

## **From weed to medicinal plant: antioxidant capacities and phytochemicals of various extracts of *Mikania micrantha***

### **ABSTRACT**

*Mikania micrantha* is commonly consumed as traditional medicine in some countries, including Malaysia. Little is known about the antioxidant properties and phytochemicals of *M. micrantha*. This study was aimed to investigate the total phenolic content (TPC), total flavonoid content (TFC) and antioxidant capacities of the leaves and stems of *M. micrantha* of hot water, cold water, 70% ethanol, ethyl acetate, and hexane extracts. Folin-Ciocalteu and aluminium chloride colorimetric assays were used to determine the TPC and TFC, respectively. The antioxidant capacities were determined using rapid, inexpensive and small-scale microplate of five different antioxidant assays. Gas chromatography-mass spectrometry (GC-MS) was used to chemically profile and characterize the phytochemicals. In comparison with different solvents, the ethyl acetate stems (EAS) and leaves (EAL) extracts of *M. micrantha* had the significantly greatest TPC ( $141 \pm 0.51$  mg gallic acid equivalent/g) and TFC ( $70.1 \pm 0.92$  catechin equivalent/g), respectively. Moreover, EAS extract had the significantly greatest antioxidant capacities using DPPH ( $EC_{50} = 324 \pm 61.4$   $\mu$ g/mL), ABTS ( $0.53 \pm 0.01$  mmol trolox equivalent/g), FRAP ( $1.28 \pm 0.05$  mmol Fe<sup>2+</sup>/g), phosphomolybdenum antioxidative power ( $219 \pm 7.03$  mg ascorbic acid equivalent/g), and  $\beta$ -carotene bleaching ( $108 \pm 2.23\%$ ) assays. GC-MS analysis of EAS showed the presence of sesquiterpenes (30.46%), phenol (16.38%), and alkane hydrocarbons (10.45%), which may contribute to its antioxidant capacities. These findings suggest the stems extract of *M. micrantha* using ethyl acetate as the potential source of natural antioxidant agents and its utilization to prevent oxidative damage-related diseases could be further explored.

**Keyword:** Antioxidant; GC-MS; *Mikania micrantha*; Phenolic; Phytochemicals; Sesquiterpenes

