

Pesticide Residues in *Alternanthera sessilis* and *Centella Asiatica* Grown in Selected Locations in Sri Lanka

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ABSTRACT

Growing concerns over food safety and the expanding world agricultural trade have led to enforcement of stringent pesticide regulations in Sri Lanka. Pesticide residues from total of 30 samples were collected from two popularly grown Green Leafy Vegetables (GLV), namely, *Alternanthera sessilis* (Mukunuwenna) and *Centella asiatica* (Gotukola) to evaluate the residue contents against five widely used pesticides (Chlorothalonil, Phenthoate, Profenophos, Fipronil, Tebuconazole) in Sri Lanka based on a farmer survey using a pre-tested questionnaire. A five samples from each GLV was collected from fields located in Kandy, Puttalam, and Kalutara districts during the the period of March to June 2017. Samples were extracted according to the quick, easy, cheap, efficient, rugged, safe (QuEChERS), as per AOAC official method 2007.01 by application of a single step buffered acetonitrile extraction. Salting out liquid-liquid partitioning from water in the sample with MgSO₄ and clean-up were done by dispersive solid-phase extraction. Concentrated samples were analyzed by GC-MS in Selective Ion Mode (SIM) and the presence of pesticides was confirmed with Retention Time (RT) and Mass Spectrum (MS). Matching of RT and MS data of the sample peak with that of the Certified Reference Materials (CRM) resulted in unambiguous identification of the pesticides present in the samples. Recovery studies at three spiking concentration levels, i.e. 1 LOQ, 5 LOQ and 10 LOQ, varied from 80.8% to 98.1%, with a Relative Standard Deviation (RSD) below 20 per cent. Forty percent of the samples obtained from Kalutara, 40% from Puttalam and 20% from Kandy contained at least one of the five pesticides. Among the vegetable samples tested, Fipronil, Phenthoate, Profenophos, and Tebuconazole were positively detected in 17.4%, 8.7%, 56.5% and 17.4%, respectively except Chlorothalonil in 30 samples tested. Profenophos and Tebuconazole residues were detected up to 7.5 ppm. The results revealed that the presence of pesticide residues in the two commonly consumed GLVs tested across three districts in this study. Monitoring studies should be expanded to other districts in order to provide a scientific basis for future policy directives on the quality standards and quality control process of leafy vegetables.

Key words: Green leafy vegetables, LOQ, Pesticide residues, QuEChERS

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