

## **Phytochemical constituents, antioxidant and antiproliferative properties of a liverwort, *lepidozia borneensis* Stephani from Mount Kinabalu, Sabah, Malaysia**

### **ABSTRACT**

The study aimed to investigate the phytochemical contents, antioxidant and antiproliferative activity of 80% methanol extract of *Lepidozia borneensis*. The total phenolic and total flavonoid contents were analysed using Folin-Ciocalteu and aluminium chloride colorimetric methods. Antioxidant properties were evaluated by using FRAP, ABTS, and DPPH assays while the effects of *L. borneensis* on the proliferation of MCF-7 cell line were evaluated by using MTT assay. The results showed that the total phenolic and flavonoid contents were  $12.42 \pm 0.47$  mg GAE/g and  $9.36 \pm 1.29$  mg CE/g, respectively. The GC-MS analysis revealed the presence of at least 35 compounds. The extract was found to induce cytotoxicity against MCF-7 cell line with IC<sub>50</sub> value of  $47.33 \pm 7.37$  µg/mL. Cell cycle analysis showed that the extract induced significant arrest at G<sub>0</sub>/G<sub>1</sub> at 24 hours of treatment. After 72 hours of treatment, the proportion of cells in G<sub>0</sub>/G<sub>1</sub> and G<sub>2</sub>-M phases had decreased significantly as compared to their control. Apoptosis occurred during the first 24 hours and significantly increased to 30.8% after 72 hours of treatment. No activation of caspase 3 was observed. These findings suggest that *L. borneensis* extract has the potential as natural antioxidant and anticancer agents.