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High Performance Liquid Chromatography of L-Theanine Content in Sri Lankan Tea

P.A. Nimal Punyasiri[1], A.M. Tissa Amarakoon[3], H.P.P. Sudharshana Somasiri[2], Ganeesha Thotawattage[1], I.S.B. Abeysinghe[1]

[1]*Biochemistry Division, Tea Research Institute of Sri Lanka, Talawakelle, Sri Lanka*
[2]*.Chemical and Microbiological Laboratory, Industrial Technology Institute, 363, Baduddhaloka Mawatha, Colombo 7, Sri Lanka,* [3]*.Department of Chemistry, University of Kelaniya, Sri Lanka*
E-mail: pnimal@hotmail.com

L-Theanine (5-N-ethyl glutamine) a unique non-protein amino acid found in tea has been reported to have relaxation and neuroprotective effects on the brain. As this has led to a renewed interest, an investigation was carried out to ascertain the levels of L-theanine of Sri Lankan tea produced in different regions, namely Dimbulla, Nuwara Eliya, Uda Pusellawa, Uva, Kandy, Sabaragamuwa, Ruhuna and their respective sub-regions. In this study High Performance Liquid Chromatographic method coupled with online pre-column derivatisation using O-pthaldehyde and fluorescence detection was used to quantify L-theanine. The method was pre-validated using control samples and a recovery study.

The L-theanine content in Sri Lankan black tea ranged from 0.91 – 1.29 % and in green tea ranged from 0.26 – 1.49 % on dry weight basis. Malwatte valley sub-region of Uva, Sabaragamuwa and Ruhuna regions showed the highest contents of L-theanine which were 1.28 ± 0.05 %, 1.05 ± 21 and 1.28 ± 0.05 % respectively. The lowest values were observed from Bandarawela sub-region of Uva and Bogawantalawa sub-region of Nuwara-Eliya which were 0.91 ± 0.08 and 0.93 ± 0.25 respectively.

Therefore, consumption of 2 cups of tea would provide 46 – 63 mg of theanine. Previous studies have shown that consumption of 50 – 200 mg of L-theanine results in relaxation effects on the brain.