

Enhancing recovery of bioactive compounds from *Cosmos caudatus* leaves via ultrasonic extraction

ABSTRACT

Cosmos caudatus (*C. caudatus*) is a medicinal plant that is high in bioactive compounds such as phenolics. In this study, an ultrasound extraction method was used to optimise the extraction of bioactive compounds from *C. caudatus* leaves. Response surface methodology (RSM) based on a Box-Behnken design (BBD) was applied to obtain the optimum extraction parameters which is solid-liquid ratio (10–30 g/mL), particle size (180–850 μm) and extraction time (20–30 min) for maximal quercitrin and total phenolic content (TPC) yields. Analysis of antimicrobial activity was performed against two human pathogenic microbes: *Staphylococcus aureus* (*S. aureus*) and *Escherichia coli* (*E. coli*) by the agar well diffusion method. The optimal ultrasonic extraction condition was as follow: solvent-liquid ratio of 1:28 (g/mL), particle size of 485 μm , and duration of 30 min, respectively. Remarkably, extraction using ultrasonic method had recovered more bioactive content and antioxidant activity than the Soxhlet method. The extract also exhibited good antimicrobial activities. Due to the above findings, the ultrasonic extraction was found to be suitable to improve recovery extraction of quercitrin and TPC from *C. caudatus* leaves. It also opens the possibility that the plant extract can be used for functional food and antimicrobial agents in various applications.