

固相萃取-三重串联四极杆气相色谱/质谱联用分析蔬菜中43种农药残留

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Analysis of 43 pesticide residues in vegetables using solid-phase extraction and gas chromatography-triple quadrupole mass spectrometry

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摘要 建立了气相色谱/三重四极杆串联质谱同时分析蔬菜中43种农药残留的方法。采用乙腈提取样品中待测组分,经固相萃取法(SPE)净化后采用气相色谱/三重四极杆串联质谱在多反应监测(MRM)模式下进行外标法定量测定。分别对青菜进行3个水平(10、80、200 µg/kg)的加标回收试验,其回收率为62.2%~170.0%,其中36种农药的回收率为70.0%~120.0%。方法的相对标准偏差(RSD)小于18%,定量限(LOQ)为0.3~4.4 µg/kg。该分析方法背景干扰低,灵敏度高,适合蔬菜中多种农药及杀虫剂残留的测定。

关键词: 气相色谱-串联质谱 固相萃取 农药残留 蔬菜

Abstract: A method for the simultaneous analysis of 43 pesticide residues in vegetables by gas chromatography coupled with triple quadrupole mass spectrometry (GC-QqQ-MS/MS) was developed and validated. The samples were extracted with acetonitrile, and then purified by solid-phase extraction (SPE). The detection of 43 pesticides was carried out by GC-QqQ-MS/MS in the multi-reaction monitoring (MRM) mode using external standard method. The overall recoveries determined at three spiked levels of 10, 80 and 100 µg/kg were 62.2%~170.0%, which in the recoveries of 36 pesticides were 70.0%~120.0%. The relative standard deviations (RSDs) were less than 18%. The limits of quantification (S/N≥10) were 0.3~4.4 µg/kg. The method possesses low background and high sensitivity. It can be applied to the routine analysis of the 43 pesticides in vegetables.

Keywords: gas chromatography-tandem mass spectrometry (GC-MS/MS) solid-phase extraction pesticide residues vegetables

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