



Determination of Vitamin C Content and Antioxidant Properties of Selected Sri Lankan Wild Fruit Species

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Abstract

As a country in the tropics, Sri Lanka has been gifted by nature with huge diversity of fruits. Since ancient times, thousands of wild fruit varieties have been consumed by Sri Lankan rural communities. Due to poor consumer awareness and lack of information on nutritional values of those fruits, those species have become neglected by the present society. Knowing the anti-oxidant capacity and vitamin C of these fruits is timely important as there is an increasing trend in the society to be away from the conventional fruits, due to use of chemicals for ripening to gain economic benefits by vendors. Therefore, the present study was carried out with the objective of determining ascorbic acid (AA) content, total vitamin C (TVC) content, 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging activity and ferric ion reducing antioxidant power assay (FRAP) of 16 species of Sri Lankan wild fruits namely, Kohukirilla (*Microcos paniculata*), Koan (*Schleichera oleosa*), Rata embilla (*Morus alba*), Nai batu (*Solanum capsicoides*), Kinithulu bovitiya (*Clidemaia hirta*), Maha bovitiya (*Melastoma malabathricum*), Heen bilin (*Oxalis berrelieri*), Pathok (*Opuntia dillenii*), Gandapana (*Lantana camara*), Jam fruit (*Muntingia calabura*), Ambul pera (*Psidium guajava*), Lovi (*Flacourtia inermis*), Batakirilla (*Erythroxylum moonii*), Ketambilla (*Dovyalis hebecarpa*), Rathambala (*Ixora coccinea*) and Heen ambilla (*Antidesma alexiteria*). AA and TVC content of 16 species of wild fruits studied, ranged from 5.3 – 121.7 mg/100g Fresh Weight (FW) and 5.8 – 123.7 mg/100g FW respectively. Highest AA and TVC contents were observed in Jam fruit (*Muntingia calabura*) (AA; 121.7±0.6 mg/100g FW, TVC; 123.7±0.4 mg/100g FW) followed by Maha bovitiya (*Melastoma malabathricum*), Kinithulu bovitiya (*Clidemaia hirta*) and Ketambilla (*Dovyalis hebecarpa*). Highest antioxidant capacity measured as DPPH, which is characterized by lowest IC₅₀ value and FRAP assay was observed in Maha bovitiya (IC₅₀; 1.2 mg/mL, FRAP; 478.2 μmol Fe(II)/g FW), followed by Kinithulu bovitiya and Heen ambilla (*Antidesma alexiteria*). Antioxidant capacity measured as ferric reducing power showed a strong positive linear relationship with AA and TVC content and IC₅₀ values obtained in DPPH showed a moderate negative linear relationship with AA and TVC content of fruits included in the study. Results of the present study revealed that neglected wild fruits in Sri Lanka are important as good sources of anti-oxidants and also with higher ascorbic acid content, when compared



to well-known vitamin C rich sources such as guava which has vitamin C content, IC₅₀ and FRAP value of 70.4 mg/100g FW, 1.7 mg/mL and 35.03 μ mol Fe(II)/g FW respectively. As natural anti-oxidants have been known to play an important role in reducing non-communicable diseases (NCDs), these wild fruits are promising agents to reduce the risk of NCDs and to ensure food security.

Key words: Antioxidant capacity, Ascorbic acid, Sri Lanka, Vitamin C, Wild fruits

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