Determining Rest Concentration of Diazinon in Agriculture Products (Melon And Cucumber) with GC-NPD and GC-MS Methods

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ABSTRACT
Introduction: Diazinon is a moderately toxic broad-spectrum organophosphate, with a LD50 of 350 to 400 mg/kg for humans. Diazinon is absorbed through the skin and gastrointestinal tract and is rapidly metabolized within a few hours. Diazinon residues in melons and cucumbers have recently became a major health concern in Iran. Thus we decided to investigate Diazinon levels in melon and cucumbers.

Method and Materials: Twenty cucumbers and 30 melons were randomly purchased from the market in Mashhad. The extraction procedure was in HR-P columns precondition with methanol and water. The subsequent elution of diazinon was accomplished by a mixture of hexane-ethyl acetate (1:1, v/v) prior to determination by GC-NPD and GC-MS/MS. Standards were prepared spiking blank juice samples to contract the observed matrix effect.

Results: Mean recovery rate for diazinon was 95.4% with relative standard deviation lower than %9 in a concentration range of 5-200ng/ml. Mean and SD of diazinon in melons was 107.64±38.5 ng/kg. Diazinon was not detected in cucumber samples. It was later confirmed that diazinon was not used for the crops of these cucumbers.

Conclusions: GC-NPD and MS/MS was developed to determine residues of diazinon in melons and cucumbers. The GC-MS/MS analytical method showed a high efficacy for determination of dizinon residues in the fruits.

Keyword: Diazinon, Pesticides, Melon, Gaschromatography, Massspectrometry, SPE.

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