

Comparative Efficacy Evaluation of Allopathic and Homeopathic Anthelmintics on Parasite Load among Small Ruminants

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INTRODUCTION

While modern anthelmintics have been successful in treating gastrointestinal parasites among small ruminants, parasitic resistance has been on the rise.

Treating based on an individual egg per gram (EPG) threshold and/or via evaluation of eye membrane color scores (FAMACHA) are industry-promoted practices to reduce the overuse of anthelmintics.

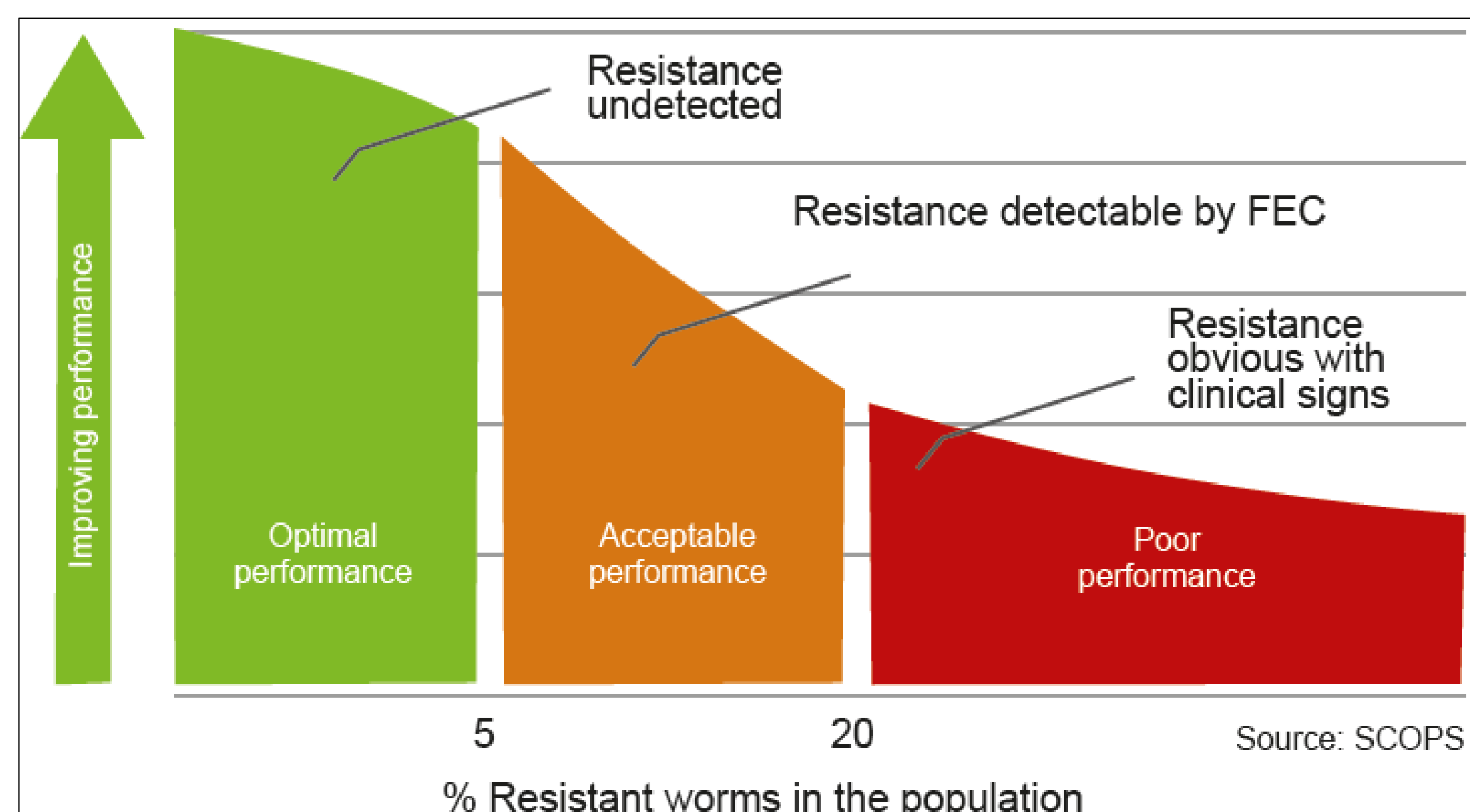


Figure 1 – Parasite resistance percentages, when detectable, and their impact on animal performance (SCOPS).

Several studies have reported promising efficacy in targeting gastrointestinal parasites commonly found in Northeastern Arkansas, like *Haemonchus contortus*.

