

## **GC-MS evaluation, antioxidant content, and cytotoxic activity of propolis extract from Peninsular Malaysian stingless bees, *Tetrigona apicalis***

### **ABSTRACT**

**Introduction.** Propolis has been used traditionally in several countries for treating various diseases as it possessed healing properties including antioxidant and anticancer qualities. In Peninsular Malaysia, *Tetrigona apicalis* is one of the species of stingless bees mainly found in virgin jungle reserves which largely contribute to propolis production. Therefore, this study is designed to evaluate the phytochemical contents, antioxidant properties, and the cytotoxic effect of ethanolic crude of propolis extract against MCF7 and MCF 10A cell lines. **Method.** The ethanolic extract of propolis (EEP) was extracted using 80% ethanol. Identification of phytochemical contents and antioxidant properties of EEP was analysed by gas chromatography-mass spectrometry (GC-MS) and using 2, 2'-azinobis (3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) method, respectively. The EEP cytotoxic activity was evaluated on MCF7 and MCF 10A using 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. **Results.** Phytochemical contents of EEP demonstrated 28 compounds in which caryophyllene (99%),  $\beta$ -amyrin (96%),  $\alpha$ -amyrin (93%), and caryophyllene oxide (93%) were the main compounds. The percentage of ABTS+ scavenging activity of EEP showed an inhibition of 9.5% with half-inhibitory concentration (IC<sub>50</sub>) value of 1.68 mg/mL. The EEP reduced MCF7 cells viability at IC<sub>50</sub> value of 62.24  $\mu$ g/mL, 44.15  $\mu$ g/mL, and 32.70  $\mu$ g/mL at 24, 48, and 72 hours, respectively. The IC<sub>50</sub> value of MCF 10A was 49.55  $\mu$ g/mL, 56.05  $\mu$ g/mL, and 72.10  $\mu$ g/mL at 24, 48, and 72 hours, respectively. The EEP cytotoxic effect of *T. apicalis* was more selective towards MCF7 at 72-hour incubation with a selectivity index (SI) of 2.20. **Conclusion.** The EEP has been shown to have antioxidants and potential bioactive compounds and inhibited proliferation of the MCF7 cells. Further studies on the EEP role in the apoptosis pathway and its screening towards other cell lines will be evaluated.