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# EVALUATION OF APRAMYCIN ADMINISTERED IN FEED FOR THE CONTROL OF COLIBACILLOSIS IN COMMERCIAL RABBITS

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## ABSTRACT

A field study on weaning rabbits was carried out to evaluate the efficacy of apramycin for the control of colibacillosis in rabbits. In a commercial rabbitry with a story of recurrent colibacillosis a number of 544 weaning rabbits, 35 days old, have been divided into three treatment groups: a) treatment with apramycin in feed at 100 ppm. level for 10 days, b) treatment with apramycin in feed at 50 ppm. level for 14 days, c) untreated control. Both treated groups showed a significant ( $p < 0.001$ ) lower mortality compared to an untreated control group, whereas no significant differences in body weight were observed at the end of the trial. No adverse reaction was observed during the treatment period.

## INTRODUCTION

Apramycin sulfate is a wide spectrum aminoglycoside antibiotic, currently approved for veterinary use in cattle, swine and rabbit, widely used for control and therapy of *E. coli* and *Salmonella* spp. infection (also if resistant to streptomycin and neomycin). The activity of apramycin is characterized by bactericidal activity, post antibiotic effect, low toxicity and low absorption by oral administration. Resistance to apramycin develops slowly and rapidly disappears (Barigazzi G. et al. - 1987)

In a commercial rabbitry, colibacillosis is the first cause of death especially during the two weeks after weaning. In Italy, the microorganism involved in this pathology is an enteropathogenic *E. coli* (EPEC) generally belonging to one of following serotypes (Grilli G, 1999 - not published): O103; O2; O153; O15; O22; O8. The infection occurs via the oral route; the pathogen adheres to the intestinal microvilli and destroys the epithelium.

The most relevant clinical symptom is diarrhea. In unweaned rabbits, between 3 and 12 days of age, the mortality may be very high and often all the litter die. The young rabbits appear depressed, with yellowish diarrhea and die within 24-48 hours. Necropsy show distended intestine with liquid, yellowish and sometime haemorrhagic content. In weaned rabbits colibacillosis occurs during the first two weeks after weaning, with waterish, brownish diarrhea; mortality is variable. Necropsies show that in hyperacute colibacillosis, the contents of the caecum and proximal duodenum are haemorrhagic, whereas, in sub-acute/chronic colibacillosis, they show catarrhal inflammation with congestion and oedema (Weisbroth S.H. et al - 1974). In order to provide an understanding of clinical efficacy in rabbits, the effect of apramycin administered in feed was evaluated in a field study.

## MATERIAL AND METODS

The study was carried out in a commercial rabbitry in Veneto area with a recurring history of colibacillosis situated near Padova. In this farm contained 1400 Grimaud female breeder and

around 7500 fattening rabbits. A total of 544 weaned rabbits, 35 days old, were randomly allocated to the following three treatments:

- a) apramycin in feed at 50 ppm level for 14 days (191 animals)
- b) apramycin in feed at 100 ppm level for 14 days (193 animals)
- c) negative control (160 animals)

Samples of medicated feeds were analyzed to ensure the correct dosage and treatment.

Before treatment the rabbits were weighed by treatment group and caged to cages (two animals per cage) equipped with manual feeders.

In order to evaluate the effect of the treatment the following parameters were considered:

- daily mortality from day 35 to day 49 of age
- weight on day 35 and on day 49 of age
- necropsy of all animals died

The three treatment groups were compared in terms of mortality from 35-49 days of age using Fisher's Exact tests. The three treatment groups have been compared in terms of average animal weights by analysis of variance.

## RESULTS AND DISCUSSION

The data concerning mortality are summarized on Table 1. A number of 3 (1.6 %) and of 4 (2.1 %) rabbits died respectively for 100 ppm and 50 ppm treatment groups, whereas 22 (13.8 %) rabbits died in the non treated group. All animals that died showed lesions typical of colibacillosis. The overall mortality during the trial was significantly higher in the negative control group than in the two apramycin groups ( $p < 0.001$ ), whereas there were no significant differences in mortality in the two treated groups. No adverse reactions were observed during the trial.

**Table 1: Mortality**

		Apramycin 100 ppm	Apramycin 50 ppm	Negative control	P-value
Total no. allocated	n	193	191	160	
Total no. died Days 36-49	n (%)	3 (1.6%)	4 (2.1%)	22 (13.8%)	<b>&lt;0.001</b>

The mean animal weights in the three treatment groups were between 959 and 973 grams on day 0 and between 1491 and 1512 g. on day 14, and there was no evidence of significant differences between the three treatment groups in terms of the animal weights, see Table 2.

**Table 2: Weights**

		Apramycin 100 ppm	Apramycin 50 ppm	Negative control	P-value
No. animals weighed (day 35 of age)	n	193	191	160	
Ave. animal weight (day 35 of age)	mean (grams)	973 ± 92	959 ± 74	960 ± 102	0.80
No. animals weighed (day 49 of age)	n	190	187	138	
Ave. animal weight (day 49 of age)	mean (grams)	1512 ± 101	1501 ± 135	1491 ± 161	0.80

In **conclusion** both 50ppm. and 100ppm. apramycin included in the feed were effective in reducing the incidence of colibacillosis, and consequently the final mortality, without reducing growth performance. Clinically no adverse reactions were observed in the treated animals.

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