Total Phenolic Compounds, Antioxidant, Anticancer and Antidiabetic Properties of *Myrmecodia Tuberosa* (Rubiaceae)

Saidi Rasemi¹, Khong Heng Yen¹,* and Rohaya Ahmad²

¹Faculty of Applied Sciences, Universiti Teknologi MARA, 94300 Kota Samarahan, Sarawak, Malaysia; ²Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Malaysia; E-mail: khonghy@sarawak.uitm.edu.my

*Myrmecodia tuberosa* or locally known as “Sarang Semut”, belongs to Rubiaceae family. The aim of the study is to investigate the total phenolic compounds and bioactivity of the crude extract of *M. tuberosa*. The tuber, bark and leaves of the plant were cut, wash and air-dried. The plant was extracted with ethyl acetate and ethanol to yield EtOAc and EtOH crude. The crude were then tested for anti-oxidant 2,2-diphenyl-1-(2,4,6-trinitrophenyl)hydrazyl (DPPH) assay, α-glucosidase assay for anti-diabetic activity, and MTT assay for cytotoxicity test. The results showed that bark ethanolic extract demonstrated the highest DPPH scavenging of 97.49% while other crudes were ranging from 95.04% to 96.86% scavenging of DPPH compared to ascorbic acid. An in-vitro α-glucosidase assay was performed according to the slightly modified method of Matsui et al. (1996) showed that the tuber ethyl acetate extract demonstrated the highest inhibition of α-glucosidase enzyme with 72.58% while other crudes were ranging from 63.27% to 72.46% inhibition. In addition, the ethanolic tuber extract exhibited the strongest cytotoxicity against HT-29 and Hela cell lines with the IC₅₀ value of 16 µg/mL and 14 µg/mL respectively. Meanwhile, the ethanolic bark extract exhibited the strongest cytotoxicity against MCF-7 with IC₅₀ value of 6.0 µg/mL. The total phenolic content results also showed that the tuber extracts contained the highest phenolic content with 1087mg GAE/ g extract compared to leaf and bark of the plants. The findings suggest that the whole part of *M. tuberosa* is a potential natural source for anti-oxidative, anti-diabetic and anti-cancer agent.

**Keywords:** Rubiaceae, *Myrmecodia tuberosa*, Antioxidant, Anticancer, Antidiabetic.