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A preliminary investigation of the antioxidant activity of *Manihot esculenta Crantz* in Sri-Lanka

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Cassava (*Manihot esculenta Crantz*), is a widely grown crop in Sri Lanka which is known to cure headache, hypertension, conjunctivitis, diabetes, inflammatory diseases, and cancer. Phytochemicals like alkaloids and flavonoids present in *M. esculentza Crantz* can initiate the antioxidant, antimicrobial and anti-carcinogenic effects. Hence, the objective of the study was to investigate the phytochemical composition and antioxidant capacity in cassava root, and young and mature leaves. The cassava rootand young and mature leaves were sun dried, pulverized and extracted with methanol. The total phenolic (TPC) and flavonoid (TFC) content was analyzed using the Folin-Ciocalteu reagent assay and aluminium chloride colorimetric method, respectively. Moreover, the total antioxidant content (TAC) was assessed using the ammonium heptamolybdate tetrahydrate method and the antioxidant activity was determined by the 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) (ABTS) and ferric reducing ability of plasma (FRAP) assays. The TPC in mature leaves was found to be the highest 2524.2 ± 7.8 mg of GAE per L compared to other samples ($P = 0.00$, $p<0.05$) and the TFC was also significantly high in mature leaves 2292.4 ± 34.6 ($P =0.00$, $p<0.05$) mg of rutin equivalents per L. Antioxidant activities of the extracts based on the ABTS, FRAP and total antioxidant capacity demonstrated a high activity in mature leaves, followed by young leaves and root. Additionally, correlations of TAC/TPC and TAC/TFC showed a positive linear correlation of 0.998 ($P = 0.042$, $p<0.05$) and 0.961 ($P = 0.018$, $p < 0.05$), respectively. These correlations signify that both phenols and flavonoids are responsible for the radical scavenging activity in cassava. Moreover, as the correlation between TAC/TFC is lower than TAC/TPC, it signifies that flavonoids belong to the subclass of phenols. In conclusion, the mature leaves demonstrated a higher radical scavenging activity together with high amounts of phenols and flavonoids,whereas roots contained the least amount of radical scavenging activity, and had the lowest amount of phenols and flavonoids.

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