

研究论文

液相色谱-电喷雾串联质谱法检测鸡组织中5种聚醚类药物残留

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摘要 建立了鸡组织中聚醚类药物多残留检测的高效液相色谱-电喷雾串联质谱方法。采用甲醇提取鸡组织中的拉沙洛菌素、盐霉素、莫能菌素、甲基盐霉素和马杜霉素,经硅胶柱净化,以乙腈(含0.1%甲酸)-0.1%甲酸水溶液(体积比为97:3)为流动相,Symmetry Shield RP18作为色谱分析柱,多反应监测(MRM)正离子扫描方式进行质谱检测。当5种聚醚类药物的添加水平为鸡肉0.1~1500 μg/kg、鸡肝0.2~4500 μg/kg时,平均回收率为71.6%~99.1%,日内测定的相对标准偏差(RSD)(n=5)为3.2%~10.7%,日间RSD(n=3)为4.6%~14.7%。2种鸡组织中5种聚醚类药物的定量限为0.1~1.0 μg/kg。该方法的灵敏度、准确度和精密度均符合兽药残留分析技术的要求,适用于鸡肉和鸡肝中5种聚醚类药物的多残留检测。

关键词 [液相色谱-电喷雾串联质谱法](#) [聚醚类药物](#) [鸡肉](#) [鸡肝](#)

Determination of 5 polyether antibiotics in chicken tissues by liquid chromatography-electrospray ionization tandem mass spectrometry

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Abstract

A liquid chromatography-electrospray ionization tandem mass spectrometry (LC-ESI MS/MS) method for the determination of 5 polyether antibiotics (lasalocid, salinomycin, monensin, narasin and maduramicin) in chicken tissues was developed. The polyether antibiotics were extracted from chicken tissues with methanol. The extract was evaporated to dry, and redissolved in hexane, then cleaned up on a Sep-Pak Silica solid-phase extraction cartridge. The target drugs were eluted with 6 mL methylene chloride-methanol (90:10, v/v), and the eluate was collected and dried under a gentle stream of nitrogen gas, then the residue was dissolved with 1 mL acetonitrile (containing 0.1% formic acid) and analyzed by LC-MS/MS. The LC separation was performed on a Symmetry Shield reversed phase C18 bonded silica column with acetonitrile (containing 0.1% formic acid) - 0.1% formic acid (97:3, v/v) as mobile phase. The quantification was carried out by positive electrospray ionization and multiple reaction monitoring (MRM) mode. The validation was carried out on spiked chicken muscle (spiked at 0.1~1500 μg/kg) and chicken liver (spiked at 0.2~4500 μg/kg), the average recoveries of target drugs ranged from 71.6%~99.1% with intra-day relative standard deviations (RSDs) of 3.2%~10.7% and inter-day RSDs of 4.6%~14.7%. The limits of quantification (LOQs) in chicken muscle and liver were 0.1~1.0 μg/kg. The results demonstrated that the sensitivity, accuracy and precision of this method meet the requirements of veterinary drug residue analysis. The method is applicable to detect 5 polyether antibiotics in chicken muscle and liver.

Key words [liquid chromatography-electrospray ionization tandem mass spectrometry \(LC-ESI MS/MS\)](#) [polyether antibiotics](#) [chicken muscle](#) [chicken liver](#)

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