



Changes in Concentrations of Fluoroquinolones and of Ciprofloxacin-resistant in Chicken Feces and Manure Stored in a Heap

Submitted by Emmanuel Lemoine on Tue, 04/07/2015 - 17:38

Titre	Changes in Concentrations of Fluoroquinolones and of Ciprofloxacin-resistant in Chicken Feces and Manure Stored in a Heap
Type de publication	Article de revue
Auteur	Moraru, Ramona [1], Pourcher, Anne-Marie [2], Jadas-Hécart, Alain [3], Kempf, Isabelle [4], Ziebal, Christine [5], Kervarrec, Magalie [6], Communal, Pierre-Yves [7], Mares, Mihai [8], Dabert, Patrick [9]
Editeur	Crop Science Society of America
Type	Article scientifique dans une revue à comité de lecture
Année	2012
Langue	Anglais
Date	2012
Numéro	3
Pagination	754 - 763
Volume	41
Titre de la revue	Journal of Environment Quality
ISSN	0047-2425

Résumé en anglais

This study evaluated the impact of storing chicken manure on the degradation of enrofloxacin (ENR) and ciprofloxacin (CIP), and on the survival of CIP-resistant Enterobacteriaceae. At 24 d of age, half of 8900 chickens received ENR for 5 d. After the animals departed, their manure was stored in two heaps for 63 d. Enterobacteriaceae were cultured on media containing 0 to 32 mg L⁻¹ of CIP. A total of 320 isolates were fingerprinted using enterobacterial repetitive intergenic consensus-polymerase chain reaction (ERIC-PCR) to evaluate community structure. Initial concentrations of ENR and CIP in the heap were 22 and 1.8 mg kg⁻¹, respectively. Seventy-three percent of the two fluoroquinolones were eliminated during storage. The administration of ENR led to a 5.1 log₁₀ decrease in Enterobacteriaceae concentrations and emergence of CIP-resistant bacteria, which became dominant in the feces. Enterobacteriaceae concentrations decreased 1.2 to 2.3 log₁₀ 2 d after the heaps were made and continued to decline during storage. No resistant Enterobacteriaceae were found by Day 63. The highest CIP minimum inhibitory concentration (MIC) values observed among isolates of *Escherichia coli* and of both *Proteus mirabilis* and *Providencia* sp. were 128 and 4 mg L⁻¹, respectively. The dominant ERIC-PCR profiles changed over time. There was no relationship between genotype and resistance-isolated strains to CIP. Storing chicken manure in heaps appeared to be an effective way of limiting the entrance of CIP-resistant *E. coli* into the environment but did not prevent the dissemination of fluoroquinolones after land spreading.

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DOI 10.2134/jeq2011.0313 [11]
Lien vers le document <http://dx.doi.org/10.2134/jeq2011.0313> [11]

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