

MAHRUS FAHRUDIN NPM 16.03.3.1.1.00028. Ekstraksi Daun Mimba (*Azadirachta Indica* A. Juss) Dengan *Microwave Assisted Extraction* (MAE) Dan Potensi Sebagai Antidiabetes Secara *In Silico*. Dibawah bimbingan **Supriyanto, STP., MP.** dan **Ir. Umi Purwandari, M.App.Sc., P.hD.**

ABSTRAK

Diabetes mellitus merupakan suatu penyakit yang terjadi ketika tubuh tidak dapat memproduksi insulin atau insulin yang diproduksi tidak dapat bekerja secara baik, dengan ditandai tingginya nilai kadar gula darah di dalam tubuh. Penggunaan obat antidiabetes yang berjenis obat sintetik dapat mengakibatkan timbulnya efek samping, maka dari itu diperlukannya obat alternatif yang dapat menyembuhkan diabetes. Banyak jenis tanaman yang dipercaya dapat mengobati penyakit diabetes seperti daun mimba. Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi pelarut etanol dan suhu ekstraksi saat proses ekstraksi dengan microwave assisted extraction terhadap aktivitas antioksidan daun mimba serta mengetahui potensi senyawa ekstrak daun mimba sebagai antidiabetes secara In Silico. Proses ekstraksi dilakukan menggunakan metode Microwave Assisted Extraction (MAE) dengan pemanfaatan radiasi gelombang mikro pada alat microwave. Penelitian dilakukan menggunakan metode rancangan acak lengkap (RAL) dengan dua faktor perlakuan jenis pelarut dan suhu ekstraksi. Hasil penelitian menunjukkan jenis pelarut dan penggunaan suhu berpengaruh terhadap nilai IC₅₀ yang memiliki aktivitas antioksidan tinggi adalah pelarut etanol 80% dengan suhu ekstraksi 45° C (Medium low) menghasilkan nilai IC₅₀ sebesar 8,23 ppm. Senyawa dari daun mimba berupa nimbin memiliki energi ikat tertinggi dengan nilai binding affinity sebesar -7,4 Kkal/mol. Harga Pokok Penjualan menghasilkan harga Rp 361.288 per botol. Jika menginginkan keuntungan sebesar 15% maka harga jual produk sebesar Rp 415.500 per botol.

Kata Kunci: Daun Mimba, Antioksidan, Antidiabetes, *In Silico*, *Microwave Assisted Extraction* (MAE).

MAHRUS FAHRUDIN NPM 16.03.3.1.1.00028. Extraction of Neem Leaf (*Azadirachta indica* A. Juss) With Microwave Assisted Extraction (Mae) And Potential For Antidiabetes By *In Silico*. Under the guidance of **Supriyanto, STP., MP.** and **Ir. Umi Purwandari, M.App.Sc., P.hD.**

ABSTRACT

Diabetes mellitus is a disease that occurs when the body can not produce insulin or the insulin that is produced does not work properly, with marked high blood sugar levels in the body. The use of antidiabetic drugs that type of synthetic drugs could result in adverse effects, and therefore the need for alternative drugs that can cure diabetes. Many types of plants that can be trusted to treat diabetes such as neem leaf. This study aims to determine the effect of ethanol concentration and extraction temperature during the process of extraction with microwave assisted extraction of antioxidant activity of neem leaf extract and determine the potential of compounds in neem leaf as an antidiabetic In Silico. The extraction process is done using Microwave Assisted Extraction (MAE) with the use of microwave radiation on the microwave apparatus. The study was conducted using a completely randomized design (CRD) with two factors treat type of solvent and extraction temperature. The result shows the type of solvent and the use of the temperature effect on IC50 values which have high antioxidant activity is 80% ethanol with extraction temperature of 45 ° C (Medium Low) yielded IC50 value of 8.23 ppm. Compounds of neem leaves in the form of nimbin has the highest binding energy with a binding affinity value of -7.4 kcal / mol. Cost of Goods Sold generate Rp 361 288 per bottle. If you want a gain of 15%, the selling price of Rp 415 500 every bottlehis.

Keywords: *Neem leaf, Antioxidant, Antidiabetic, In Silico, Microwave Assisted Extraction (MAE).*

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