Cytotoxicity and Antioxidant Activities of Aqueous and Methanolic Extracts of Different Parts OF Averrhoa Carambola

Sultan Ayesh Mohammed Saghir¹, Amirin Sadikun² and Vikneswaran Murugaiyah¹,*

¹Discipline of Pharmacology, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia; ²Discipline of Pharmaceutical Chemistry, School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia; E-mail: vicky@usm.my

Averrhoa carambola family Oxalidaceae is largely found in Malaysia and many other tropical countries. This plant has hypoglycemic, hypocholesterolemic, antimicrobial, anti-inflammatory and antioxidant activities. The present study aimed to evaluate the in vitro cytotoxicity and antioxidant activities of aqueous and methanolic extracts of various parts of A. carambola. All aqueous and methanolic extracts of ripe fruit, unripe fruit, leaves and stems of A. carambola were found to cause no cytotoxic effect on the four cancer cell lines used (K-562, HL-60, kasumi and HCT-116). On the other hand, the methanolic extracts of stem and leaves showed higher total phenolic contents of 198.08 and 46.74 mg gallic acid equivalent (GAE)/100g extract and total flavonoid 114.8 and 36.76 mg quercetin equivalent (QE)/100g extract, respectively. Both methanolic and aqueous extracts of stem showed most potent reducing power of 0.087 and 0.042 µmol FeSO₄/ mL, respectively. In contrast, the methanolic extract of stem and leaves exhibited radical scavenging activity with IC₅₀ values of 6.86 and 22.84 in DPPH assay and 68.8, 23.2 µg/mL in ABTS assay, respectively. In conclusion, methanolic extracts showed higher antioxidant capacity compared to aqueous extracts in particular, the stem and leaves extracts.

Keywords: Averrhoa carambola, cytotoxicity, K-562 cells, antioxidant, radical scavenging.