Optimasi ekstraksi resveratrol dari kulit kacang tanah (arachis hypogaea l.) menggunakan 1-butil-3-metilimidazolium bromida ([bmim]Br)-microwave assisted extraction (MAE) dengan pre-treatment urea = Optimization of 1-butyl-3-methylimidazolium bromide ([bmim]Br)-based microwave-assisted extraction (MAE) to obtain resveratrol from peanut hull (arachis hypogaea l.) using urea pre-treatment

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Abstrak

ABSTRAK
Resveratrol 3,5,4-Trihidroksistilben merupakan senyawa polifenol alami yang terdapat di kulit kacang tanah Arachis hypogaea L. serta memiliki manfaat bagi kesehatan, diantaranya sebagai kardioprotektif, antioksidan, dan anti-kanker. Penelitian ini bertujuan untuk melakukan optimasi kondisi ekstraksi dengan pre-treatment urea menggunakan pelarut cairan ionik, 1-Butil-3-metilimidazolium Bromida [bmim]Br berbasis Microwave-Assisted Extraction MAE. Lima konsentrasi urea 5, 10, 15, 20, dan 25 digunakan untuk pre-treatment dan dipilih konsentrasi urea 15 b/v. Optimasi kondisi ekstraksi dilakukan dengan beberapa parameter: konsentrasi pelarut, rasio pelarut-sampel, dan waktu ekstraksi terhadap kadar resveratrol 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 resveratrol yang diperoleh dari optimasi kondisi ekstraksi dengan pre-treatment urea sebesar 0,2900 g/gram serbuk dan tanpa pre-treatment urea sebesar 0,1572 g/gram serbuk. Sedangkan, maserasi memberikan perolehan kadar resveratrol terbesar yaitu 223,6692 g/gram serbuk.
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ABSTRACT
Resveratrol is a polyphenolic compound found in peanut hull Arachis hypogaea L. and has known for many biological activities including anti cancer, antioxidant, and cardio protective. This research aimed to optimize extraction condition using an ionic liquid, 1 Butyl 3 methylimidazolium Bromide bmim Br based microwave assisted extraction MAE with urea pre treatment. Sample was pre treated at five levels of urea concentration 5, 10, 15, 20, and 25 and urea 15 w v was chosen. Extraction parameters including solvent concentration, liquid solid ratio, and extraction time for resveratrol 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. Under optimized condition with urea pre treatment, the resveratrol value was 0,2900 g gram and without pre treatment was 0,1572 g gram. However, maceration method gave the highest value of resveratrol, 223,6692 g gram.