

IN VITRO SUSCEPTIBILITY OF FIELD ISOLATES TO TYLVALOSIN OF AVIAN ERYSIPELOTHRIX RHUSIOPATHIAE STRAINS FROM COMMERCIAL LAYERS, TURKEYS AND WILD GAME FROM GERMANY AND THE UNITED KINGDOM

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Introduction

Infections with *Erysipelothrix rhusiopathiae* (ER) in poultry flocks can cause acute septicaemic or chronic arthritic disease. The infectious agent is a Gram-positive bacillus, which infects many animal species, including man, and is able to persist in the environment for several weeks or months, however, it is susceptible to many disinfectants. ER has been isolated from the surface and internal organs of red mites, suggesting *Dermanyssus gallinae* may act as a carrier. In commercial layers, free range chickens and turkeys the main clinical feature is a sharp increase in daily mortality. Lameness and respiratory signs may occur in affected turkey flocks. Risk factors include being in close contact with pigs, sheep and other affected poultry flocks.

An association between erysipelas outbreaks and housing system has been demonstrated. Flocks in free-range systems appear to be at a higher risk than flocks in indoor litterbased systems, while flocks in cages appear to be at the lowest risk. *Dermanyssus gallinae* collected from affected flocks has been shown to carry *E. rhusiopathiae* externally and internally, but the reservoir potential of the mite could not yet be proven.

Objective

The objective of this study was to determine the minimal inhibitory concentration (MIC) of tylvalosin (Aivlosin® from ECO Animal Health Ltd., United Kingdom) on 25 avian ER isolates using the agar dilution test.

Materials and Methods

Ten (10) isolates from commercial layers were tested from Germany. Two ER isolates came from Inchcolm Veterinary Services (one from commercial layers and another one from turkeys). Another 14 isolates came from the Scotland's Rural College (SRUC) archive: 9 from turkeys, 3 from game birds and a single isolate from a harbour porpoise.

The MIC value of 0.25 mcg/ml from the porpoise strain served as reference point, in absence of published MIC's for ER.

Results

As per Table 1., the Minimum Inhibitory Concentration (MIC) values of tylvalosin ranged from 0.25mcg/ml to 0.50 mcg/ml for the *Erysipelothrix rhusiopathiae* isolates.

Minimum Inhibitory Concentrations of Tylvalosin for Avian *E. Rhusiopathiae* isolates

Country of Isolate	ER Isolate number	Host Type of Bird	Tylvalosin MIC* value in mcg/ml
Germany	A	Layer	0.5
Germany	B	Layer	0.25
Germany	C	Layer	0.25
Germany	D	Layer	0.25
Germany	E	Layer	0.25
Germany	F	Layer	0.25
Germany	G	Layer	0.25
Germany	H	Layer	0.25
Germany	I	Layer	0.25
Germany	J	Layer	0.25
United Kingdom	B201622	Turkey	0.25
United Kingdom	B308289/1	Layer	0.25
United Kingdom	B201689	Turkey	0.5
United Kingdom	B201695	Turkey	0.25
United Kingdom	B401049	Turkey	0.25
United Kingdom	B501401	Turkey	0.25
United Kingdom	B501627	Turkey	0.25
United Kingdom	B307672/1	Turkey	0.25
United Kingdom	B307691/1	Turkey	0.25
United Kingdom	B307782/1	Turkey	0.5
United Kingdom	B308404/1	Turkey	0.5
United Kingdom	B306236	Partridge	0.25
United Kingdom	B307969/3	Partridge	0.25
United Kingdom	B306865/2	Pheasant	0.5
United Kingdom	M679/98/1	Porpoise	0.25 **

MIC * : Minimum Inhibitory Concentration

** : Reference point

All isolates were considered sensitive to tylvalosin, as they had low MIC's and were at or within one dilution of the reference porpoise isolate MIC value.

It is postulated with these data, that Aivlosin® 62.5% Water Soluble Granules can be an effective solution for the treatment of *Erysipelothrix rhusiopathiae* infections in commercial layers, turkeys and pheasants through the drinking water.

Keywords:

- *Erysipelothrix rhusiopathiae*
- Commercial Layers
- Tylvalosin
- Turkeys
- MIC
- Game Birds



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