

Bio-Chemical Evaluation of Selected Sri Lankan Tea (*Camellia sinensis* L.) Cultivars and Accessions for Production of Green Tea.

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Two major types of tea, “green tea” and “black tea” are produced from the young shoots of *Camellia sinensis* L. employing different processing methods. Sri Lanka traditionally produces black tea and the existing cultivars are more suitable for black tea production. However, due to the increased demand for green tea in certain countries, it could be economically advantageous for some Sri Lankan factories to produce green tea for niche markets. Therefore, this study was conducted to evaluate the potential of using selected Sri Lankan tea cultivars and accessions for the production of green tea.

Tender shoots (two leaves and the bud) from 35 cultivars/accessions from St. Coombs Estate, Tea Research Institute of Sri Lanka, Talawakelle were steamed and dried to obtain green tea samples. Total polyphenol, catechin, free amino acid and caffeine content were determined by UV-vis spectrophotometric methods. Crude fiber content was determined according to ISO 5498. Three Chinese green tea samples were used as the controls.

Crude fiber content was found to be < 16.5 %. Total polyphenol and catechin were found to be in the range of 9.55-26.19 % and 7.91-20.07 % respectively, while free amino acids and caffeine were found in the range of 0.83-5.31 % and 3.98-7.60 % respectively. According to the correlation matrix of different bio-chemical parameters, positive correlation was identified between catechin and total polyphenol content. Besides total polyphenol content had a significant negative correlation with amino acid content. Principal Component Analysis (PCA) revealed that, total polyphenols, amino acids and catechins are the main contributing characters. Based on the first three PCs, analyzed tea samples clustered into three main groups at an average distance of about 1.00. The group I comprised of fourteen cultivars/accessions. Eight cultivars/accessions were included in group II whereas group three represented sixteen cultivars/accessions. Comparatively high amino acid content (1.72-5.06%), low total polyphenol (9.55-18.30%) and caffeine (4.08-5.80%) of cultivars/accessions in group II (CY 9, TRI 62/5, WHMOR, TRI 4079, PLLG 2 and DN) warrants them to be considered as potential cultivars/accessions for green tea production.

Keywords: Camellia sinensis L., green tea, tea cultivars, tea accessions

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