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A pilot study on quality parameters of commercially available black tea in Sri Lanka

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Tea is the most popular, widely consumed beverage next to water in the world. Tea is vital for the Sri Lankan economy as a main source of foreign exchange earnings and employment provider. 'Ceylon Tea' is considered the best quality tea in the world market. It is important to ensure maintenance of the high quality to sustain the reputation of 'Ceylon Tea'. Although adequate quality assurance measures are in place for tea exported, less attention is given to the tea in the local market. Therefore, this study was carried out to find the quality aspects of black tea available in the Sri Lankan market. Most popular branded tea samples available in the local market were selected through a survey while loose tea samples were randomly selected. To evaluate the quality of tea samples, the parameters of total ash, water-soluble ash, acid-insoluble ash, alkalinity of water-soluble ash, crude fibre and total polyphenol content were determined based on the methods recommended in the international standard ISO 3720:2011 – Black tea – Definition and basic requirements. In addition, antioxidant activity and total flavonoid content (TFC) were evaluated by DPPH (2,2-Diphenyl-1-picrylhydrazyl) assay and aluminium chloride colorimetric assay respectively. According to the results, percent mass fraction of total ash, water-soluble ash, acid-insoluble ash, alkalinity of water-soluble ash, crude fibre and total polyphenol content of tea samples varied in the ranges between 5.21% - 6.95%, 57.60% - 69.35%, 0.004% - 1.365%, 1.85% - 2.28%, 10.78% - 18.95%, and 23.29% - 44.76% respectively. The antioxidant activity/ IC₅₀ value of tea samples varied in the range of 32.91 - 49.06 µg/mL and the TFC of tea samples varied in the range of 399.82 - 659.12 µg/mL. Overall, with the limited number of samples tested, all branded tea samples satisfied the requirements of ISO parameters but two loose tea samples deviated from ISO requirements. In one sample acid insoluble ash was 1.37% and in another sample crude fiber content was 18.95%. Both were higher than the minimum ISO requirement. Results of the study indicate that analyzed branded tea meets the ISO quality requirements while some loose tea samples did not meet the quality requirements. Antioxidant activity and the total flavonoid content of branded and loose tea samples were almost similar. More stringent testing of tea in the local market, paying special attention to loose tea, is recommended to ensure the maintenance of high quality and the image of Ceylon tea.

Keywords: Antioxidants, Black tea, Ceylon tea, Flavonoid, ISO