

Use of Chromatography and Mass Spectrometry in Quality Control of some Vegetables and Fruits sold on the Romanian Market

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Abstract. The study aims to optimize and validate the QuEChERS extraction method and develop a multi-residue separation method for the detection of the 74 pesticides studied (frequently used in spraying treatment on vegetables and fruits).

The study presents the experimental results regarding the dynamics of pesticides in apples on the Romanian market, both in the organic and in the ordinary Romanian ones.

The optimized QuEChERS extraction method was used to determine the pesticide residues and the final extract was analyzed using an EXION LC - Sciex chromatograph liquid coupled to a SCIEX QTRAP 4500 mass spectrometer.

Keywords: *pesticides in fruits and vegetables, chromatographic liquid analysis, mass spectrometry, food safety*

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1. Introduction

The study entitled Determination of pesticide residues from plant products aimed at ensuring compliance with the maximum permitted limits and assessing consumer exposure to these substances has as a fundamental objective the development of studies and research to investigate the accumulation of pesticides in fruits and vegetables, by developing and implementing an experimental program that will use advanced methodologies, techniques and equipment for analysis and interpretation of results.

Ideally, a pesticide should be lethal only to targeted pests, but not to non-target species, including humans. Unfortunately, this is not possible, so there has been an ongoing controversy over the use and abuse of pesticides. The rampant