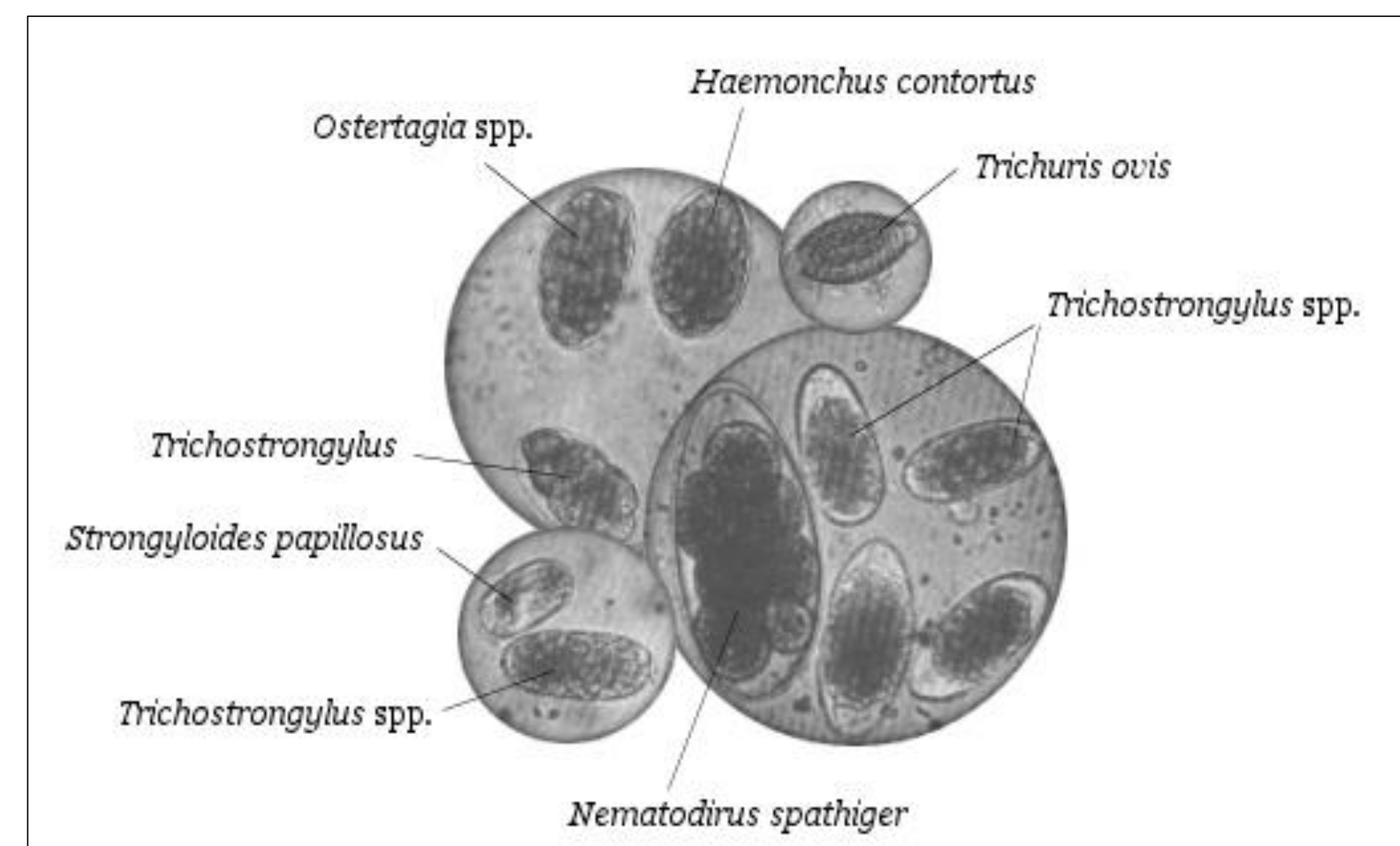


Figure 2 – Eggs from common species of worms (300x). Clunies Ian, and Hugh Gordon. *The Internal Parasites and Parasitic Diseases of Sheep*, 1936.

OBJECTIVES

The objective of this study was to evaluate and compare the effectiveness of an allopathic (Prohibit™) anthelmintic with a homeopathic (VermOust™) alternative in managing gastrointestinal parasites in a small ruminant herd at Arkansas State University.

