

## 液相色谱-电喷雾串联质谱法测定生姜中的215种农药残留

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## Determination of 215 pesticide residues in ginger using liquid chromatography with electrospray ionization tandem mass spectrometry

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**摘要** 建立了生姜中215种农药多残留测定的液相色谱-电喷雾串联质谱(LC-ESI-MS/MS)方法。样品用1%醋酸-乙腈溶液均质提取, Vac固相萃取柱净化,乙腈-甲苯(3:1, v/v)洗脱,旋转蒸发浓缩至约0.5 mL后,于室温氮气吹干,用乙腈-水(3:2, v/v)溶解,以电喷雾电正离子多反应监测(MRM)模式下进行测定。在定量限水平进行添加回收率实验,方法的回收率范围为68.1%~132.6%,其中回收率:120%的占94.4%,相对标准偏差(RSD)范围为0.4%~25.0%。方法的检出限(S/N=3)和定量限(S/N=10)范围分别为0.01~70.04~234.84 μg/L。该方法操作简便,灵敏度、准确度和精密度均符合农药多残留检测技术要求,适用于生姜中215种农药多残留。

**关键词:** 液相色谱-电喷雾串联质谱 农药多残留 生姜

**Abstract:** A multiresidue analytical method was developed for the determination of 215 pesticides in ginger using liquid chromatography coupled with electrospray ionization tandem mass spectrometry (LC-ESI-MS/MS). The pesticides were extracted from ginger by acetonitrile containing 1% (v/v) acetic acid, cleaned-up by a Sep-Pak Vac cartridge with acetonitrile-toluene (3:1, v/v). The eluate was concentrated to about 0.5 mL with a rotary evaporator, dried with nitrogen at room temperature. The sample was redissolved in an acetonitrile-water mixture (3:2, v/v), then analyzed using LC-MS/MS in multiple reaction monitoring (MRM) mode via positive electrospray ionization. The recovery experiment was conducted at spiked level of limit of quantification (LOQ). The validation results were as follows: the overall recoveries were from 68.1% to 132.6% of which 94.4% of the recoveries were from 70% to 120%, with the relative standard deviations of 0.4%-25.0%. The limits of detection (S/N=3) and the limits of quantification (S/N=10) were 0.01-70.04 and 0.04-234.84 μg/L, respectively. The results demonstrated that this method is simple and with acceptable accuracy to meet the requirements of the multiple pesticide residue analysis. This method is applicable to 215 pesticide residues in ginger.

**Keywords:** liquid chromatography-electrospray ionization tandem mass spectrometry (LC-ESI-MS/MS) multiple pesticide residues ginger

Received 2010-01-14; published 2010-06-28

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