Applicant Information

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Abstract Details

Title:

HPLC-MS Assessment of Pesticide Residues in Selected Fruits and Vegetables at the Ho Central Market

Category:

Socio-ecological determinants of Health (climate change and One Health)

Authors:

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Objectives:

This research aimed to assess the levels of pesticide residues in fruits and vegetables sold at Ho Central Market, Ghana, sourced from different regions. It specifically analyzed residue levels during both the dry and wet seasons, comparing the findings to the EU Maximum Residue Limits (MRLs) to evaluate food safety compliance.

Method:

Samples of pineapples, okra, tomatoes, and mangoes were collected using stratified random sampling during dry and wet seasons. High-Performance Liquid Chromatography with Tandem Mass Spectrometry (HPLC-MS/MS) was used to analyze pesticide residues, and the results were compared to EU MRLs to assess compliance and potential health risks.

Results:

During the dry season, 33.33% of samples collected and analyzed, contained detectable pesticide residual levels, with the chemicals Thiamethoxam (55.5976 Âµg/ml, 12.9691 Âµg/ml, 33.2758 Âµg/ml) and Emamectin benzoate (44.9738 Âµg/ml, 24.5620 Âµg/ml) exceeding Maximum Residue Limits (MRLs) in pineapples and okra. In the wet season, all samples collected and analyzed, detected at least one pesticide, with tomatoes showing a 51.67% detection rate. Chlorfenvinphos (14.5793 Âµg/ml) exceeded MRLs in tomatoes.

Conclusion:

The study reveals significant pesticide contamination in fruits and vegetables being sold at the Ho Central Market, with levels exceeding EU safety limits. This poses significant health risks, including cancer, birth defects, and nervous system damage, highlighting the urgent need for stricter pesticide regulations and improved monitoring practices to ensure consumer safety.

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