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AND ATTEMPT TO CONTROL THE DISEASE.**

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EPIZOOTIC RABBIT ENTEROCOLITIS: SPONTANEOUS EVOLUTION AND ATTEMPT TO CONTROL THE DISEASE.

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ABSTRACT

In a rabbit farm affected by Epizootic Rabbit Enterocolitis (ERE), the spontaneous evolution of the disease in the breeding and fattening rooms was studied. Simultaneously the efficacy of an antibiotic (Tiamuline 32ppm) and of an immunostimulant (MacroGard) used separately or in association in the feed was tested on 4 series of weaning (687 weanlings coming from 87 litters). During the suckling period results were very good and no morbidity nor mortality were seen. In the absence of any treatment the mortality appeared 10 days after weaning with a pic 10 days later again. Animals which did not dye during the trial had a lower growth during the whole fattening period. This trial confirms that Tiamuline 32ppm in feed distributed from the 3rd week to the 8th week of age completely controls the ERE but mortality appears as early as 5 days after withdrawing the antibiotic. This observation confirms that the feed itself play no role. The different prepatent period (10 or 5 days) could be the consequence that, despite the control of the disease by the antibiotic, at the 8th of age the level of infection with the specific pathogen of ERE is higher than at 5 weeks of age. The effect of the immunostimulant (MacroGard) was never described. Without antibiotic it did not reduce the mortality but it seems to diminish the negative effect of the disease on the growth. When this immunostimulant was associated with the antibiotic it reduced strongly the mortality and morbidity. These observations have to be confirmed by further researches.

INTRODUCTION

An experimental rabbit farm was affected by Epizootic Rabbit Enterocolitis (ERE) since 12 months when we decide to study the spontaneous evolution of the disease in the breeding and fattening rooms. Simultaneously the efficacy of an antibiotic (Tiamuline 32ppm) and of an immunostimulant (MacroGard) used separately or in association in the feed was tested.

MATERIAL ET METHODS

In this rabbits farm, before the apparition of the disease the average mortality was around 3 to 5%. During the 12 months preceding our study the mortality weekly varied from 15% to 35%. Our trial include the study of 4 series of weaning during 4 consecutive weeks. (respectively 28, 29, 12 and 18 litters)

Experimental design

There were 4 feeds (Table 2). The only other additive in feed was robenidine 66 ppm.

Table 2 : Name of the feeds	No immunostimulant (M-)	MacroGard 100ppm (M+)
No antibiotic (T-)	M-T- = A1	M+T- = A3
Tiamuline 32 ppm (T+)	M-T+ = A2	M+T+ = A4

Table 1 :
Distribution of the feeds.

Age (weeks)	Groups			
	1	2	3	4
3 to 6	A1	A2	A3	A4
6 to 8	A1	A2	A1	A2
8 to 10	A1	A1	A1	A1

Up to the 3rd week of age all animals (does and sucklings) received the control feed (A1). From the 3rd week to the end (10th week) there was no modification for the control group (group 1). For the 3 other groups the experimental feed was first distributed at the 3rd week, remove 5 weeks later for the group only treated with antibiotic (group 2) or 3 weeks later for the group receiving the immunostimulant alone (group 3) or associated with the

antibiotic (group 4). After the 8th week of age all animals received the control feed (A1) (Table 1). The groups 3 and 4 were not present in series 3 and 4 (Table 3).

Animals

We used 87 litters (687 sucklings of 22 days). It was representative of the breeding stock (100 does). Animals were born from the 29/03 (series 1) to the 19/04/1999 (series 4).

The fattening room was separate of breeding room.

Animals were weaned at 35 days of age (5 per cages). They were distributed according to their litter of origin (one animal of the same litter per group) and according to their weight (2 blocks). No animals were eliminated of the trial.

Table 3 :

Experimental design		Groups			
		1	2	3	4
Feed		M-T-	M-T+	M+T-	M+T+
Name of the feed		A1	A2	A3	A4
Series					
1	No of weanlings	53	53	51	55
2	No of weanlings	61	61	61	59
3	No of weanlings	51	52	-	-
4	No of weanlings	69	71	-	-

M = MacroGard T = Tiamuline+ or - = with or without

Recordings

Individual body weights and clinical examination at 22, 35, 43, 57 and 71 days of age. Daily mortality and autopsy. Data were interpreted by a 2-factorial analysis of variance (block, groups) using Systat 5.04 (Systat Inc USA). Means were compared with Tukey HSD test.

RESULTS

During the time of the study, the only observed pathology was ERE.

Observations before weaning

Before the 3rd week mortality was very low and did not differs between series ($\chi^2 : \alpha < 0$). (Table 4). No mortality of does or of litters was observed

Between D22 and weaning (D35) only 9/697 sucklings died within the different series.

