

# EFFECT OF A PHYTOBIOTIC BLEND TO *CRYPTOSPORIDIUM* CONTROL IN CALVES

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## INTRODUCTION

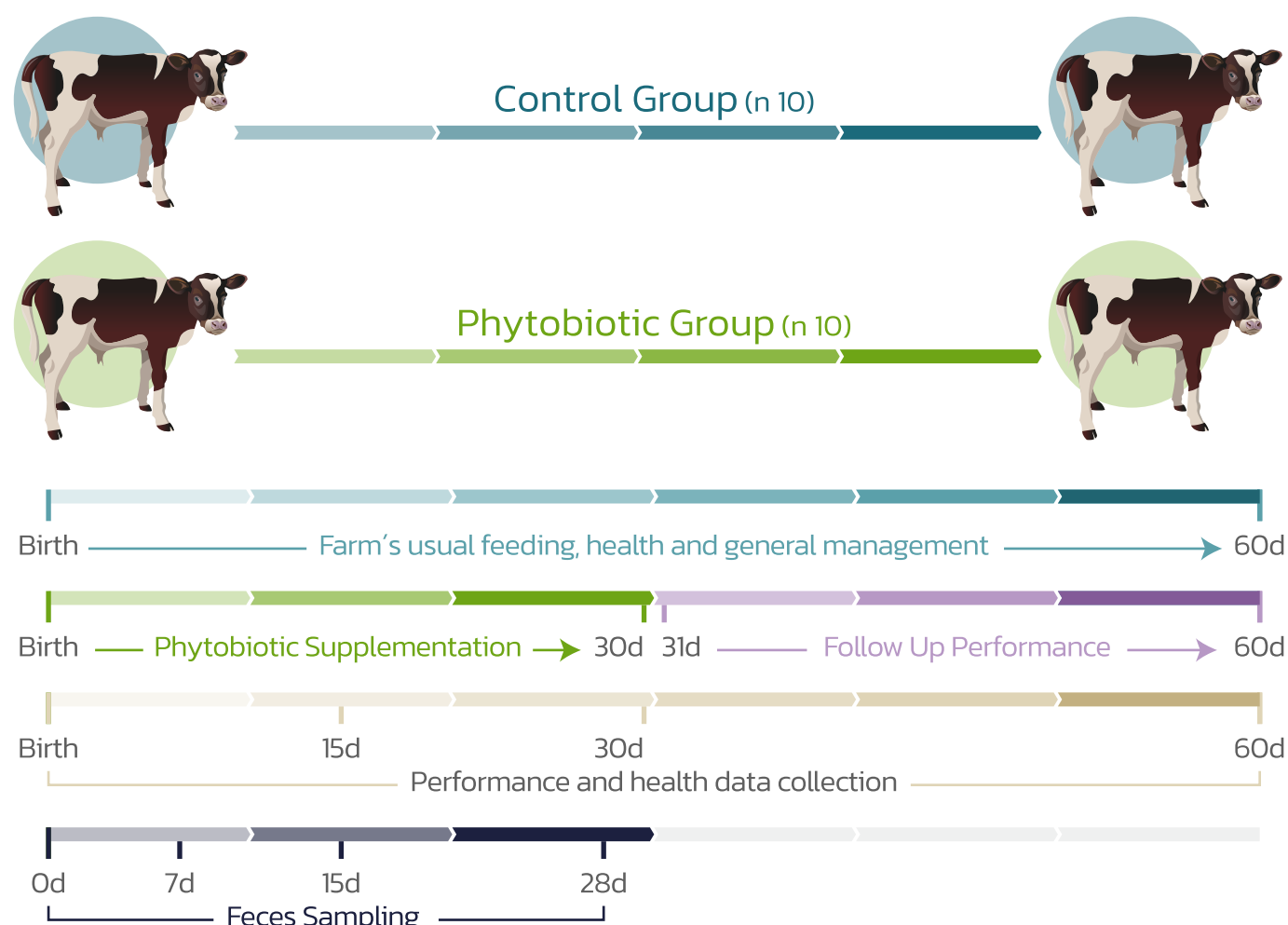
Enteric diseases are among the main health problems in young lactating cattle, where *Cryptosporidium* parasite is recognized as one of the main causes presenting high rates of morbidity and mortality, intestinal damage and impact over feed conversion and calves development.

**GRUPO NUTEC®** designed a phytobiotic blend based on garlic and cinnamon extracts, which has shown an anticoccidial effect by means of coccidia membrane rupture avoiding reinfestation, and microbiota modulation.