- **Ho:** There is no difference in the efficacy between homeopathic and allopathic anthelmintics in reducing parasite load

- **HA:** There is a difference in the efficacy between homeopathic and allopathic anthelmintics in reducing parasite load

METHODS

- Ewes (n=39), does (n=15), rams (n=2) and bucks (n=1) were enrolled in the study.
- Fecal samples were analyzed for eggs per gram (EPG) using the McMaster technique.

$$\frac{(Eggs_{C1} + Eggs_{C2})}{0.3 \text{ mL}} \times \frac{\text{total volume (mL)}}{\text{feces weight (g)}} = EPG$$

Equation 1 – Eggs per Gram formula for McMaster technique. C1 (chamber 1) and C2 (chamber 2).

- Animals with an EPG threshold of ≥ 1000 (n=18 ewes, 11 does, 2 rams) were randomly assigned to Prohibit or VermOust treatment at parturition.
- Fecal Egg Count Reduction Tests (FECRT) were conducted to observe changes in fecal parasite egg numbers between treatments and/or fecal sampling events.

$$\left(\frac{\text{Pre-Treatment EPG} - \text{Post-Treatment EPG}}{\text{Pre-Treatment EPG}} \right) \times 100$$

Equation 2 – Fecal Egg Count Reduction Test formula.

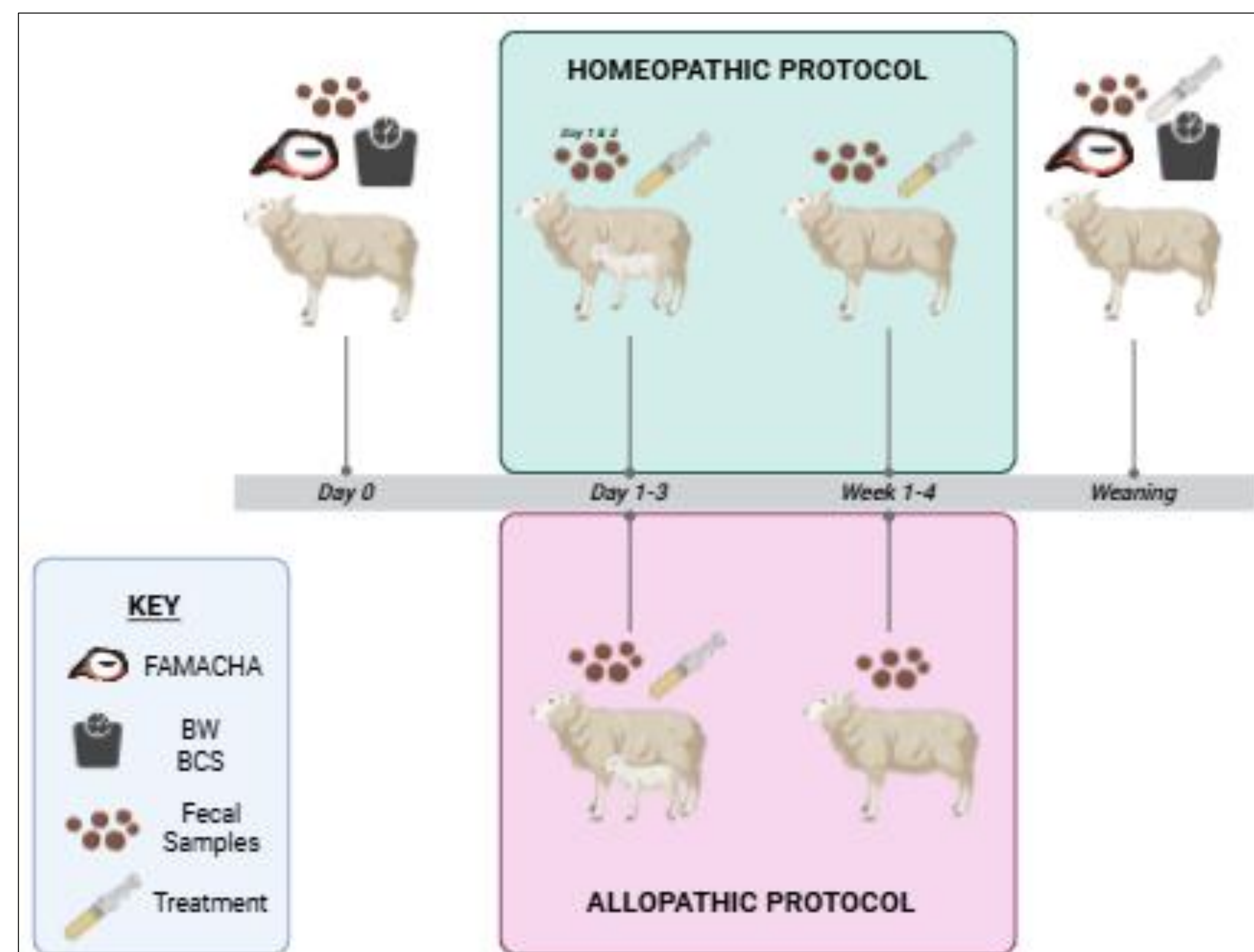


Figure 3 – Homeopathic and allopathic protocol timeline for the study.

