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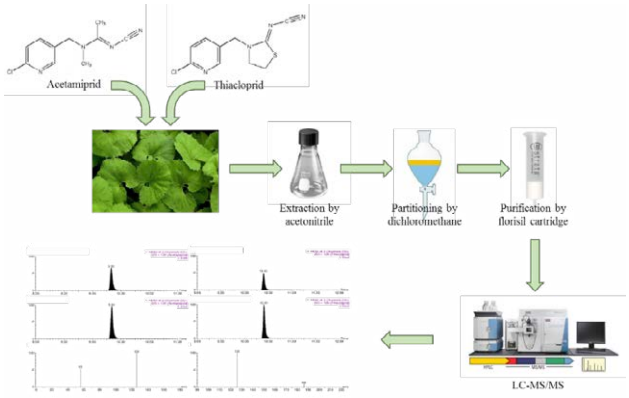
Quantification of acetamiprid and thiacloprid residues in field-incurred butterbur samples using liquid chromatography-tandem mass spectrometry

Han Sol Lee, Hyung Suk Chung, Md Humayun Kabir, Md Musfiqur Rahman and **Jae-Han Shim**
Chonnam National University, South Korea

An analytical method was developed to quantify the residual levels of the neonicotinoid insecticides acetamiprid and thiacloprid in field-incurred butterbur samples using liquid chromatography-tandem mass spectrometry. Samples were extracted with acetonitrile and partitioned with dichloromethane. After partitioning, purification was conducted using a Florisil® cartridge. Linearity of the two compounds over a concentration range of 0.004–0.4 µg/mL was excellent, with determination coefficients (R2)≥0.9998. The limits of detection (LOD) and quantitation (LOQ) for both acetamiprid and thiacloprid were 0.0006 and 0.002 mg/kg, respectively. The average recoveries for acetamiprid and thiacloprid at two spiking levels (0.02 and 0.1 mg/kg, i.e., 10×LOQ and 50×LOQ) were between 78.23 and 82.15%, with relative standard deviations≤7.22%. The method was successfully applied to field-incurred samples treated with a commercial pesticide product, either once (zero or 7 days before harvest) or twice (0 and 7, 7 and 14, or 14 and 21 days before harvest). The highest and lowest residues were obtained for the 0 and 7 days' treatment and the 14 and 21 days' treatment, respectively. The developed method is simple and accurate and can be extrapolated to other leafy vegetables.



Biography

Han Sol Lee is pursuing her Master degree at Chonnam National University, South Korea. She is interested in agricultural food safety from harmful materials such as pesticides and veterinary antibiotics. She participated in many projects that developed the analytical method for determining pesticides and veterinary antibiotics in several environmental factors such as crops, water, and monitoring.

fjqngksthf@naver.com

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