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Phenolic and flavonoid contents and antioxidant capacity of selected underutilized fruit species in Sri Lanka

D C Abeysinghe* and W A H Wajirani

Department of Plantation Management, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, Makandura, Gonawila

The aim of this study was to determine total antioxidant capacity (TAC), total phenolic content (TPC) and total flavonoid content (TFC) of six underutilized fruit species namely; *Naminan (Cynometra cauliflora), Lawulu (Pouteria campechiana), Jambu (Syzygium aqueum), Ambilla (Morus australis), Billin (Averrhoa bilimbi)* and *Veralu (Elaeocarpus serratus)* grown in Sri Lanka. Well ripened fruits of each species were harvested from home gardens and directly transported to the laboratory under cool condition. A completely randomized design (CRD), with three randomly selected sample replicates was used in the experiment. Ferric reducing antioxidant power (FRAP) assay was used to evaluate TAC, whereas the TPC was determined by Folin-ciocalteu method and TFC was evaluated by a colorimetric method. *Lawulu* had significantly the highest TAC (10.17±0.47mg TE/g FW) and TPC (7.58±0.25 mg GAE/g FW) whereas significantly highest TFC (17.37±0.28 mg RE/g FW) was observed in *Naminan* fruit. Significantly lowest TAC (0.49±0.01 mg TE/g FW) and TFC (0.17±0.04 mg RE/g FW) were recorded in *Billin*, while *Jambu* recorded the lowest phenolic content (0.37±0.02 mg GAE/g FW). No flavonoids were detected in *Jambu*. In selected underutilized fruit species, TAC showed positive significant correlations with the total phenolics (R^2 = 0.98, $p<0.001$) and total flavonoid content (R^2 = 0.66, $p<0.001$).

The results revealed that among selected underutilized fruits, *Lawulu* and *Naminan* fruits had higher TAC and TPC whereas very low levels of phenolic compounds and antioxidant capacity were recorded in *Billin* and *Jambu* fruits. Therefore, *Lawulu* and *Naminan* are suggested as good dietary antioxidant sources. The significant positive correlations between TAC and phenolic compounds indicated that phenolic components contributed significantly to the fruit antioxidant capacity.

Keywords: Antioxidant capacity, flavonoids, phenolics, underutilized fruits

abeysinghedc@yahoo.com Tel: +94 718068809/ +94 312299704