

Margaretha Stefanie Hutagalung. NPM 220331100050. Ekstraksi dan Analisis Fitokimia Daun Cabe Jamu (*Piper Retrofactum Vahl*) dengan Pelarut Berbeda Kepolaran: Profiling Metabolit Sekunder dan Uji Antidiabetes. Dibawah Bimbingan **Dr. Enung Siti Nurhidayah** dan **Dr. Darimiyya Hidayati, S.TP., M.P.**

ABSTRAK

*Diabetes melitus merupakan penyakit metabolik yang ditandai dengan peningkatan kadar glukosa darah dan memerlukan alternatif terapi berbasis bahan alam. Penelitian ini bertujuan untuk menganalisis pengaruh kepolaran pelarut terhadap rendemen, kandungan metabolit sekunder, dan aktivitas antidiabetes ekstrak daun cabe jamu (*Piper retrofractum Vahl*). Ekstraksi dilakukan dengan metode sokletasi menggunakan pelarut etanol, etil asetat, dan *n*-heksan, dilanjutkan dengan skrining fitokimia, kadar piperin, total fenolik, total flavonoid, profiling GC-MS serta uji inhibisi enzim α -amilase dan uji antidiabetes secara *in silico*. Hasil penelitian menunjukkan bahwa ekstrak etanol menghasilkan rendemen tertinggi (24,00%), kadar piperin sebesar 139,980 ppm, total fenolik 86,410 mg GAE/g, dan total flavonoid 286,357 mg QE/g. Profil GC-MS mengidentifikasi senyawa dominan berupa benzenepropanoic acid methyl ester, piperine, dan germacrene D. Aktivitas antidiabetes menunjukkan ekstrak etanol memiliki daya inhibisi α -amilase paling tinggi dibandingkan pelarut lainnya, serta didukung hasil molecular docking dengan afinitas ikatan yang baik terhadap enzim target sehingga disesuaikan dengan Lipinski's Rule of Five banyak senyawa yang sesuai dan hasil skrining ADMET mendukung bahwa sebagian besar senyawa bioaktif memiliki potensi sebagai kandidat obat antidiabetes yang aman dan efektif. Dengan demikian, pelarut etanol memberikan hasil ekstraksi dan aktivitas antidiabetes paling optimal pada daun cabe jamu.*

Kata Kunci: Antidiabetes, Daun Cabe Jamu, Pelarut, Senyawa

Margaretha Stefanie Hutagalung. NPM 220331100050. *Extraction and Phytochemical Analysis of Piper retrofractum Vahl Leaves With Different Solvent Polarities: Secondary Metabolite Profiling and Antidiabetic Activity.* Supervised by **Dr. Enung Siti Nurhidayah** and **Dr. Darimiyya Hidayati, S.TP., M.P.**

ABSTRACT

Diabetes mellitus is a metabolic disease characterized by elevated blood glucose levels and requires alternative therapies based on natural products. This study aimed to analyze the effect of solvent polarity on extraction yield, secondary metabolite content, and antidiabetic activity of Piper retrofractum Vahl leaves extract. Extraction was carried out using the Soxhlet method with ethanol, ethyl acetate, and n-hexane, followed by phytochemical screening, piperine content analysis, total phenolic and total flavonoid determination, GC-MS profiling, α -amylase inhibition assay, and in silico antidiabetic analysis. The results showed that the ethanol extract produced the highest yield (24.00%), piperine content (139.980 ppm), total phenolic (86.410 mg GAE/g), and total flavonoid (286.357 mg QE/g). GC-MS profiling identified dominant compounds such as benzenepropanoic acid methyl ester, piperine, and germacrene D. Antidiabetic activity indicated that the ethanol extract exhibited the highest α -amylase inhibitory activity compared to other solvents. Molecular docking results showed good binding affinity toward the target enzyme, supported by Lipinski's Rule of Five indicating that many compounds met drug-likeness criteria, and ADMET screening suggesting that most bioactive compounds have potential as safe and effective antidiabetic drug candidates. Thus, ethanol provided the most optimal extraction results and antidiabetic activity of Piper retrofractum leaves.

Keywords: Antidiabetic, Piper retrofractum leaves, Solvent, Compounds