Controlling cryptosporidiosis with paromomycin sulphate in neonatal dairy calves

Trial description

Set-up

- Location: Mexico
- Trial Period: 2024
- Animals: 156 newborn female calves

Studies

- Study 1 (S1), northern Mexico
- Study 2 (S2), central Mexico
- Study 3(S3), western Mexico

Materials and methods

- Control (C) - calves received the antibiotic treatment of choice on the dairy farm for scours
- Treatment 1 (T1) - commercial treatments against *Cryptosporidium* (T1b – Halofuginone)
- Treatment 2 (T2) - Parofor®, paromomycin sulphate at 50 mg/kg body weight for 7 days

Measurements

Passive immunity was determined with a Brix refractometer at 48 hours of age. A daily scoring system to record diarrhoea was used for the first 60 days of life. Faeces were collected at 7 and 14 days of age and diagnosed with a morphological examination. Calves had their weight measured at birth, day 60 (S2 and S3), day 90 (S1 and S3), and day 120 (S2). All calves received pasteurised colostrum, and the total population received pasteurised milk until 55 days of age.

Table 1. Overview of trial sites and treatment groups

Site	Treatment Group	Number of animals
S1: Northern Mexico	C T2: Parofor®	20 20
S2: Central Mexico	C T1 T2: Parofor®	21 14 23
S3: Western Mexico	T1b T2: Parofor®	30 28
Total		156

Results

Table 2 summarises the results from the three dairy facilities. Animals in the Parofor® treatment group showed better weight gain and a faster reduction in *Cryptosporidium parvum* oocyst prevalence.

Table 2. Overview of trials and results

Trial site	Treatment group	N	Treatment initiation (days)	*C. parvum oocysts* 7 days (%)	*C. parvum oocysts* 14 days (%)	*Cumulative diarrhoea* cases at 2nd week	*Cumulative diarrhoea* cases at 3rd week	Weight gain on day 60 (kg)	Weight gain on day 90 (kg)	Weight gain on day 120 (kg)
S1	C	20	6.9 ± 0.08	30	35	6.4 ± 3.8	2.1 ± 3.4		38.3 ± 20.8	
	T2: Parofor®	**20**	**6.9 ± 0.08**	**40**	**20**	**4.0 ± 4.1[a]**	**0.4 ± 0.8 [a]**		**51.9 ± 19.7 [a]**	
S2	C	21	7.1 ± 1.7	42.9	50.0	5.5 ± 3.6	3.9 ± 4.1	39.8 ± 13.4		83.2 ± 17.8
	T1a	14	2.8 ± 1.4	39.3	42.9	9.4 ± 5.4	4.2 ± 3.8	29.3 ± 23.2		65.3 ± 16.9 [d]
	T2: Parofor®	**23**	**7.7 ± 1.6**	**36.9**	**28.1 [b]**	**2.7 ± 2.9 [b]**	**0.8 ± 2.0 [b]**	39.2 ± 10.1		82.1 ± 16.2
S3	T1b	30	2	0	33	2.4 ± 2.4	NA	30.2 ± 12.9		
	T2: Parofor®	**28**	**7**	**21.4**	**14 [d]**	**0.8 ± 1.5 [a]**	NA	**37.1 ± 5.6 [c]**		

a: *p* value < 0.05; b: *p* value < 0.0001; c: *p* value < 0.007; d: *p* value < 0.006

Figure 1 shows detailed data collection from Study 3 with daily gain at 30 and 60 days in both groups. The green line is the animals in the Parofor® treatment group and the yellow line shows the results for the animals treated with halofuginone.

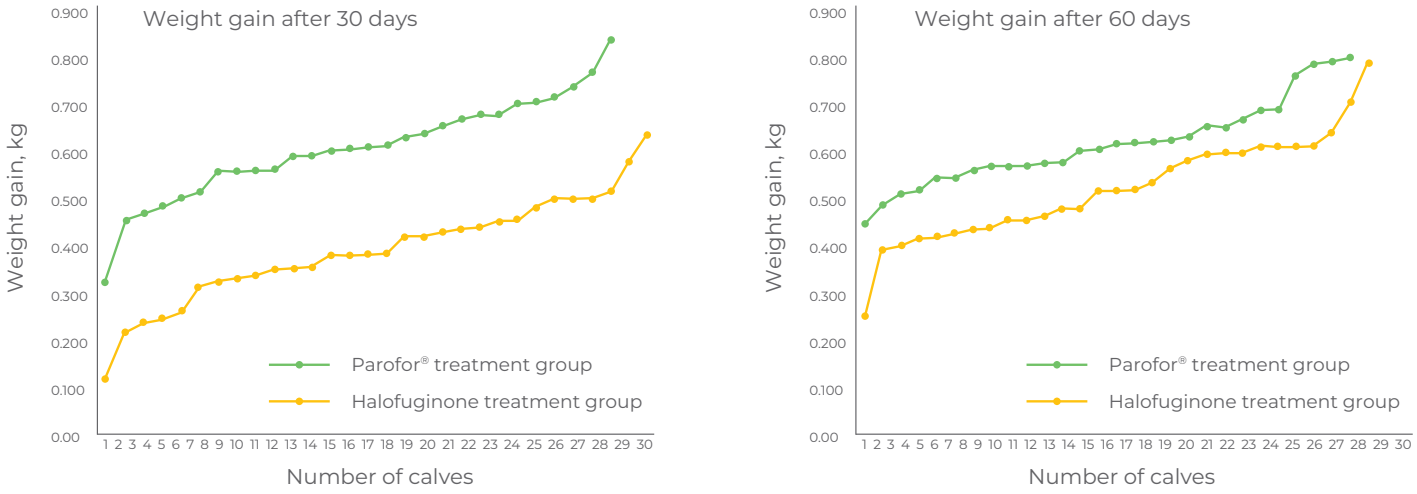

Figure 1. Detailed data collected from Study 3 (western Mexico) showing weight gain over 30 days (left graph) and 60 days (right graph) for animals in the Parofor® group (green line) and the halofuginone group (yellow line)

Conclusion

In summary, the use of Parofor® during the peak of the cryptosporidiosis infection resulted in a 34-50% reduction in oocyst shedding, supporting the development of local immunity with fewer clinical symptoms, maintained appetite, and a decrease in the number of pneumonia cases.

Calves in the Parofor® group consistently demonstrated superior weight gain at 60, 90, and 120 days of age compared to those receiving prophylactic treatments for *Cryptosporidium* spp.

Effective control of cryptosporidiosis is further enhanced by ensuring strong passive immunity, providing higher levels of milk feeding, closely monitoring clinical cases, and implementing biosecurity measures alongside timely treatment interventions.

Reference

Vázquez Flores, S., Barrera-Almanza, S. and Sánchez Martínez, F. (2024). Controlling cryptosporidiosis with paromomycin sulphate as a metaphylactic treatment in neonatal dairy calves. Poster presented at: World Buiatric Congress 2024; 2024 Aug 26-30; Cancun, Mexico.

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