Weight at D22 (397g to 411g) and average body weight gain (ABWG) (41g to 43g) from D0 to D35 did not differs between series ($F < 0$). These zootechnical results before weaning were very good.

Table 4 : Mortality before D22.

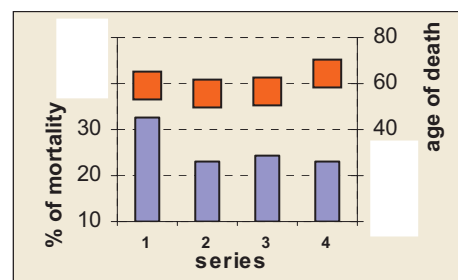
series	No at D0	Mortality D0 to D22.
1	220	1,4
2	255	4,3
3	108	4,6
4	144	2,8
Total	727	3,2

Effect of the series

The only slight difference between serie were the rate of mortality which were higher in series 1 (32% vs 23%, 24%, 23%) ($\chi^2 : 9\%$). But the average age of death was not significantly different (D59, D56, D57, D65) ($F < 0$). (Figure 1)

Considering this absence of difference between series the other results will be the average of the 4 series.

Figure 1 : Effect of the serie on mortality



Effects of treatments after weaning.

There were no significant effect of the weight at D22 (block effect) nor on the further rate of mortality nor on the age of death.

Mortality rate being very different before and after the withdrawal of the antibiotics supplemented feed we will successively study the global mortality (D35 to D71) and the effect of withdrawing the antibiotics supplemented feed.

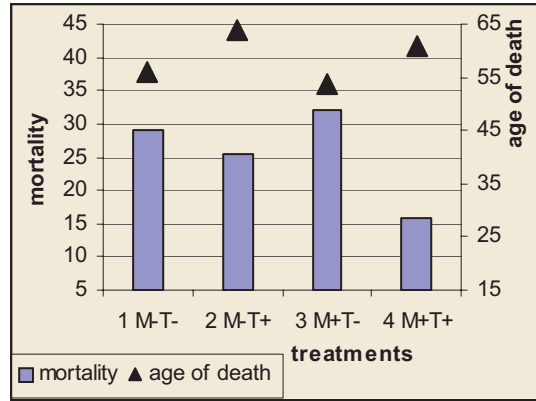
Global mortality from D35 to D71.

(Figure 2)

There is no significant difference between groups 1, 2 and 3 Only the group 4 receiving the antibiotic + the immunostimulant differs from the others ($\chi^2 : 2\%$).

The age of death is significantly more precocious in the groups receiving no antibiotic (2 and 4) ($P < 1\%$).

Figure 2: Effect of treatments on mortality.

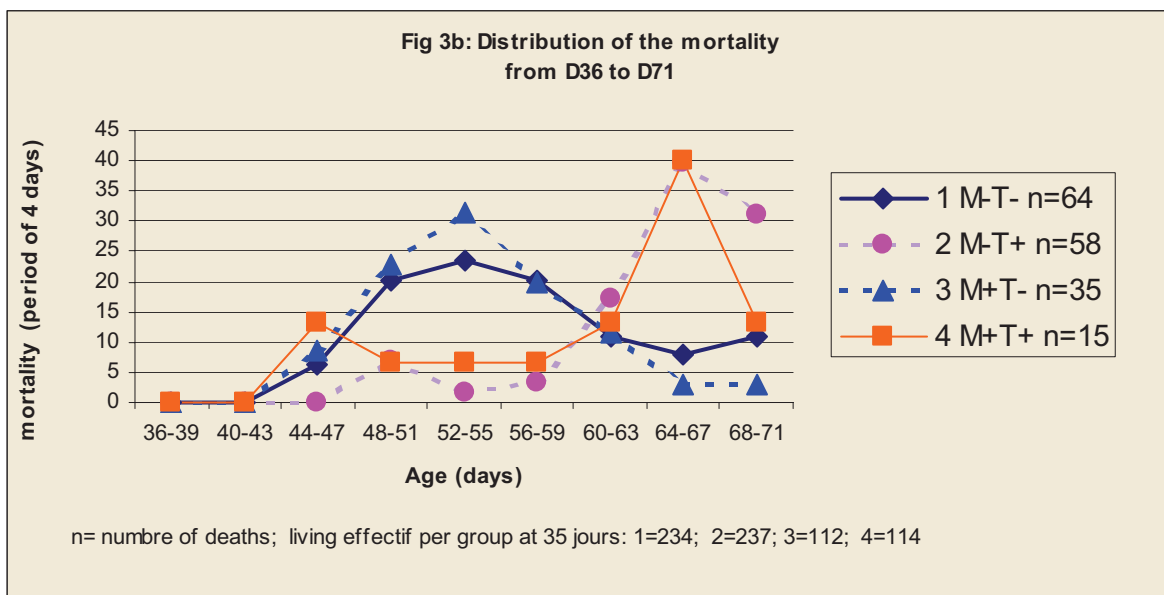
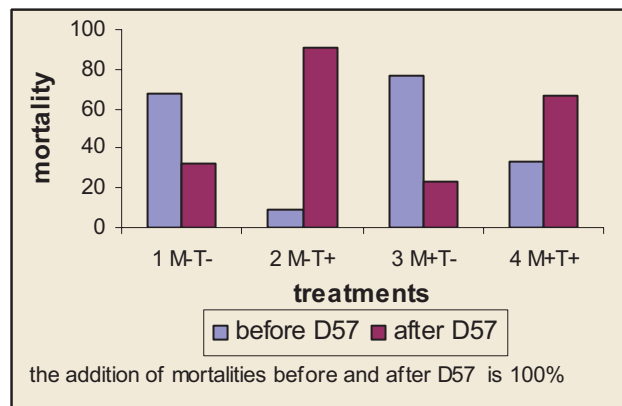


