

## **ABSTRACT**

**Studies on risk analysis of some organophosphorus pesticides in food.**

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This study aimed to: (1) monitor the presence and concentrations of a total of 100 pesticides in 608 samples of 19 different vegetables, leafy vegetables and fruits collected from local markets of 8 Egyptian governorates during 2011 season, (2) estimate the potential health risks associated with intakes of each violated pesticide residue on each commodity. A multi residue method based on the Quick Easy Cheap Effective Rugged and Safe (QuEChERS) was used for sample preparation and gas chromatography coupled to mass spectrometry (GC-MS/MS) and liquid chromatography coupled to mass spectrometry (LC-MS/MS) was adopted for the analysis of pesticide residues.

The results obtained indicated that 50.2% of all samples were contaminated with pesticides, and 17.43% contained pesticide residues above the maximum residue limits (MRLs). Results illustrated that the most common pesticide residues found were carbendazim (95 samples), chlorpyrifos (77 samples),  $\lambda$ -cyhalothrin (70 samples), profenofos (63 samples), sulfur (40 samples), and malathion (29 samples).

The most frequently pesticides found above the MRL for the whole samples were profenofos (17 samples), carbendazim (15 samples) and malathion (15 samples), ethion (12 samples), dimethoate (9 samples), and chlorpyrifos (8 samples).

On the whole, orange reported the highest percentage of positive samples (93.75%), followed by pepper (90.62%), cucumber (84.37%), grape (81.25%), apple (65.62%), tomato (62.5%), green beans (53.12%), potato (53.12%), eggplant (43.75%) and green parsley (43.75%). MRL values were exceeded most often in orange (46.88%) followed by green parsley (40.63%), grape leaf (31.25%) and cucumber (25%). In contrast, no violated pesticides were found in watermelon and mango samples. About 24.84% of the positive samples contained organophosphorus compounds followed by benzimidazole (18.26%), pyrethroid (15.13%) and carbamate (7.07%).

The results of Estimated Daily Intake (EDI) were far below the acceptable daily intake (ADI) as established by FAO/WHO, which indicated that consumption of vegetables, leafy vegetables and fruits from Egyptian markets were at little risk to human health in term of violated pesticides in this study at present. The most critical pesticides were phenthoate on potato, methamidophos on grape, carbaryl on potato,  $\gamma$ -HCH on potato and omethoate on orange which contribute 42.84, 22.13, 11.64, 9.66 and 8.8% of the hazard index (HI), respectively.

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