Consumption pattern of Green Leafy vegetables by Myocardial Ischemic (MI) Patients in Batticaloa and selection of the best vegetables based on the antioxidant properties

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Abstract

This study was conducted to identify the consumption pattern of Green Leafy Vegetables (GLVs) of Myocardial Ischemic (MI) patients who suffered chest pain due to insufficient blood flow to heart muscle and attending the cardiac clinic at teaching Hospital Baticaloa. In addition, vitamin C, total phenolic contents (TPC) and total antioxidant activity (TAA) were also estimated for the highly consumed fresh GLVs for food and medicinal purpose by the MI patients. Consumption pattern of GLVs was assessed by using a semi-structured questionnaire. Vitamin C content was determined by 2,6-dichloroindophenol (DCP) titrimetic method, whereas TPC was measured by Folin-Ciocalteu method. Total Antioxidant activity was measured using Ferric Reducing Antioxidant Power (FRAP) assay which depends upon the reduction of ferric tripyridyltriazine [Fe(III)-TPTZ] complex to the ferrous tripyridyltriazine (Fe(II)-TPTZ) by a reductant at low pH.

Results revealed that thirty one species of GLVs were commonly consumed by MI patients. Their average frequency of consumption was nearly 50%. Fourteen species were consumed by more than 50% of the patients interviewed. Sixty one percentage of MI patients consumed GLVs daily. Eighty eight percent of MI patients consumed GLVs immediately after harvesting / purchasing. Sixteen GLVs were selected to determine Vitamin C, TPC and TAA which included *Aerva, Alternanthera sessilis Amaranthus caudatus* (Pendant amaranth), *Amaranthus viridis, Argyreia pomacea, Cardiospermum. halicacabum*, *Centella asiatica Delonix elata* , *Drega volubilis* , *Mollugo oppositifolia, Moringa oleifera, Murraya koenigii, Pisonia. grandis* , *Sauropus androgynus* , *Sesbania grandiflora, and Solanum. trilobatum*. Vitamin C content of fresh GLVs ranged from 5.25 mg/100 g wet weight in *Centella asiatica* to 416.2 mg/100 g in *Drega volubilis*. TPC of fresh GLVs ranged from 21.82±15 mg TAE /100 g in *Mollugo oppositifolia* to 560.1±51 mg TAE /100 g in *Delonix elata*. TAA of fresh GLVs ranged from 4.12±0.16 µmol $Fe^{2+}g^{-1}$ in Moringa oleifera to 38.59±1.05 µmol $Fe^{2+}g^{-1}$ in *Murraya koenigii*. Based on the Vitamin C, TPC and TAA analysis, *D. volubilis*, *D. elata* and *M. Koenigii* are identified as promising GLVs.

Keywords: Antioxidant activity, consumption pattern, green Leafy vegetables, Total phenolic content, Vitamin C.