Effect of withdrawing the antibiotics supplemented feed on mortality .

In groups without antibiotic (1 and 3) the mortality began 10 days after weaning and more than 2/3 of the total mortality occurred before D57 with a pic at D52-55. (Figure 3 a and b).

For the groups receiving antibiotic (2 and 4) the mortality was very low during the treatment but arise suddenly 5 days after withdrawing the supplemented feed.

Figure 3 a : Distribution of the mortality before and after withdrawing the antibiotic.

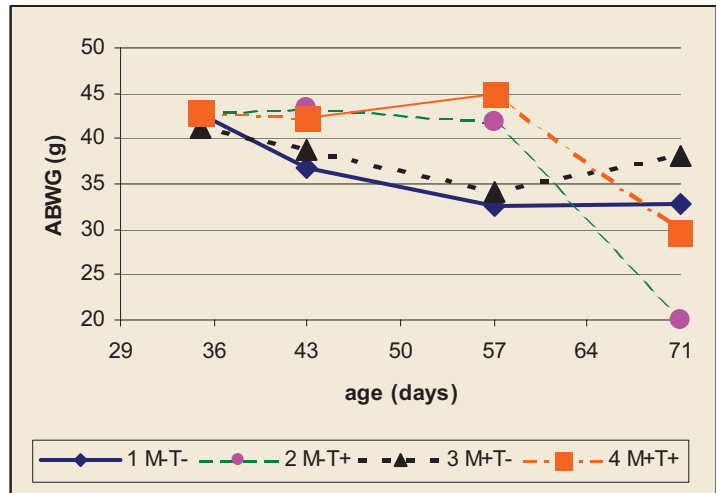


Effect of the treatments on growth.

Up to D57 the ABWG is significantly lower in groups not supplemented in antibiotic (1 and 3) ($P < 0.001$). These animals were living at D71 but they were ill during the whole period of fattening. In the opposite the treated groups had a very good growth.

The two groups receiving an immunostimulant (3 and 4) had an ABWG (D22 to D71) significantly higher than the two others (37.9 and 39.4 g/day vs 36.0 and 36.1 g/day) ($P < 0.001$).

Figure 4 : Average body weight gain of living animals at D71.



DISCUSSION

In this rabbit farm this ERE was important and no other disease was observed before and during the 9 weeks of the trial. The mortality was 20% higher than before the apparition of the disease 12 months earlier.

Nevertheless the zootechnical results were very good and no morbidity nor mortality were seen during the suckling period. Animals were weaned at the age of 35 days.

In the absence of any treatment the mortality appeared 10 days after weaning with a pic 10 days later again. Animals which did not dye during the trial had a lower growth during the whole fattening period. During the two weeks following the apparition of the disease the growth was 23% lower than the treated animals.

This trial confirms that Tiamuline 32ppm in feed distributed from the 3rd week to the 8th week of age completely controls the ERE but mortality appear as early as 5 days after withdrawing the antibiotic. This observation confirms that the feed itself play no role (Lebas 1998). This period of 5 days correspond to the apparition of the ERE after a strong experimental inoculation of the disease whereas the 10 days observed before apparition of the mortality after weaning in the non supplemented groups, corresponds to a low inoculation (Licois et al. 1998a, 1998b, 1999). One hypothesis could be that, despite the control of the disease by the antibiotic, at the 8th weeks of age the level of infection with the specific pathogen of ERE is higher than at 5th weeks of age. One other hypothesis could also be that during the acute period of ERE of non treated animals the environment was heavily contaminated.

The effect of the immunostimulant (MacroGard) was never described. Without antibiotic it did not reduce the mortality but it seems to diminish the negative effect of the disease on the growth. When this immunostimulant was associated with the antibiotic it reduced strongly the mortality and morbidity after suppression of the antibiotic although the immunostimulant was withdrawn two weeks earlier. These observations have to be confirmed by further researches.

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