

# Aivlosin granules for oral solution used for the treatment and prevention of mycoplasmosis due to *Mycoplasma gallisepticum*

1. Veterinary Medicine Research Institute, Budapest, Hungary 2. ECO Animal Health, London, United Kingdom  
Laszlo Stipkovits<sup>1</sup>, Albert P A Mockett<sup>2</sup>

## Introduction

Mycoplasmosis is an economical important disease of poultry. The antibiotic tylvalosin, present in Aivlosin<sup>®</sup> as the tartrate salt, has been shown to concentrate in cells (1) and has low minimum inhibitory concentrations against *Mycoplasma gallisepticum* (table 1).

	Tylvalosin MIC (µg/ml)	Tylosin MIC (µg/ml)
MIC range	0.002-0.125	0.002-4
MIC <sub>50</sub>	0.0075	0.015
MIC <sub>90</sub>	0.06	4

Table 1. Comparative MICs of 14 strains of *Mycoplasma gallisepticum*

The major metabolite, 3-acetyltylosin is also microbiologically active. The aim of the study was to determine the efficacy of tylvalosin for the treatment and prevention of mycoplasmosis in field conditions. A negative control was used and a positive control was tylosin, another macrolide.

## Materials and Methods

A broiler breeder parent flock that was serologically positive for *M. gallisepticum* antibodies was located. Day-old chicks from this flock were placed in a commercial production unit. For both the prevention of mycoplasmosis and for the treatment, ten pens (300 chickens in each) - 4 pens for each medicated group and 2 pens for the un-medicated groups were used. For mycoplasmosis prevention, a dose of 25 mg tylvalosin/kg bodyweight (b.wt.) was used for the first three days of life followed by 4 days medication at 15 mg/kg b.wt. at 16-19 days of age. The primary variable for the prevention trial was clinical signs. For treatment, a daily dose of 25 mg tylvalosin/kg b.wt. for 3 days was initiated when about 2-5% of the chickens showed clinical signs of mycoplasmosis. Chickens were reared up to 34 or 40 days of age. The primary variable for the treatment trial was gross pathology (based on lesion scores). Tylosin was used according to the UK manufacturer's instructions at a constant 500 mg/litre of water. MIC<sub>90</sub> of strains from the field trial was 0.125 µg/ml for tylvalosin and 0.25 µg/ml for tylosin.

## Results

Both macrolides, when used preventatively, significantly reduced the number of chickens that showed clinical signs at day 34, but tylvalosin was significantly (p=0.002) better than tylosin (fig.1). Clinical signs were also significantly reduced in severity. Lesion scores

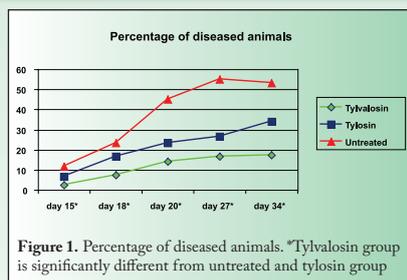


Figure 1. Percentage of diseased animals. \*Tylvalosin group is significantly different from untreated and tylosin group

of the tylvalosin and tylosin treated birds were significantly reduced (table 2) relative to the untreated birds, for all tissues examined with the exception of peritoneal tissue in the tylosin group at day 16.

Group	Number with score								Odds ratio vs Aivlosin <sup>®</sup>		Logistic regression p vs Aivlosin <sup>®</sup>	Wilcoxon p vs Aivlosin <sup>®</sup>
	0	1	2	3	4	5	6	>6	Estimate	95% CL		
Tylvalosin	87	21	8	3	0	1	0	0				
Tylosin	58	21	16	14	6	2	3	0	0.33	0.510	<0.001	<0.001
Untreated	15	2	4	4	14	5	8	8	0.044	0.078	<0.001	<0.001

Table 2. Post mortem lesions scores at day 34

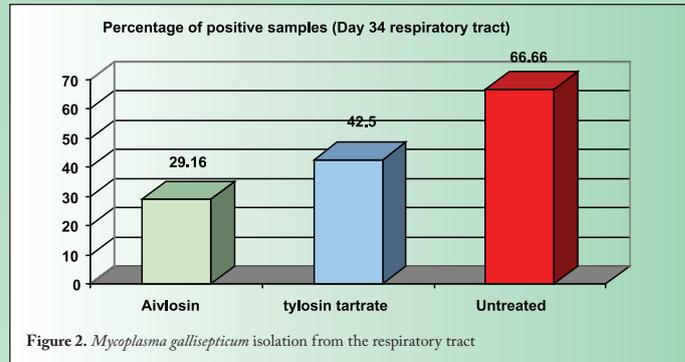


Figure 2. *Mycoplasma gallisepticum* isolation from the respiratory tract

Isolation of *Mycoplasma gallisepticum* was significantly less in all respiratory tissues examined at day 34 in the medicated chickens (fig. 2). Tylvalosin treatment (table 3) significantly reduced the pathology (lesion

Group	Number with score								Odds ratio vs Aivlosin <sup>®</sup>		Logistic regression p vs Aivlosin <sup>®</sup>	Wilcoxon p vs Aivlosin <sup>®</sup>
	0	1	2	3	4	5	6	>6	Estimate	95% CL		
Tylvalosin	172	39	19	4	5	1	0	0				
Tylosin	122	38	40	17	18	1	3	1	0.380	0.515	<0.001	<0.001
Untreated	15	4	9	13	14	20	20	25	0.020	0.030	<0.001	<0.001

Table 3. Total lesion scores (trachea, airsacs, peritoneum) on day 14

scores) at post-mortem compared to un-medicated chickens and was also statistically better (p<0.001) than tylosin. The histological lesion scores in the lung were significantly reduced in the tylvalosin-treated chickens and also significantly (p<0.05) fewer lesions than tylosin. There was a significant reduction in the isolation of mycoplasma from both the

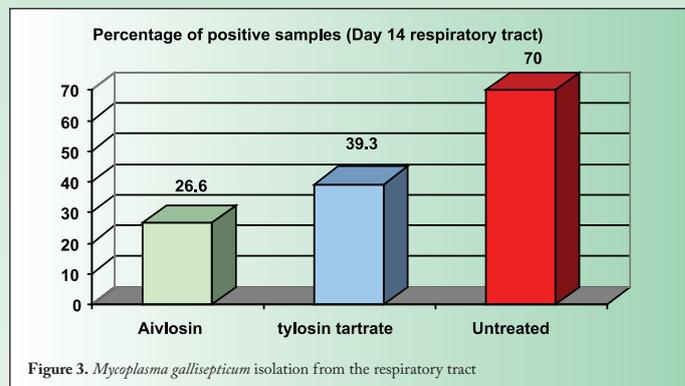


Figure 3. *Mycoplasma gallisepticum* isolation from the respiratory tract

respiratory (fig. 3) and internal organs in both medicated groups. The untreated group had significantly lower bodyweight than the medicated groups.

## Discussion

Tylvalosin at 25 mg/kg b.wt. for the first three days of life and 15 mg/kg b.wt. for 4 days at 16-19 days of age was significantly better than tylosin at preventing the clinical signs of mycoplasmosis. Tylvalosin at 25 mg/kg b.wt. for 3 days was significantly better than tylosin at reducing the lung pathology (lesions and histology) associated with mycoplasmosis. The possible reason for this is the fact that tylvalosin enters and accumulates in cells better than tylosin (Stuart et al, 2007).

## References

Stuart et al (2007) *The Pig Journal*, vol 60 (in press)

