

## Seasonal Variations of Plant Pigments in New Hybrid Tea [*Camellia sinensis* (L.) O. Kuntze] Population

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Tea is an ancient and popular beverage. It has various merits for human health such as antibacterial, antiviral, diuretic, and anti-carcinogenic effects. Tea has been consumed in the world such as green, black, yellow, white, oolong and purple teas. Plant pigments available in tea has many health properties. It is important to develop new tea cultivars with variable amounts of pigments. This study focused on quantification of chlorophylls and carotenoids in fresh tea leaves of a new hybrid progeny derived from crossing TRI 3055 and TRI 2043 during December 2019 to January 2020 as dry season and February 2020 to March 2020 as wet season. Two fresh leaves and bud from 68 accessions were obtained from field number 9, St.Coombs state, with 2 replicates from one sample. The annual pigments contents in fresh tea leaves were extracted using acetone 80% (v/v) and quantified using standard spectrophotometric method. Absorbance of chlorophyll a, chlorophyll b and carotenoids were measured at 663 nm, 646 nm and 470 nm, respectively. Significant difference ( $p < 0.05$ ) was not observed for chlorophyll a and chlorophyll b, total chlorophyll and carotenoids between accessions developed from direct cross and reciprocal cross. Content of chlorophyll a, chlorophyll b and total chlorophyll was significantly high in wet season. Total chlorophyll content was varied from 3.90 mg/g to 9.24 mg/g. Total carotenoids concentration was ranged from 0.24 mg/g to 0.77 mg/g. Accession number 34 reported high carotenoid (0.58 mg/g) and low chlorophyll content (4.16 mg/g), which could be a potential cultivar for yellow tea production. Accessions numbers 41, 45, 109, 78 and 151 with high chlorophyll content were identified as good accessions for black tea production. Information generated from the study is useful in identifying potential accessions for producing yellow tea and black tea.

**Keywords:** Black tea, Hybrid population, Tea pigments, Yellow tea