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# Effect of plant extract based additives against coccidiosis development of lambs

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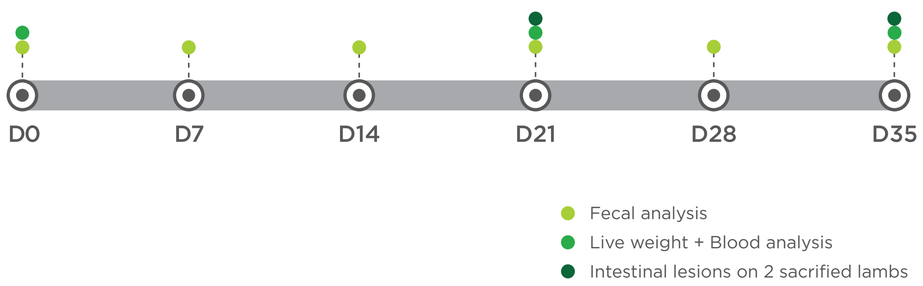
**Coccidiosis, caused by *Eimeria* parasites, is an important disease in young ruminants. Due to the growing pressure by governments and consumers to reduce the use of antibiotics and coccidiostats in animal feed, new alternatives to prevent coccidiosis are now available. Plant extracts are commonly being used in Europe to reduce the incidence of coccidiosis. The product has been tested in calves, leading to a significant reduction in *Eimeria* development [2]-[4]. The objective of this trial was to evaluate the efficacy of this natural based product on lambs.**

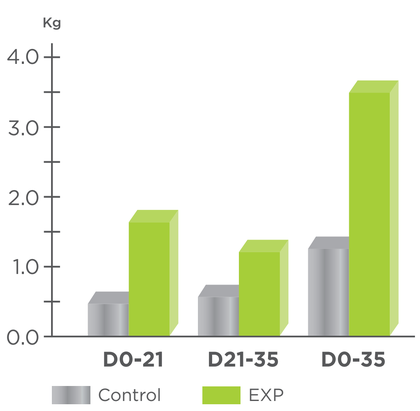
## MATERIAL AND METHOD

- 2x8 Romney Marsh lambs at weaning (21 days old)
- Outside rearing in paddock
- **Feed:** hay + concentrated feed + grass
- **Experimental group (EXP):** plant based supplementation through daily gelatinous capsules (standardized in sapogenins, terpens and alkaloids)
- **Control group:** placebo with empty capsules

