

Effect of Sugar Component Changes during Processing of High Grown Black Tea using High Performance Liquid Chromatography Technique

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Abstract

Black tea, produced through a series of processing steps including withering, rolling, roll breaking, aeration, and drying of young tea shoots from *Camellia sinensis* (L.) plant, is cultivated in various agro-ecological regions in Sri Lanka. Among these regions, high grown teas from Dimbula, Nuwara-Eliya, Udupussellawa, and Uva are renowned for their distinct specialty qualities. Unfortunately, the tea industry has been facing challenges due to the adulteration of tea with sugar compounds, leading to a decline in the quality of Sri Lanka tea. This research aims to investigate the sugar contents, specifically fructose, glucose, and sucrose, in different grades of manufactured black tea from various high grown agro-ecological regions. Samples were collected from randomly selected tea factories, and the sugar contents were determined using High Performance Liquid Chromatography (HPLC). Additionally, professional tea tasters evaluated the sensory qualities of Broke Orange Pekoe Fannings (BOPF) grade and Dust 1 grade tea samples, providing complementary data for the study. The analysis revealed significant variations in sucrose content among black teas from different agro-ecological regions. The study established the average values for fructose, glucose, and sucrose in orthodox black tea produced in high grown elevation in Sri Lanka as 9.24 mg/g, 11.01 mg/g, and 16.42 mg/g, respectively. These findings provide valuable insights into the sugar composition of black tea, highlighting the impact of agro-ecological factors on sugar contents. This research contributes to addressing the issue of sugar adulteration in the tea industry, enabling quality control measures to preserve the authenticity and integrity of Sri Lanka's black tea production.

Keywords: *Agro-ecological region, Black tea, Quality*