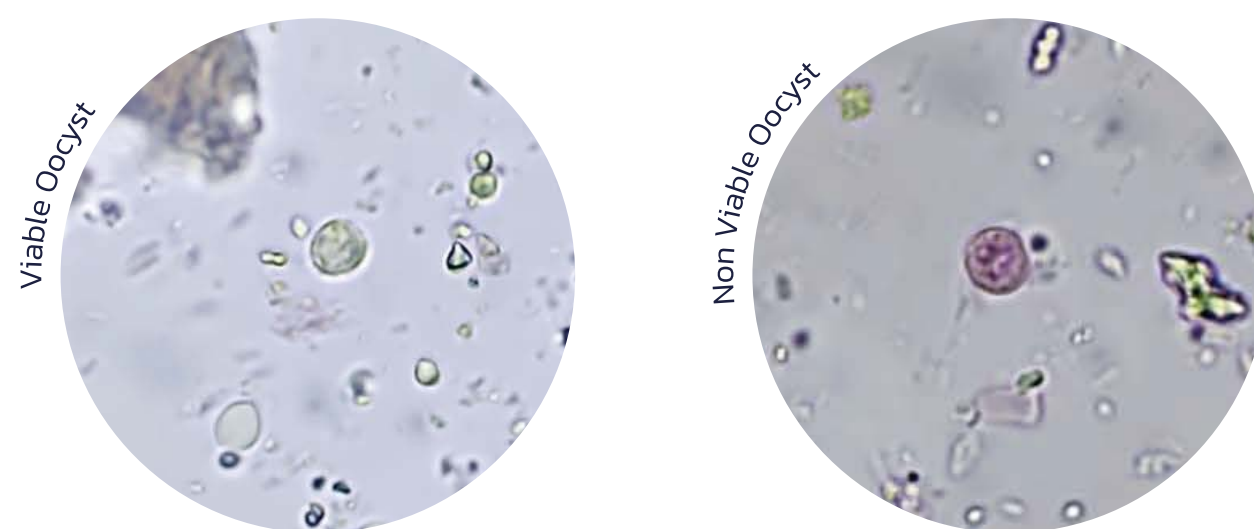
Thus, this work aimed to evaluate the effect of the phytobiotic blend supplemented in milk during the first 30 days of calves life as an alternative to the antiparasitic used for the prevention and control of bovine cryptosporidiosis under commercial farm conditions.



## EXPERIMENTAL PROCEDURE

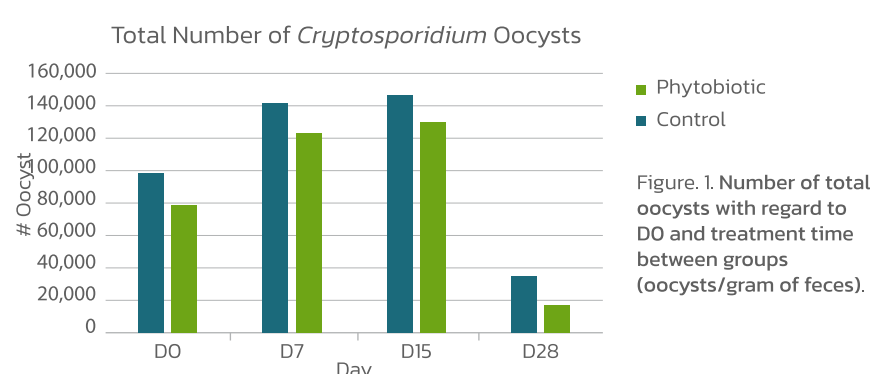


To evaluate the effect against *Cryptosporidium*, 25 grams of feces were obtained from the rectum at 0 (d 0, before first application of phytobiotic), 7, 15, and 28 d. The oocysts identification was made by the sedimentation method and Kinyoun stain. Quantification was based on dilutions visualized by microscopy (40X). Viability was determined by a modification in the eosin stain technique, which can discriminate into viable and non-viable oocysts based on pigmentation.