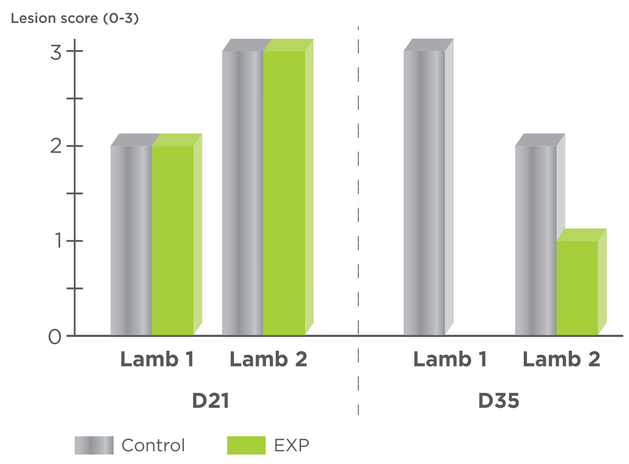



## RESULTS

### FIGURE 1: WEIGHT GAINS (KG/PERIOD)




### FIGURE 2: INTESTINAL LESION SCORE

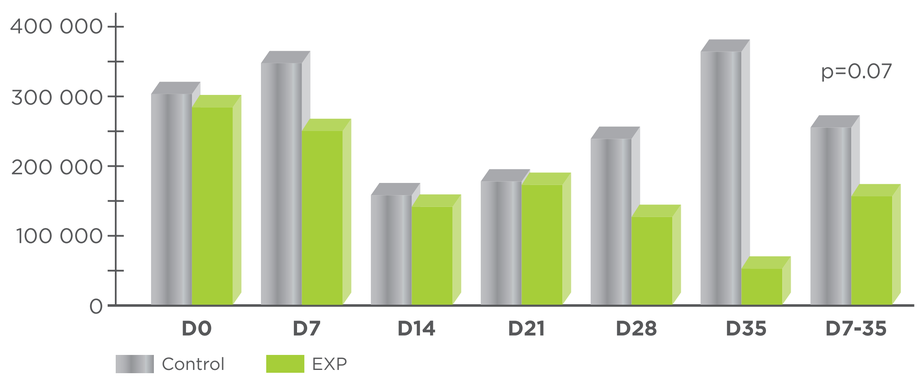



The average daily gain was 99.7 vs. 37.7 g d-1 lamb-1 for the EXP and Control groups respectively (insignificant; Fig. 1).

The EXP group tended to get a significant reduction in oocyst count (-39 %; P = 0.07) on average from D7 to D35 (Fig. 3).

Oocyst excretions are correlated with the histology results, with a lower lesion from Eimeria at D35 on the 2 EXP lambs (Fig. 2).

### FIGURE 3: AVERAGE *EIMERIA* EXCRETION




As shown in Table 1, it is observed for EXP group:

- lower creatin kinase (CK) and aspartate amino transferase (AST) at D21;
- higher levels of vitamins A, E at D21 and magnesium (Mg) at D21 and D35;
- higher white blood cells at D35.

## DISCUSSION AND CONCLUSION

This trial evaluated the potential of natural plant extracts to reduce *Eimeria* development. Due to the low number of animals, no significant differences were obtained for live weight and lesion scores.

Further investigation into plant additives and their modes of action on *Eimeria* would be interesting to confirm Muthamilselvan *et al.* (2016) and Azeredo *et al.* (2014) describing an inhibition of host cell invasion with the use of some plant extracts; and then to largely recommend these coccidiostatic alternatives in line with consumer demand.

**The results of investigation indicate oocyt excretion tended to be reduced in the overall period in the experimental group which might be associated with a better biochemistry status of some parameters**

### TABLE 1: HAEMATOLOGY AND BIOCHEMISTRY RESULTS

| DAY | TREAT. | AST (µkat/l) | CK (µkat/l) | Zn (µmol/l) | Fe (µmol/l) | Mg (mmol/l) | VIT. A (µmol/l) | VIT. E (µmol/l) | HGB (g/l) | HCT (%) | WBC (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D0 | EXP | 2.23 | 5.96 | 11.64 | 30.62 | 1.00 | 1.29 | 3.26 | 110.4 | 32.5 | 8.50 |
| | Control | 2.36 | 6.78 | 13.77 | 26.16 | 1.04 | 1.08 | 2.42 | 113.9 | 35.4 | 8.76 |
| | *P value* | NS | NS | NS | 0.09 | NS | NS | NS | NS | NS | NS |
| D21 | EXP | **2.14** | **7.05** | 11.04 | 29.69 | **0.98** | **1.28** | **3.45** | 109.5 | 32.5 | 8.65 |
| | Control | **2.43** | **8.59** | 12.86 | 27.12 | **0.82** | **0.98** | **2.11** | 103.1 | 29.8 | 9.21 |
| | *P value* | **0.04** | **0.09** | 0.013 | NS | **0.014** | **0.002** | **0.028** | NS | 0.07 | NS |
| D35 | EXP | 2.46 | 7.23 | 11.70 | 19.6 | **0.99** | 1.57 | 1.32 | 101.2 | 31.4 | **11.68** |
| | Control | 2.16 | 9.02 | 9.57 | 15.0 | **0.90** | 1.37 | 1.14 | 98.3 | 32.7 | **9.23** |
| | *P value* | NS | NS | 0.008 | 0.08 | **0.06** | NS | NS | NS | NS | **0.04** |

## REFERENCES

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