

Validation of Multiresidue Method for Analysis of 31 Pesticides in Rice Using Gas Chromatography-Tandem Mass Spectrometry.

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Abstract

Five modified QuEChERS were tested for the multiresidue analysis of 31 pesticides in rice. Rice was spiked with mixtures of pesticides at 10 ng/g. Method selection was based on the LODs (sensitivity) and recovery tests (accuracy) of the pesticides. Analysis was done in GC-tandem MS in multiple reaction monitoring mode with a total run time of approximately 37 min. The selected method was validated after spiking rice at 20 and 100 ng/g in rice. The performance characteristics of the method impacted for all selected pesticides were acceptable according to the guidelines for method validation (recovery of 70-120% with an RSD of <20% and r^2 value of ≥ 0.99). For rice, matrix effect on the signals of the compounds was corrected by using matrix-matched calibration standards. The LOQs met the requirements of the maximum residue limits for pesticides in rice. The developed method allowed for the simultaneous determination and confirmation of a large number of different groups of pesticides and was fast, simple, inexpensive, and useful for the routine analysis of rice.