

Kanuka bush leaves for Alzheimer's disease: Improved inhibition of γ -secretase enzyme, antioxidant capacity and yield of extracts by ultrasound assisted extraction

ABSTRACT

Alzheimer's disease (AD) is a neurodegenerative disease leading to irreversible neuronal damage. Kanuka or *Kunzea ericoides* (A. Richard) revealed a remarkable inhibition of γ -secretase activity, an important enzyme for AD. This study presents optimization of the ultrasound assisted extraction (UAE) of inhibitors of γ -secretase and antioxidants from *K. ericoides* leaves, and yield by response surface methodology (RSM). Experimental validation of optimized conditions and 50% inhibitory extract concentrations (IC₅₀) determinations were performed. The extraction time and temperature were significant for enzyme inhibition, RSA (DPPH radical scavenging activity) and yield, while acoustic power density had less effect on the 3 responses. The optimum conditions were 15.6 min extraction time, 69 °C and 0.43 W/mL. The ultrasound extraction produced better extracts in term of enzyme inhibition and RSA (lower IC₅₀: 14.25 g/mL enzyme, 3.17 g/mL RSA), in comparison to Soxhlet and maceration combined with heat, and a more rapid extraction with increased yield of extraction. Ultrasound kanuka extracts can potentially complement existing AD treatment