



Residual and health risk assessment of pesticides in commonly consumed vegetables of Panipat, Haryana, India

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Abstract : A study was conducted to monitor the presence of 52 pesticides in 168 samples commonly consumed vegetables. Samples of cabbage (24), cauliflower (36), brinjal (17), tomato (20), cucumber (21), chilli (25) and okra (ladyfinger) (25) were received from Directorate of Horticulture, Panipat, Haryana. Quick, Easy, Cheap, Effective, Rugged, and Safe (QuEChERS) method was used for the extraction and processing of samples whereas concentrations and confirmation of pesticide residues were determined by Gas Chromatography and Mass Spectrometry. A total 168 samples were screened for 52 commonly applied pesticides. Chlorpyrifos, pretilachlor, pendimethalin, triazofos, profenofos and atrazine were present in 34% of the samples. Total 56 contaminated samples were recorded, among which 54% of the them were found above maximum residue limit (MRL). Chlorpyrifos and pretilachlor were present in 46% of the total contaminated samples. The assessments of risk on human health were calculated for pesticide residues present in the samples. Health risk assessment of vegetable samples carried out indicated that 3 samples of brinjal, 2 of cabbage, 3 of cauliflower, 3 cucumber, 2 of okra and 1 of tomato were at high Health Risk Index ($HRI \geq 1$). All the contaminated chilli samples and rest contaminated samples of above vegetables were free from any health risk ($HRI \leq 1$).

Keywords : Vegetables; India; QuEChERS; Pesticide residues; Health Risk Index

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