah ialah inhibitor α-glukosidase. Namun, penggunaan inhibitor α-glukosidase menimbulkan efek samping gangguan gastrointestinal, maka dicari sumber dari tumbuhan agar lebih aman.

Penelitian terdahulu menunjukkan ekstrak etanol dari herba meniran (Phyllanthus niruri L.) memiliki penghambatan aktivitas α-glukosidase yang kuat dengan IC50 = 2,32 μg/mL. Penelitian ini bertujuan mengetahui aktivitas penghambatan α-glukosidase terhadap fraksi teraktif hasil fraksinasi ekstrak metanol herba meniran dan mengetahui golongan senyawa kimia yang terdapat pada fraksi teraktif. Ekstrak metanol difraksinasi menggunakan fase diam Sephadex LH-20 dan fase gerak metanol 50%.

Empat fraksi terpilih diuji penghambatan aktivitas α-glukosidase dengan menggunakan microplate reader. Didapatkan nilai IC50 dari fraksi teraktif adalah 37,257 μg/mL dan dilakukan uji kinetika penghambatan. Fraksi ini memiliki jenis penghambatan kompetitif terhadap α-glukosidase. Hasil penapisan fitokimia menunjukkan fraksi teraktif mengandung flavonoid dan tanin.
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Diabetes mellitus is a hyperglycemia chronic disease that can lead to complications like hypoglycemia, hyperglycemia, macrovascular and microvascular complications. Alternative therapeutic approaches to normalize blood sugar levels are α-glucosidase inhibitor. However, utilization of α-glucosidase inhibitor has side effects like gastrointestinal disorders, then look for the source from plants to find more safety therapy.

Past research has shown that the ethanolic extract from aerial part Phyllanthus niruri L. has strong α-glucosidase inhibitory activity with IC50 = 2.32 µg/mL. The aims from this study to determine the α-glucosidase inhibitory activity from the most active fractions of methanolic extracts Phyllanthus niruri L. as fractionation results and to know chemical compounds in the most active fraction. Methanolic extract fractionated using Sephadex LH-20 and 50% methanol as mobile phase.

The four selected fractions tested α-glucosidase inhibitory activity using microplate reader. The IC50 values was obtained from the most active fraction 37.257 µg/mL and tested kinetics inhibition. The fraction has mechanism competitive inhibition with α-glucosidase. The phytochemical screening showed that the most active fractions containing flavonoids and tannins.