

Aplikasi 1-heksil-3-metilimidazolium bromida berbasis microwave-assisted extraction (MAE) pada ekstraksi resveratrol dari biji melinjo (*Gnetum gnemon* L.) = Application of 1-hexyl-3-methylimidazolium bromide ([hmim] Br) based microwave assisted extraction mae of resveratrol from melinjo (*Gnetum gnemon* L.) seeds

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Abstrak

Resveratrol merupakan suatu senyawa polifenol yang terdapat pada biji melinjo *Gnetum gnemon* L. yang memiliki banyak khasiat seperti kardioprotektif, antioksidan, antidiabetes, dan antiinflamasi. Terdapat banyak cara ekstraksi resveratrol dari biji melinjo yang dapat diterapkan. Penelitian ini bertujuan untuk melakukan optimasi metode ekstraksi menggunakan salah satu pelarut cairan ionik, 1-heksil-3-metilimidazolium bromida [hmim]Br berbasis Microwave-Assisted Extraction MAE. Optimasi terhadap parameter ekstraksi: konsentrasi pelarut, rasio pelarut-sampel, dan waktu ekstraksi terhadap kadar resveratrol dan fenol total dilakukan menggunakan RSM dengan desain Box-Behnken. Kadar resveratrol ditetapkan dengan Kromatografi Cair Kinerja Tinggi KCKT dengan fase gerak asetonitril:air 75:25 v/v dan dideteksi pada panjang gelombang 306 nm. Kadar fenol total ditetapkan dengan metode Folin-Ciocalteu menggunakan microplate reader pada panjang gelombang 750 nm. Kondisi optimum diperoleh pada konsentrasi pelarut [hmim]Br 0,5 M, waktu ekstraksi 15 menit, dan rasio pelarut-sampel 15,5:1 ml/g dengan kadar resveratrol 0,0679 mg/g simplisia dan kadar fenol total 0,6437 mg EAG/g simplisia.

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Resveratrol is a polyphenolic compound found in melinjo *Gnetum gnemon* L. seeds and has known for many biological activities including cardioprotective, antioxidant, antidiabetic, and anti inflammatory. There are many methods can be applied to extract resveratrol from melinjo seeds. This research aimed to optimize extraction method using an ionic liquid IL, 1 hexyl 3 methylimidazolium bromide hmim Br based microwave assisted extraction MAE. Extraction parameters including solvent concentration, liquid solid ratio, and extraction time for resveratrol and total phenolic content were optimized using response surface methodology RSM, based on Box Behnken design BBD. Resveratrol content was determined using High Performance Liquid Chromatography HPLC with acetonitrile water 75 25 v v as mobile phase and detection wavelength was 306 nm. Total phenolic content was determined using Folin Ciocalteu method by microplate reader. The optimum condition obtained was the condition of solvent concentration of hmim Br 0.5 M, liquid solid ratio 15.5 1 ml g, extraction time 15 minutes. Under these conditions, resveratrol content and total phenolic content were 0.0679 mg g dry weight and 0.6437 mg GAE g dry weight, respectively.