- The Prohibit™ group received a singular oral dose (0.3ml/lb).
- The VermOust™ group received an aqueous oral drench (2tbsp sheep/1tbsp goats) 2x a day for 3d then 2x a day once a week.
- After the treatment period, any remaining infected animals were given an oral dose of Panacur™ 10%.

VermOust Ingredients: Peppermint Leaf, Gentian Root, Fennel, Psyllium, Wormwood, Clove, Quassia, Olive Leaf, Turmeric Root, Black Walnut Hull, Cayenne Pepper.

Prohibit Ingredients: levamisole hydrochloride (cell depolarizer).

FINDINGS

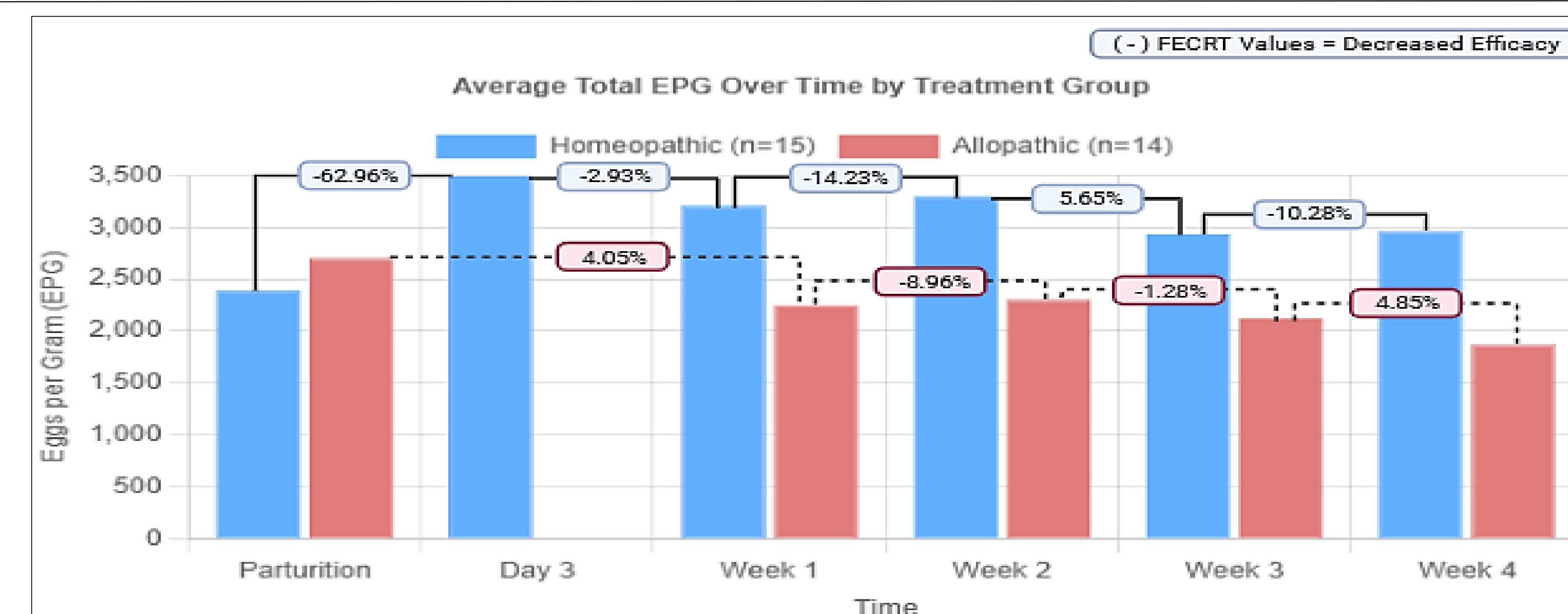


Figure 4 – Total EPG values for homeopathic and allopathic treatment groups over time. Percentages represent FECRT between each period.

