Infeed medication with tiamulin in the treatment of experimental swine dysentery.

D.J. Taylor.
Department of Veterinary Pathology,
University of Glasgow Veterinary School,
Bearsden Road,Bearsden, Glasgow G61 1QH.

Introduction

Tiamulin has been shown to be effective in the treatment of experimental swine dysentery and to eliminate Treponema hyodysenteriae from infected pigs when given in the drinking water at 60 ppm for 5 days (Taylor 1980a)and by injection at 10 or 12.5 mg/kg (Taylor 1980b). It has also shown to be effective in the prophylaxis of the experimental disease (Taylor 1980a)when given at levels between 25 and 45 ppm for 42 days. Two controlled studies carried out to establish the most appropriate feed levels of tiamulin for the treatment of experimental swine dysentery and the elimination of T. hyodysenteriae are described in this paper.

Materials and Methods

The pigs used in both studies were from a farm free from swine dysentery and were housed in separate pens. They were fed on a ration containing no non-nutrient additives and infected with a pure culture of T. hyodysenteriae (isolate S80/5 with an M.I.C. to tiamulin of between 0.3 µg/ml and 0.5 µg/ml).

The levels of treatment given are shown in Tables 1 and 2. The period of observation was 35-44 days in Study 1 and 16 days (pen 3) or 2 days (pen 4) in Study 2.

Faecal consistency and appearance were recorded daily and the presence of T. hyodysenteriae in the faeces was monitored by culture on spectinomycin blood agar. Bodyweight and feed consumption were recorded at weekly intervals. All animals were examined post mortem at the end of the study. Cultures from 5 sites in the colon were carried out in Study 2.

Results

Study 1.

Medication of the feed with tiamulin at 120 and 160 ppm eliminated the clinical signs of swine dysentery within 5 days and T. hyodysenteriae could not be recovered after treatment. Relapse occurred in both successfully-treated groups by the end of the period of investigation. T. hyodysenteriae was detected in the faeces as soon as 10 days after the withdrawal of treatment (160 ppm). The results are summarised in Table 1.

Table 1.

Results of Study 1, the use of infeed medication for 14 days with tiamulin at 50, 80, 120 and 160 ppm in the treatment of experimental swine dysentery.

Pen	Infected	Treatment level	Clinical, Bacteriological or pathological evidence of swine dysentery present on day					
			0	7	14	21	28	end
1	-	-	0/5	0/5	0/5	0/5	0/5	0/5
2	+	-	3/5	5/5	3/5	3/5	2/5	5/5
3	+	50	2/5	1/5	1/5	0/5	1/5	4/5
4	+	80	2/5	3/5	1/5	0/5	1/5	5/5
5	+	120	4/5	0/5	0/5	0/5	0/5	4/5
6	+	160	3/5	0/5	0/5	0/5	1/5	4/5

Feed conversion ratios and rates of daily liveweight gain were considerably superior to those of the infected and uninfected untreated controls in the groups receiving feed medicated with tiamulin at 120 and 160 ppm for the treatment period.

Study 2.

In this study medication of the feed with tiamulin at 100 ppm was successful in eliminating the disease in the group (pen 4) containing animals which had only had clinical signs for 24 hours and which were still eating but was not effective in those in pen 3 which had had disease for 3-5 days and which were inappetent. Only in the group in which early treatment with tiamulin was carried out and in which therapy was continued at 30 ppm for 14 days was treatment successful. The results are given in detail in Table 2.

Table 2.

Results of Study 2, the use of in-feed medication with tiamulin at 100 ppm for 7 days and at 30 ppm for 14 days in the treatment of experimental swine dysentery.

Pen	Infected	Treatment at 100 ppm	Treatment at 300 ppm	Clinical, bacteriological or pathological evidence of swine dysentery present on day 0	7	21	21/23
1	-	-	-	0/5	0/5	0/5	0/5
2	+	-	-	3/5	3/5	2/3	5/5
3	+	+	-	5/5	3/5	0/4	0/5
4	+	+	+	2/5	0/5	0/5	0/5

Pigs which had received only the 7-day treatment at 100 ppm had evidence of colitis in which Balantidium coli and campylobacters but no T. hyodysenteriae were demonstrated. One animal which was not seen to eat medicated feed died. The animals of pen 4 were normal and had a feed conversion ratio and daily liveweight gain far superior to those of the uninfected and untreated control.

Discussion

The results of these studies indicate that medication of the feed with tiamulin at levels of 100 ppm or more is effective in eliminating clinical signs of swine dysentery providing that animals are not so severely or chronically affected that they are inappetent. Clinical signs had disappeared in each case where treatment was effective within 7 days. Treatment in the feed using levels of tiamulin of 100 ppm or more did not appear to be effective in eliminating T. hyodysenteriae entirely even when given for 14 days but the subsequent use of feed containing 30 ppm appeared to eliminate the organism and to leave animals free from infection.

It therefore appears that tiamulin medication of the feed can be effective in the treatment of swine dysentery and the elimination of T. hyodysenteriae if used at 100 ppm for 7 days followed by 30 ppm for 14 days.

The following factors must be borne in mind.

1. Chronically ill pigs should be given parenteral treatment or water medication.
2. Animals which have not responded to treatment within 5-7 days should be removed and treated separately.
3. The findings of Study 2 apply only to a short period of observation.

References

Taylor, D.J. 1980a. Vet. Rec. 106, 526.

Taylor, D.J. 1980b. Proc. 6th Congress I.P.V.S. Copenhagen P.255.