Viability of *Cryptosporidium* spp. oocysts after exposure to two commercial disinfectants

Trial description

Objective

The study performed by Vasquez Flores *et al.* (2024) compared two disinfectants: hydrogen peroxide at 35% in two dosages, and a positive commercial control in two dosages with Prophyl®: Clorocresol 17.0% and glycolic acid 4.9% under field conditions. The trial subjected the disinfectants to direct sunlight, sun and shadow, and only shadow, using sand, one of the most common bedding materials, with a predetermined number of oocysts. The objective of the trial was to determine the quantity and viability of the *Cryptosporidium* spp. oocysts after disinfectant treatment compared to the control groups.

Materials and method

Fifteen areas of controlled contamination were placed on substrates combined with sand and seeded with a controlled and approved number of oocysts per area (3.3×10^5).

- 5 in Site A: at the front of the corral in direct sunlight
- 5 in Site B: inside the hutch with some exposure to sunlight
- 5 in Site C: inside the hutch without any exposure to sunlight

Treatment sites

Each site (A, B and C) was treated with the disinfectant under the contact conditions indicated on the label as follows (Figure 1):

- Hydrogen peroxide 35% 1:50 dilution with treatment for 2 hours
- Hydrogen peroxide 35% 1:100 dilution with treatment for 2 hours
- Prophyl® 2% 1:50 dilution with treatment for 6 hours
- Prophyl® 2% 1:100 dilution with treatment for 6 hours
- Water as a control for 6 hours

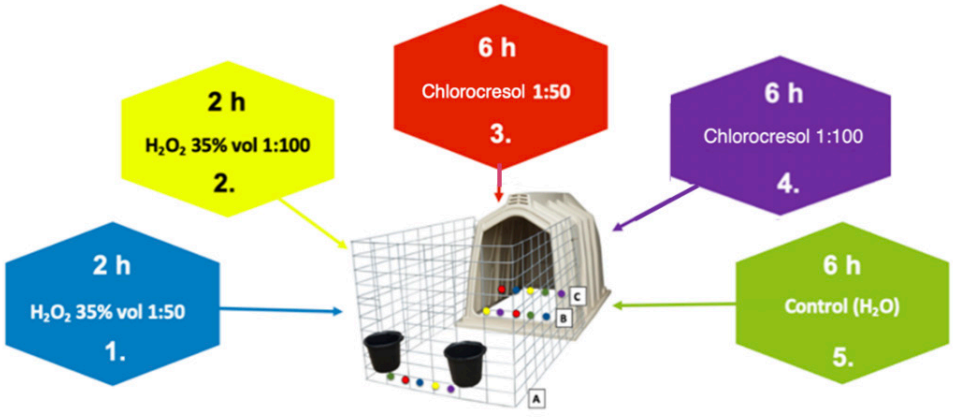

Figure 1. Illustration of treatment sites and treatment applications.
Laboratory and culture tests were performed to identify the level of efficiency of the product.

Results

Table 1. Destroyed oocysts per treatment group for each trial site

Treatment	Peroxide 1:100			Peroxide 1:50			Peroxide 1:100			Peroxide 1:50			Control		
	Site A	Site B	Site C	Site A	Site B	Site C	Site A	Site B	Site C	Site A	Site B	Site C	Site A	Site B	Site C
Average	**11.3[a]**	**6.8**	**9.9**	**5[a]**	**9**	**8.8**	**5.4**	**8.3**	**5.3**	**16.3[a]**	**7.8**	**6.6**	**6.0[a]**	**3.4**	**5.8**
Std deviation	6.2	7.3	8.3	5.8	7.2	6.9	8.2	11.8	9.3	17.3	9.7	9.9	6.7	3.3	3.7
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	22	22	32	18	23	23	27	23	31	51	28	27	24	10	12

a = significantly lower oocysts ($p < 0.05$)

Site A - direct sunlight; Site B – half shade; Site C – shade only

The greatest damage to oocysts was observed in the 1:50 Prophyl® group, due to the number of oocysts destroyed, in general counts and linear regressions under the sun (site A). This same disinfectant presented greater resistance to the sun with the highest number of whole oocysts, and oocysts that did not hatch.

The Prophyl® 1:100 treatment presented the highest number of non-viable oocysts and detritus in the half-shade block (site B), and the most detritus in the sun (site A) and shade (site C).

Conclusion

In general, Propyl® performed well at a lower dilution in direct sunlight, and at a higher dilution in the medium shade and in the shade.

Prophyl® proved to be a good solution to inactivate and/or destroy *Cryptosporidium* oocysts under field conditions including direct sunlight and shade.

Reference

Vázquez Flores, S. (2024). Viability of *Cryptosporidium* spp. Oocysts Subjected to Two Commercial Disinfectants. Internal data report not published.

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