Validation of a method for determination of some organophosphate residues

N. Tangmunkongvorakul, O. Arquero

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Abstract

Currently, validation of the method of residue analysis is particularly important for the reliability, accuracy, and precision of analysis reports. The research was done to validate a method for determination of some organophosphate pesticide residues, i.e., diazinon, malathion, pirimiphos-methyl, chlorpyrifos, and ethion in plant samples, analyzed by GC-FPD with a (5%-Phenyl)-methylpolysiloxane capillary column. It was found that the method range and linearity were greater than 0.005 mg/kg (R2>0.99). For the accuracy and precision of the criteria specified in the AOAC manual for the peer verified methods program (1993), the results were acceptable, as indicated by the percentages of analyte recovery, and HORRAT values were less than 2.0. The resolution values were close to 1 which indicated good extraction. The limit of detection (LOD) and the limit of quantification (LOQ) were in the range of applications for the residue analysis. Therefore, this analysis method is considered to be appropriate for residue analysis, and may be used to obtain the laboratory accreditation standard (ISO/IEC 17025) in the future.