

Phenolic Content and Antioxidant Activities of Underutilized Dioscorea Yams in Sri Lanka

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Many populations around the world consider yams as a component of the staple diet but, in Sri Lanka, yams especially those of the *Dioscorea* species are underutilized. Yams offer variety to the diet in addition to nutrients and non-nutrient bioactive components. They provide enormous health benefits such as antioxidative, hypoglycemic, hypocholesterolemic, antimicrobial and immunomodulatory activities attributed to bioactive constituents like phenolic compounds, and saponins among others. The aim of the present study was to investigate soluble phenolic contents and their antioxidant activities of fifteen yams belonging to *Dioscorea alata*, *Dioscorea esculenta* and *Dioscorea bulbifera* that are locally available in Sri Lanka. The soluble phenolic extracts were analyzed for their total phenolic content (TPC), 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity (DRSA), Trolox equivalent antioxidant capacity (TEAC), Reducing power (RP) and Ferrous ion chelating activity (FICA). Among the yams studied, *Ledhantha* (*Dioscorea alata*) showed the highest TPC (9.00 ± 0.23 mg/g GAE) ($p=0.001$) whereas *Hingurala* (*Dioscorea alata*) (0.22 ± 0.03 mg/g GAE) and *Angiliala* (*Dioscorea alata*) (0.37 ± 0.02 mg/g GAE) ($p=0.449$) showed the least. *Ledhantha* (*Dioscorea alata*) showed the highest antioxidant activities as per DRSA (26.23 ± 0.58 mg/g TE), TEAC (11.33 ± 4.27 mg/g TE) and RP (19.06 ± 0.08 mg/g AAE) whereas *Jamburala* (*Dioscorea alata*) showed the highest FICA (6.83 ± 0.23 mg/g EE). Recognizing the health-promoting effects of these yams, as evidenced by their phenolic content and antioxidant activities, is crucial for advocating the optimal utilization of these currently underutilized yams varieties.

Keywords: *Dioscorea* species, DPPH, RP, Soluble phenolics, TEAC