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Impact of different cooking methods on the Antioxidant content of selected underutilized tubers in Sri Lanka

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Tuber consumption has been limited only to common types where many underutilized varieties remain neglected and underexploited. The knowledge about the cooking methods to obtain the maximum nutritional benefits is also controversial. The present study characterized the antioxidant potential of tubers as affected by different cooking methods.

Twelve different underutilized tubers belonging to five species namely, *Dioscorea alata*, *Dioscorea esculenta*, *Xanthosoma sagittifolium*, *Alocasia indica* and *Amorphophallus campanulatus* were collected from Horticulture Research and Development Centre, Agriculture Department, Gannoruwa. The flesh of the tubers was processedwith six different cooking methods; oven drying, roasting, frying, open boiling, pressure cooking and steaming. Processed samples were analysed for their total phenolic content (TPC), 2, 2- diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity (DRSA), reducing power (RP), and ferrous ion chelating activity. The tests were performed in triplicates and the statistical analysis was carried out using SPSS software.

Ratala pressure cooked sample had the highest TPC whereas *Hingurala* flesh possessed the lowest and ranged from 1.8-95.2 µmols of gallic acid equivalent/g of dry weight (DW). DPPH radical scavenging activity of the tubers ranged from 1.50 to 245.1 µmols of trolox equivalent per/g of DW. The best Fe ion chelating ability was exhibited by *Kahatala* peel while *Guruala* open boiled sample possessed the lowest. Reducing power of the tubers varied between 3.35 and 118.56 µmols of ascorbic acid equivalent per /g of DW.

Pressure cooking and steaming revealed its suitability to retain the highest antioxidant potential among tested cooking methods. Further the potential of these underutilised tubers as natural source of antioxidants depends on the species and the cooking method.

Keywords: *Antioxidant activities; cooking methods; total phenolic content; underutilized tubers*

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