

Comparison of Physicochemical and Sensory Characteristics Between Torch Ginger Flower Tea and Curry Leaves Tea

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Structured Abstract

Background: Black tea, derived from the leaves of the *Camellia sinensis* plant, contains caffeine, antioxidants, and other stimulants. It can be enjoyed hot or cold but must be steeped in hot water before cooling. The oxidation process transforms the fresh green leaves into a dark brownish-black colour through exposure to moisture and air, with manufacturers controlling the degree of oxidation; black tea is fully oxidized. Various black tea blends incorporate additional ingredients for flavour differentiation and brand development, often utilizing culinary herbs and spices. Curry leaves and torch ginger flowers are commonly added due to their unique aromas and nutritional benefits, including antioxidants and flavonoids.

Methods: Five different tea formulations were produced, including black tea as the control. Torch ginger flowers (TGF) and curry leaves (CLT) were added in amounts of 1.25 grams and 2.50 grams to the black tea. Each tea formulations were assessed using pH, colour analysis, total phenolic and flavonoid content as well as antioxidant activity (ABTS, FRAP, and DPPH assays). Volatile compound analysis was conducted using Gas chromatography-mass spectrometry (GC-MS). Sensory evaluation was conducted to determine the acceptability of each tea formulation.

Results: The pH of TGF 2.50 (5.23) decreased due to organic acids, while colour analysis showed similar results across formulations due to the dominance of black tea. TGF 2.50 had the highest Total Phenol Content (16.09 mg GAE/g), Total Flavonoid Content (11.77 mg QE/g), and tannin content (16.70 mg TAE/g), correlating with its phenolic compounds. It also exhibited the highest antioxidant activity (ABTS: 62.51%, FRAP: 30.16 mg Trolox/L, DPPH: 72.18%). All formulations showed slightly the same caffeine levels as torch ginger flowers and curry leaves lack caffeine content. Sensory evaluation by 50 panellists aged 18–30 found no significant differences ($p>0.05$) in colour, aroma, astringency, aftertaste, or overall acceptability, indicating that all formulations were equally acceptable.

Conclusion: In conclusion, adding curry leaves and torch ginger flowers to black tea significantly enhanced its antioxidant properties while maintaining sensory acceptability. This addition also resulted in caffeine-free formulations. These findings indicate the potential for creating new tea formulations that can enhance health benefits.

Keywords: Antioxidant, Black tea, Curry leaves, Torch ginger flowers

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