

## **Quantification of L-theanine Content of Two Selected Tea Cultivars [*Camellia sinensis* (L.) O. Kuntze] Grown in Sri Lanka**

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L-theanine is an abundant non-protein amino acid that accounts for more than 50% of the total free amino acid in the green tea leaves, having various pharmaceutical importance. The study was conducted to determine the variation of L-theanine content of commonly growing tea cultivars, TRI 2025, and TRI 4053 among all tea-growing agro-ecological regions in Up, Mid, and Low Country of Sri Lanka, concerning one month before and after the onset of rainfall periods. Fresh tea leaves were collected from same-aged plants by using stratified sampling techniques and samples from each stratum were selected randomly from different tea estates of each agro-ecological region in all three elevations of Sri Lanka. Collected samples were oven-dried at 50°C for 12 hours and hot water (85°C) was used to extract L-theanine from fresh tea leaves. The High-Performance Liquid Chromatographic technique with ultraviolet detection (RP-HPLC-DAD-UV) was optimized and validated to quantify L-theanine content according to conditions of Csopor's method with slight modifications. Data acquisition and evaluation were performed using Chromeleon software. The findings of this study showed that the total L-theanine contents (gg<sup>-1</sup>%) were significantly different ( $p < 0.05$ ) among the tea growing agro-ecological regions in both TRI 2025 and TRI 4053 in Up, Mid and Low Country of Sri Lanka. The highest total L-theanine contents were recorded in IU3d, WU2b, and WL1b-E1 of TRI 2025 and IU3a, IM3a, and WL2a-E3 of TRI 4053 in Up, Mid and Low Country respectively. Significant variation in total L-theanine content in TRI 2025 and TRI 4053 in all three major elevations one month before and after the onset of rainfall was observed. Total L-theanine content (gg<sup>-1</sup> %) was ranged from 0.04 - 7.96% in all three elevations in Sri Lanka and it was higher than reported values from Kenya. This study evident that Ceylon tea is having higher quality in terms of L-theanine content.

**Keywords:** Agro-ecological regions, Low country, Mid Country, Total L-theanine, Up Country