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ABSTRACT LIMIT IS 250 WORDS

# Template

**Qualitative Aspects in the Analysis of Pesticide Residues in Fruits and Vegetables using Fast, Low-Pressure GC/TOF**

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Quantitative method validation is a well-established process to demonstrate trueness and precision of the results with the method.  However, an assessment of qualitative results is also an important need to estimate selectivity and devise identification criteria for chemical residues with the method.  For multianalyte analysis, automatic instrument software is commonly used to identify the target analytes by comparison of their mass spectra against a database library.  Especially at low residues levels in complex matrices, manual checking of results is typically needed to correct the peak assignments and integration errors, which is very time-consuming.  Low-pressure gas chromatography− mass spectrometry (LP-GC/MS) has been demonstrated to increase the speed of analysis for GC-amenable residues in various foods and provide more advantages over the traditional GC-MS method.  In this study, we used LP-GC/MS on a time-of-flight (TOF) instrument for the quantification and identification of 150 pesticides in strawberry, tomato, potato, orange, and lettuce samples.  The LP-GC/TOF provided high sample throughput with <10 min analysis time.  In a quantitative validation, acceptable performances were achieved with overall recoveries 70-120% and <20% RSD for >126 analytes in >180 sample extracts at 3 spiking levels.  In a qualitative assessment, we analyzed in blind fashion 130 samples spiked randomly with different pesticides at different levels in the different matrices.  We compared automated software evaluation with manual assessments in terms of false positive and negative results.  The automated approach yielded a slightly higher rate of false results, but with shorter time for data analysis compared to the manual verification approach.