

DETERMINATION OF SUSCEPTIBILITIES OF STRAINS OF BRACHYSPIRA HYODYSENTERIAE TO TIAMULIN IN SPAIN

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Introduction

As in other countries, in Spain tiamulin is an antibiotic used against *Brachyspira hyodysenteriae* infection. The purpose of this study was to establish the *in vitro* susceptibility to tiamulin of non-resistant *Brachyspira hyodysenteriae* (MIC < 4 µg/ml), isolated from porcine clinical samples in Spain during 2004 and 2005. These results are an update of susceptibility degree of *Brachyspira hyodysenteriae* strains in Spain.

Materials and Methods

This study evaluated the MIC levels of 24 susceptible strains of *Brachyspira hyodysenteriae* of porcine origin. All of the examined strains were isolated from different Spanish porcine farms during the last 2 years.

Susceptibility was established by the dilution method in agar, using a Mueller-Hinton agar (MH, Merck) formulated under NCCLS guidelines and supplemented with a serial concentration of Sigma-Aldrich's tiamulin (Tiamulin fumarate, ref. 46959) to obtain final concentrations of tiamulin between 32 and 0.004 µg/ml.

The method used for the susceptibility analysis was based on the M2-A8 NCCLS guideline (2003).

Samples were cultured under anaerobic conditions at 37°C for 48 hours on selective media, and identifying as *Brachyspira hyodysenteriae* by PCR.

The minimum concentration, in µg/ml, found to produce a total inhibition of the bacterial growth was considered to be the MIC (Minimum Inhibitory Concentration)

Results

Table 1 shows the MIC, in µg/ml, of the susceptible strains of *Brachyspira hyodysenteriae* isolated from porcine intestines.

The MIC₅₀ calculated from these susceptible strains was 0.25 µg/ml for tiamulin.

The new MIC₉₀ of the susceptible strains was 1 µg/ml for tiamulin.

The geometric mean of the MIC of the susceptible strains of *Brachyspira hyodysenteriae* was 0.37 µg/ml.

The median and the mode of the MIC were 0.25 µg/ml.

Table 1 MIC: Minimum inhibitory concentration in µg/ml of susceptible strains of *Brachyspira hyodysenteriae* to Tiamulin

Strain	MIC
Bh-04	0.016
Bh-02	0.031
Bh-05	0.031
Bh-09	0.031
Bh-01	0.063
Bh-03	0.063
Bh-20	0.063
Bh-21	0.063
Bh-10	0.125
Bh-14	0.125
Bh-06	0.25
Bh-07	0.25
Bh-08	0.25
Bh-11	0.25
Bh-12	0.25
Bh-13	0.25
Bh-15	0.25
Bh-16	0.5
Bh-23	0.5
Bh-24	0.5
Bh-17	1
Bh-19	1
Bh-22	1
Bh-18	2

Discussion

To assist the practitioner in the correct use of antimicrobials is important to conduct periodic analysis of the susceptibility degree of the target bacteria against the recommended antibiotic.

In this study we included twenty-four strains susceptible to tiamulin, MIC below 4 µg/ml, the breakpoint recommended by the M31-A2 NCCLS guideline (2002) for Spirochaetae.

The susceptibility degree of the examined *Brachyspira hyodysenteriae* strains, and the additional data of few reports of resistant strains (1), permits to recommend the tiamulin for the treatment of swine dysentery in Spain.

References

1. Karlsson, M. et al. (2002). Vet. Microbiol. 3; 84(1-2): 123-33.