

白莉,张秀丽,甘辛,王伟,胡豫杰,侯君,李凤琴,徐进.肉鸡养殖场中环丙沙星和头孢噻肟双重耐药沙门菌耐药机制的研究[J].中国食品卫生杂志,2015,27(5):487-494.

## 肉鸡养殖场中环丙沙星和头孢噻肟双重耐药沙门菌耐药机制的研究

### Molecular characteristics of ciprofloxacin and cefotaxime co-resistant Salmonella isolates in broiler flocks

投稿时间: 2014-12-15

DOI:

**中文关键词:** 肉鸡 养殖场 沙门菌 环丙沙星 头孢噻肟 耐药机制 抗生素 食源性致病菌

**Key Words:** [Broiler flock](#) [Salmonella](#) [ciprofloxacin](#) [cefotaxime](#) [mechanism of resistance](#) [antibiotic](#) [foodborne pathogenic bacteria](#)

基金项目:

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中文摘要:

阐明养殖场肉鸡及其环境中环丙沙星和头孢噻肟耐药沙门菌的分布和耐药机制特点。方法 对河南省4个不同地区肉鸡养殖场及环境中分离的沙门菌进行环丙沙星和头孢噻肟双重耐药菌株的筛选和鉴定,并对分离株进行药敏试验、喹诺酮类和超广谱β内酰胺酶耐药机制研究。结果 从52株养殖场肉鸡肛拭子及环境中筛选出5株耐环丙沙星和头孢噻肟的沙门菌,均为印第安纳沙门菌,有AMP-CAZ-CHL-CIP-CTX-GEN(n=1)和AMP-CAZ-CHL-CIP-CTX-GEN-SXT-TET(n=4)两种耐药谱。喹诺酮耐药机制研究显示,5株菌的拓扑异构酶编码基因gyrA和parC均有点突变出现,均携带了质粒介导的喹诺酮耐药基因,包括oqxAB、aac(6)-Ib-cr基因,而qnrA、qnrB、qnrS、qnrC、qnrD和qepA基因均未检出。超广谱β-内酰胺酶耐药机制显示,5株菌均为bla CTX-M-65型。结论 耐环丙沙星和头孢噻肟的菌株存在于肉鸡养殖环节及其环境中,并具有复杂的喹诺酮耐药机制和可传播的超广谱β内酰胺酶耐药机制。为阐明农场-餐桌-感染者传递链条中耐药关联性,为社区感染防控、临床抗生素用药提供科学依据,我国应该加强肉鸡等养殖业沙门菌多重耐药菌株的监测。

Abstract:

To investigate the prevalence and characteristics of ciprofloxacin and cefotaxime co-resistant Salmonella isolates in broiler flocks. Methods Ciprofloxacin and cefotaxime co-resistant Salmonella isolates were selected from isolates recovered from cloaca or rectal swabs and environment samples collected from 4 different districts in Henan Province. Ciprofloxacin and cefotaxime co-resistant Salmonella isolates were subjected to antimicrobial susceptibility testing, phylogenetic analysis and further characterized by screening for β-lactamase genes and quinolone resistance determinants by PCR and followed by DNA sequence analysis. Results Totally, five ciprofloxacin and cefotaxime co-resistant Salmonella isolates were recovered from 52 isolates, which all belonged to Salmonella Indiana. There were two antimicrobial resistant profiles which were AMP-CAZ-CHL-CIP-CTX-GEN (n=1) and AMP-CAZ-CHL-CIP-CTX-GEN-SXT-TET (n=4). Point mutations in topoisomerase encoded genes gyrA and parC were identified, and all isolates carried plasmid-mediated quinolone resistance genes, including oqxAB and aac(6)-Ib-cr, but qnrA, qnrB, qnrS, qnrC, qnrD and qepA were not detected. All of the five cefotaxime-resistant Salmonella were due to the production of plasmid borne bla CTX-M-65. Conclusion The extensive prevalence, complicated quinolone resistance mechanisms of isolates and the possible transmission of bla CTX-M-65 were existed in broiler flocks and environment. In order to clarify the farm-table-patient resistant relevance chain of infection transmission and to provide a scientific basis for antibiotic medication in clinical, the continuous surveillance of multidrug-resistant Salmonella in broiler flocks should be carried out.

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