

## **Dietary Exposure to Pesticide Residues from Fresh Fruits and Vegetables in Lebanon**

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### **Abstract:**

This paper evaluates the dietary exposure of Lebanese adults to 90 pesticides residues from fresh fruits and vegetables. The study was carried out using Total Diet Study protocol in North Lebanon: Tripoli EL Minaa (Urban area). A total of 525 samples of fresh fruit and vegetables were purchased from the main urban markets and supermarkets in Tripoli during June, 2017 till August, 2017. Then, transported to the laboratory within 24 h. Composite samples of similar group were analyzed, following the QuEChERS multiresidue method. Thirty one residues were detected/quantified in at least one composite sample, with 87.5 % of the results being quantifiable and 12.5% detectable. Quantifiable levels extended from 10 and 430 µg/kg. For the composite samples where residues were detected, 13% had one residue, while 37% had 2-5 residues, and 20% had 6-9 residues. The most frequently detected/quantified pesticides residues included Chlorpyrifos, Cypermethrin, Difenconazole and Methomyl. The dietary exposure assessment was conducted using deterministic method with two approaches: Lower bound (LB) and the Upper bound (UB). Using the LB scenario, mean estimated daily exposures were higher compared to other countries but it were below the acceptable daily intakes (ADIs) for all investigated pesticides residues except for Chlorpyrifos when ADIs is equal to 0.001 mg/kg/bw/day (116%). It is worth mentioning that Diazinon and Malathion were not detected in any composite sample. Using the UB scenario, which tend to overestimate the exposure, mean estimated daily exposures were below the ADIs for residue except for chlorpyrifos (120%).

### **Keywords:**

Adults, Dietary exposure, Lebanon, Pesticide residues, Risk characterization, and Total diet study.