Development of herbal tea with Masbedda (*Gymnema sylvertre* L.) and evaluation of its physicochemical, microbiological and sensory properties

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Abstract

Herbal tea products are popular among health conscious people in Sri Lanka as value added products. *Masbedda* is commonly used as a herbal medicine which can reduce blood sugar and serum cholesterol levels. A ready-to-consume herbal tea bag with Masbedda (*Gymnema sylvestre* L.) leaves was developed as a value added tea product. Triangle Sensory Test was carried out to determine the highest percentage of *Mabedda* leaves that can be added to black tea without adversely affecting the sensory properties of the final product. The physicochemical properties (dry matter and ash content) of the final product, named "Ruhunu" herbal tea, were also determined using the standard methods of the SLSI. Microbiological tests, namely Total Plate Count, Coliform and *E. coli* tests were also carried out to determine the microbiological properties of "Ruhunu" herbal tea. The sensory properties of "Ruhunu" herbal tea was compared with other commercial herbal tea products and commercial non-herbal tea products using a 5-point hedonic scale. A sensory panel consisting of 35 panelists was used in all sensory studies. Furthermore, a clinical test was conducted to determine the effect of "Ruhunu" herbal tea on absorption of sugar into the blood stream after a standard meal. Sensory data were analyzed using Kruskal Wallis non-parametric test using the SPSS statistical package.

It was observed that addition of 5% or more Masbedda leaves to black tea adversely affected the sensory properties of the herbal tea. Therefore, "Ruhunu" herbal tea bags were produced by mixing 4% of Mabedda leaves with black tea. The dry matter content and ash contents of "Ruhunu" herbal tea were 91.62% and 6.39%, respectively. Microbiological examination revealed that the product contained a total aerobic plate count of 2.1×10^6 CFU/g and a coliform count of 10^3 CFU/g. Moreover, "Ruhunu" herbal tea did not contain *E. coli*. In sensory evaluation between commercial herbal tea products and "Ruhunu" herbal tea, the total sum of ranks of "Ruhunu" herbal tea for taste, colour, aroma and overall acceptability were 136, 164, 149 and 158, respectively and "Ruhunu" herbal tea showed significantly ($P<0.05$) higher sensory properties. In sensory evaluation between commercial non-herbal tea products and "Ruhunu" herbal tea, the total sum of ranks of "Ruhunu" herbal tea for taste, color, aroma and overall acceptability were 131, 140, 120 and 129, respectively and "Ruhunu" herbal tea

showed moderately higher sensory scores. The consumption of "Ruhunu" herbal tea after a standard meal appeared to decrease the absorption of sugar into the blood stream in human volunteers. It can be concluded that herbal tea with 4% Masbedda leaves can be produced without changing the sensory properties. Further, the "Ruhunu" herbal tea, which shows significantly higher ($P<0.05$) sensory properties, can effectively reduce sugar absorption into the blood stream after a meal. "Ruhunu" herbal tea may be recommended for use by diabetes patients as an alternative medicine.

Keywords: Herbal Tea, Masbedda, Sensory Properties, Blood Sugar, Diabetes