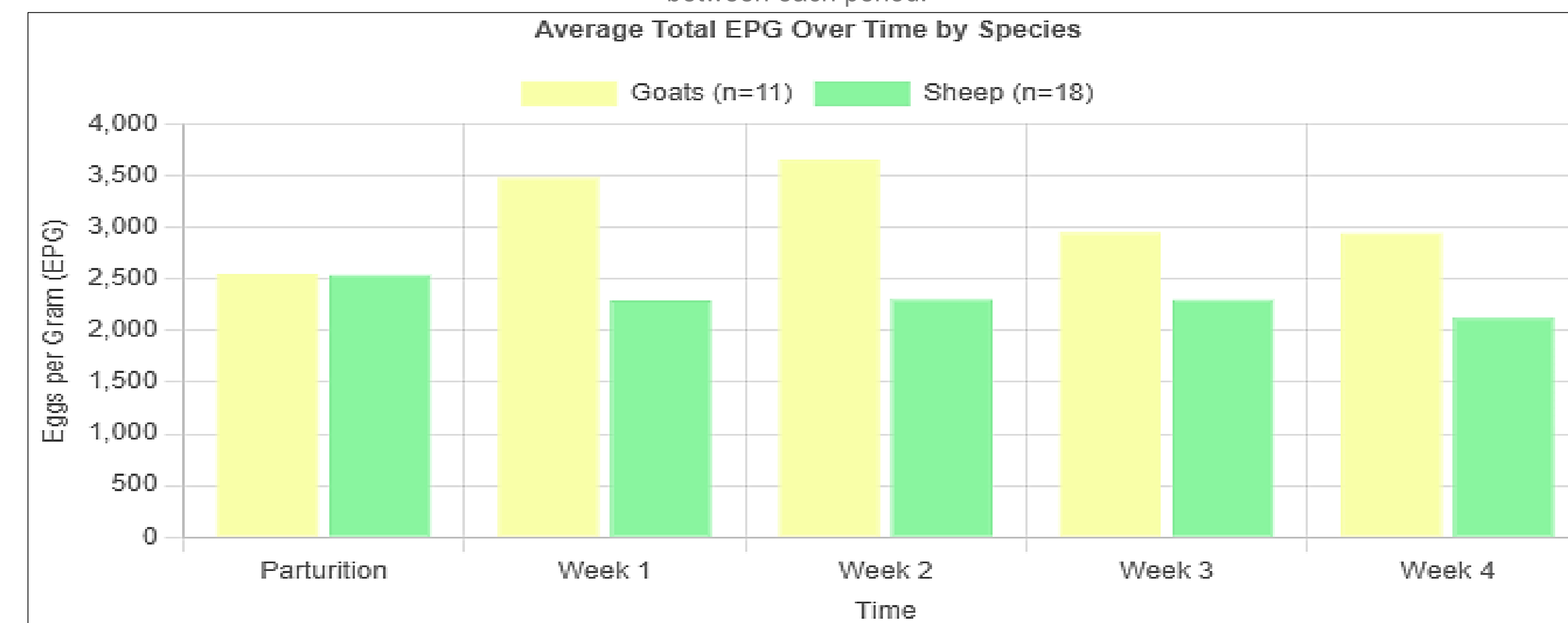


Figure 5 – Average Total EPG between sheep and goat groups over time.

PRELIMINARY IMPLICATIONS

- Data from the present study indicate disparities between allopathic and homeopathic treatments on parasite load.
- Goats have a greater total EPG over time on average compared to sheep.
- The homeopathic treatment group has experienced greater fluctuations in total EPG.

If trends persist, this will support the sustained application of conventional anthelmintics as more effective interventions for parasitic infections compared to allopathic.

Resistance is still an issues, therefore, treatment based on individual EPG and alternating allopathic anthelmintic products is crucial.

ACKNOWLEDGMENTS

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REFERENCES

- Fleming, Sherrill et al. 2006. "Anthelmintic resistance of gastrointestinal parasites in small ruminants." *Journal of Veterinary Internal Medicine*. 20(2): 435-444. [https://doi.org/10.1892/0891-6640\(2006\)20\[435:arogpi\]2.0.co;2](https://doi.org/10.1892/0891-6640(2006)20[435:arogpi]2.0.co;2)
- Zajac, A.M., et al. 2020. "Biology, epidemiology, and control of gastrointestinal parasites in small ruminants." *Veterinary Clinics of North America: Food Animal Practice*. 36(1): 73-87. <https://doi.org/10.1016/j.cvfa.2019.12.005>
- Rocha, da R.A., et al. 2006. "Efficacy of homeopathic treatment against natural infection of sheep by gastrointestinal nematodes." *Revista Brasileira de Parasitologia Veterinaria*. 15(1): 23-27. ISSN 0103-846X.