Optimasi microwave-assisted extraction dari herba tanaman suruhan (peperomia pellucida kunth) terhadap kadar fenolik total, aktivitas penghambatan angiotensin converting enzyme dan aktivitas antioksidan = Optimization of microwave assisted extraction of total phenolic content angiotensin converting enzyme inhibitory activity and antioxidant activity from peperomia pellucida kunth

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Abstrak

Peperomia pellucida Kunth. mengandung senyawa fenolik dan diketahui berkhasiat sebagai antihipertensi dengan mekanisme penghambatan angiotensinconverting enzyme (ACE) dan antioksidan. Metode microwave-assisted extraction (MAE) berpotensi besar untuk mengekstraksi senyawa aktif pada tanaman. Pada penelitian ini, metode MAE dikembangkan untuk memperoleh kadar fenolik total, aktivitas penghambatan ACE, dan antioksidan yang optimum dari Peperomia pellucida Kunth. Parameter efisiensi MAE yang digunakan yaitu konsentrasi pelarut etanol, rasio sampel-pelarut, waktu ekstraksi, dan daya gelombang mikro.

Analisis dilakukan menggunakan response surface methodology (RSM). Kadar fenolik total diukur dengan metode Folin-Ciocalteu, sedangkan aktivitas penghambatan ACE dievaluasi menggunakan ACE kit-WST, dan aktivitas antioksidan diukur dengan metode FRAP. Kondisi optimum MAE untuk kadar fenolik total (49,78 mgEAG/g ekstrak) adalah pelarut etanol 80%, rasio sampelpelarut 1:12, waktu ekstraksi 2 menit, dan daya 30%. Aktivitas penghambatan ACE yang optimum (54,73% pada konsentrasi 100 g/mL) dan kapasitas antioksidan metode FRAP (130,33 molEAG/g ekstrak pada konsentrasi 32,26 g/mL) diperoleh pada kondisi ekstraksi berturut-turut berupa pelarut etanol 80%, rasio 1:12, waktu ekstraksi 2 menit, daya 70%, serta pelarut etanol 65%, rasio 1:12, waktu ekstraksi 1 menit, dan daya 70%. Analisis korelasi Pearson menunjukkan bahwa tidak ada korelasi antara kadar fenolik total dengan aktivitas penghambatan ACE dan aktivitas antioksidan.
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Peperomia pellucida Kunth. contain phenolic compounds and known to have efficacy as antihypertensive by the mechanism of inhibition of angiotensinconverting enzyme (ACE) and antioxidants. Microwave-assisted extraction (MAE) method has great potential for extracting the active compound in plant. In this study, MAE method was developed to obtain optimum total phenolic content, angiotensin-converting enzyme inhibitory activity, and antioxidant activity from Peperomia pellucida Kunth. MAE efficiency parameters used were ethanol concentration, sample to solvent ratio, extraction time, and microwave power.

The analysis was performed using response surface methodology (RSM). Total phenolic content was measured by Folin-Ciocalteu method, while ACE inhibitory activity was evaluated using ACE kit-WST, and antioxidant activity was measured by FRAP method. The optimum conditions of MAE for total phenolic content (49.78 mgGAE/g extract) were 80% ethanol, sample-solvent ratio of 1:12, extraction time of 2 min, and power of 30%. The optimum ACE inhibitory activity (54.73% at a concentration of 100 μg/mL)

and antioxidant capacity of FRAP method (130.33 μmolGAE/g extract at a concentration of 32.26 μg/mL) were obtained at 80% ethanol, ratio of 1:12, time of 2 min, 70% power, and 65% ethanol, ratio of 1:12, time of 1 min, and 70% power respectively. The analysis of Pearson correlation indicated that there was no correlation between total phenolic content with ACE inhibitory activity and antioxidant activity.