

Phenolic rich extract from *Clinacanthus nutans* attenuates hyperlipidemia-associated oxidative stress in rats

ABSTRACT

Clinacanthus nutans is used as traditional medicine in Asia but there are limited scientific studies to support its use. In this study, the stem and leaf of *C. nutans* were extracted using solvents of differing polarities, and their antioxidant capacities were determined using multiple antioxidant assays. The water and aqueous methanolic leaf extracts were further fractionated and their antioxidant capacities and phenolic compositions were tested. Furthermore, the efficacies of the water and aqueous methanolic leaf extracts were tested against hyperlipidemia-induced oxidative stress in rats. Serum and hepatic antioxidant and oxidative stress markers were tested after feeding the rats with high fat diet together with the extracts or simvastatin for 7 weeks. The results indicated that both leaf extracts attenuated oxidative stress through increasing serum antioxidant enzymes activity and upregulating the expression of hepatic antioxidant genes. Multiple phenolic compounds were detected in the extracts and fractions of *C. nutans*, although protocatechuic acid was one of the most abundant and may have contributed significantly towards the bioactivities of the extracts. However, synergistic effects of different phenolics may have contributed to the overall bioactivities. *C. nutans* can be a good source of functional ingredients for the management of oxidative stress-related diseases.