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

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Introduction

Mycoplasmosis is an economically important disease of poultry. The antibiotic tylvalosin, present in Aivlosin® as the tartrate salt, has been shown to concentrate in cells (1) and has low minimum inhibitory concentrations against Mycoplasma gallisepticum (table 1). The major metabolite, 3-acetyltyosin 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 90 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 of the tylvalosin and tylosin treated birds were significantly reduced (table 2) relative to the un-treated birds, for all tissues examined with the exception of peritoneal tissue in the tylosin group at day 16. 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 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 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