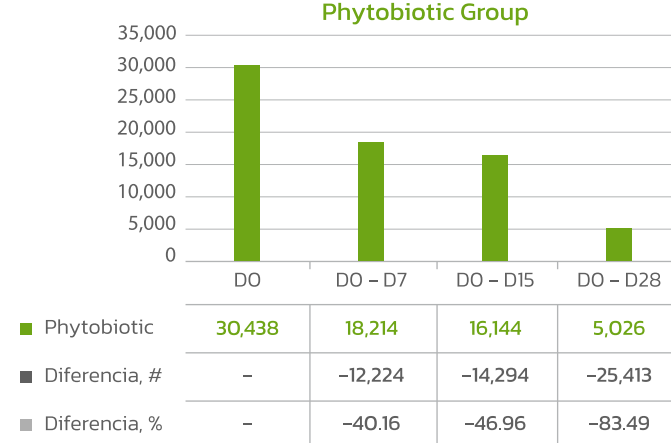
## RESULTS

At 7 d and 15 d an increase in the total number of oocysts found in feces was observed no matter the treatment due to the normal life cycle of *Cryptosporidium*. Furthermore, samples of water were analyzed and the results showed a content of 1,000 oocysts/ml and a viability of 100%; these elevated content and viability of oocysts represents a continuous source of dissemination and reinfestation (Figure 1).



The number of infective oocysts quantified at the beginning of the trial was 34,414 and 30,438 oocysts per gram of feces for Control and Phytogenic groups, respectively. Nevertheless, as the trial progressed the counts of viable oocysts were lower in the Phytobiotic treatment group than the Control group by 23.9% (7d) and 15.5% (15d). By day 28 a considerable reduction in the number of viable oocysts found in feces was observed for the treatment with the phytobiotic (Figure 2).

Number of Viable *Cryptosporidium* Oocysts Across Time



Number of Viable *Cryptosporidium* Oocysts Across Time

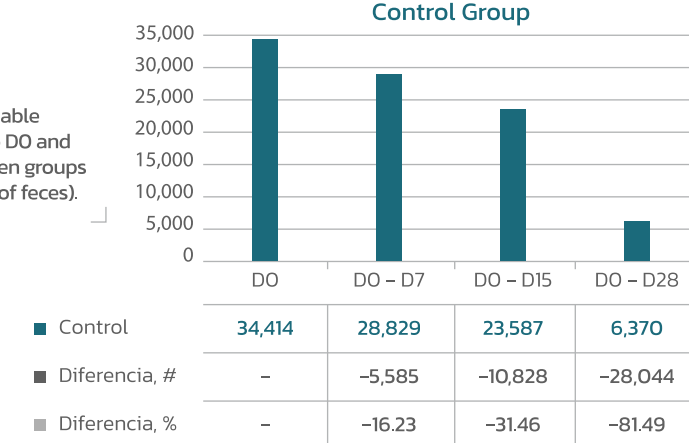


Figure 2. Number of viable oocysts with regard to DO and treatment time between groups (viable oocysts/gram of feces).

Phytobiotic supplementation also allowed an increment in daily weight gain (+ 71 g/day from birth to 60d) and final body weight (+4.292 kg at 60d), compared with the Control group. No significant difference was observed in Daily Height Gain (Figure 3).

There was no significant difference in cases of diarrhea. However, when diarrhea was present the duration and the average number of days in treatment were reduced compared to Control group (2.5 days Phytobiotic Group vs 3.2 Control Group).

| Treatment     | Birth  | 15 d   | 30 d   | 60 d   | TWG     | DWG     |
|---------------|--------|--------|--------|--------|---------|---------|
| Control       | 36.167 | 40.883 | 44.500 | 66.500 | 30.333  | 0.506   |
| Phytobiotic   | 33.375 | 39.388 | 42.088 | 68.000 | 34.625  | 0.577   |
| Diferencia,kg | -2.792 | -1.495 | -2.412 | +15    | +4.295  | +0.071  |
| Diferencia, % | -8.36% | -3.79% | -5.73% | +2.25% | +14.15% | +14.03% |

| Treatment     | Birth  | 15 d   | 30 d   | 60 d   | THG    | DHG    |
|---------------|--------|--------|--------|--------|--------|--------|
| Control       | 77.667 | 79.833 | 81.667 | 89.500 | 11.833 | 0.197  |
| Phytobiotic   | 76.125 | 78.125 | 81.250 | 87.750 | 11.625 | 0.194  |
| Diferencia,kg | -1.542 | -1.708 | -0.417 | -1.750 | -0.208 | -0.003 |
| Diferencia, % | -2.02% | -2.18% | -0.51% | -1.99% | -1.78% | -1.54% |

Figure 3. Evolution of growth from birth to 60 days of age (TWG = Total Weight vGain, DWG = Daily Weight Gain, THG = Total Height Gain, DHG = Daily Height Gain).

## CONCLUSIONS

The phytobiotic blend reduced the number of viable oocysts in treatment group; allowed a higher weight gain from birth to 60 days, and the severity, number of days with diarrhea and treatment time were reduced when present.