Comparison of microwave, ultrasound and accelerated-assisted solvent extraction for recovery of polyphenols from Citrus sinensis peels

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Description
Peel of *Citrus sinensis* contains significant amounts of bioactive polyphenols that could be used as ingredients for a number of value-added products with health benefits. Extraction of polyphenols from the peels was performed using a microwave-assisted extraction (MAE) technique. The effects of aqueous acetone concentration, microwave power, extraction time and solvent-to-solid ratio on the total phenolic content (TPC), total antioxidant activity (TAA) (using DPPH and ORAC-values) and individual phenolic acids (IPA) were investigated using a response surface method. The TPC, TAA and IPA of peel extracts using MAE was compared with conventional, ultrasound-assisted and accelerated solvent extraction. The maximum predicted TPC under the optimal MAE conditions (51% acetone concentration in water (v/v), 500 W microwave power, 122 s extraction time and 25 mL g^{-1} solvent to solid ratio), was 12.20 …