

在线凝胶渗透色谱-气相色谱/质谱法检测茶叶中的153种农药残留

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Determination of 153 pesticide residues in tea using on-line gel permeation chromatography-gas chromatography/mass spectrometry

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摘要 建立了在线凝胶渗透色谱-气相色谱/质谱(GPC-GC/MS)分析茶叶中153种农药残留的方法。样品用乙腈超声提取,提取液经石墨化炭黑固相萃取柱净化后,经GPC-GC/MS在线净化、分离和检测。方法的加标回收率为73.32%~117.05%,相对标准偏差为0.76%~13.18%。方法的检出限和定量限范围分别为0.0003~0.006 mg/kg和0.001~0.02 mg/kg。该方法样品前处理简单、分析时间短,灵敏度和精密度均符合农药多残留检测技术的要求,适用于茶叶中多种农药残留的检测。

关键词: 在线凝胶渗透色谱 气相色谱-质谱 多农药残留 茶叶

Abstract: A method was developed for the determination of 153 pesticide residues in tea using on-line gel permeation chromatography-gas chromatography/mass spectrometry (GPC-GC/MS). The pesticide residues were extracted with acetonitrile under ultrasonic operation, and the extract was first cleaned up with an ENVI-carb solid phase extraction column and then separated and detected with the on-line GPC-GC/MS system. The recoveries of the method ranged from 73.32% to 117.05% with the relative standard deviations (RSDs) from 0.76% to 13.18%. The limits of detection and the limits of quantification were 0.0003–0.006 mg/kg and 0.001–0.02 mg/kg, respectively. This method is simple, rapid and characterized with acceptable sensitivity and accuracy to meet the requirements for the analysis of multiple pesticide residues in tea.

Keywords: on-line gel permeation chromatography (GPC) gas chromatography/mass spectrometry (GC/MS) multiple pesticide residues tea

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