

Biological activities of selected plants and detection of bioactive compounds from *Ardisia elliptica* using UHPLC-Q-Exactive Orbitrap mass spectrometry

ABSTRACT

Plants and plant-based products have been used for a long time for medicinal purposes. This study aimed to determine the antioxidant and anti- α -glucosidase activities of eight selected underutilized plants in Malaysia: *Leucaena leucocephala*, *Muntingia calabura*, *Spondias dulcis*, *Annona squamosa*, *Ardisia elliptica*, *Cynometra cauliflora*, *Ficus auriculata*, and *Averrhoa bilimbi*. This study showed that the 70% ethanolic extract of all plants exhibited total phenolic content (TPC) ranging from 51 to 344 mg gallic acid equivalent (GAE)/g dry weight. *A. elliptica* showed strong 2,2-diphenyl-1-picrylhydrazyl (DPPH) and nitric oxide (NO) scavenging activities, with half maximal inhibitory concentration (IC₅₀) values of 2.17 and 49.43 μ g/mL, respectively. Most of the tested plant extracts showed higher inhibition of α -glucosidase enzyme activity than the standard, quercetin, particularly *A. elliptica*, *F. auriculata*, and *M. calabura* extracts with IC₅₀ values of 0.29, 0.36, and 0.51 μ g/mL, respectively. A total of 62 metabolites including flavonoids, triterpenoids, benzoquinones, and fatty acids were tentatively identified in the most active plant, i.e., *A. elliptica* leaf extract, by using ultra-high-performance liquid chromatography (UHPLC)–electrospray ionization (ESI) Orbitrap MS. This study suggests a potential natural source of antioxidant and α -glucosidase inhibitors from *A. elliptica*.

Keyword: Underutilized plants; Antioxidant; Free radical scavenging; Anti- α -glucosidase; Phytochemical characterization