Is there a role for chicory in controlling internal parasitism in organic sheep?

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Introduction The potential antiparasitic effects of chicory (*Cichorium intybus*) are currently investigated as an alternative means to control parasitism in organic sheep production systems. Previous studies showed that parasitised lambs grazing on parasite-clean chicory swards had improved growth and lower faecal egg counts (FEC) compared to those grazing on parasite-clean grass pastures (Athanasiadou *et al,* 2004). The objective of this experiment was to investigate whether chicory can have a role as a potential means to control parasitism in lactating ewes and their lambs grazing on previously parasite contaminated pastures.

Materials and Methods Fifty-six twin-rearing, certified organic Shetland cross ewes, which carried a natural mixed parasite infection were used in a 2x2 factorial experiment, with forage species and level of parasite contamination as the two factors. Following parturition, half of the ewes were moved onto low contaminated pastures of grass or chicory, whereas the rest were moved onto high contaminated grass or chicory pastures (two replicates for each treatment; groups of ewes were balanced for FEC). The low and high parasite contaminated pastures were established following grazing of periparturient ewes drenched or not with an anthelmintic during the previous grazing season. Ewes and lambs remained on the experimental plots until weaning (day 118 after birth). FEC of ewes and lambs were monitored throughout and were analysed by ANOVA for repeated measurements. FEC were log (x+1) transformed prior to analysis. Liveweight gain of lambs was also monitored throughout and analysed by ANOVA.

Results All measurements obtained from the replicates of the same treatment were similar. Ewes grazing chicory had similar FEC to those grazing grass; similarly, ewes grazing on low parasite contaminated pastures had similar FEC to those grazing on high parasite contaminated pastures (Fig 1). FEC of lambs grazing on chicory were significantly lower than those grazing on grass until day 84 after birth (Fig 2). FEC of lambs grazing on low contaminated pastures were lower than those of lambs grazing on high contaminated pastures throughout the experiment. Lambs grazing on chicory grew better than lambs grazing on grass (235 vs 212 g per day, sed: 8.0; P<0.001). Lambs grazing on low contaminated pastures grew better than those grazing on high contaminated pastures (229 vs 211 g per day, sed: 7.0; P<0.001).

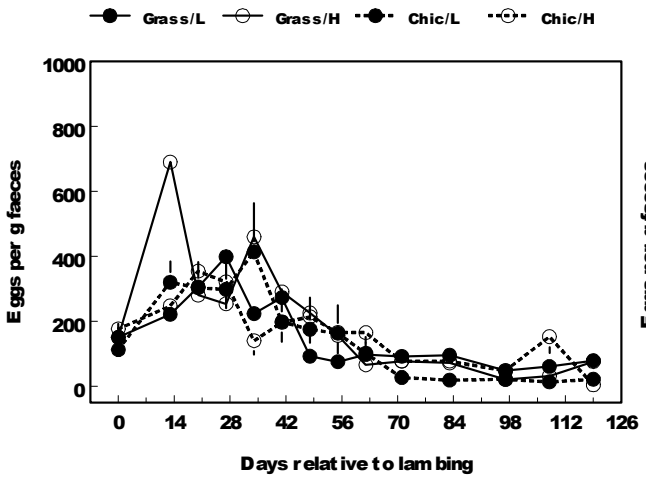

Figure 1 Backtransformed FEC of ewes grazing either on grass or chicory, low (L) or high (H) contaminated pastures, with 95% confidence intervals.

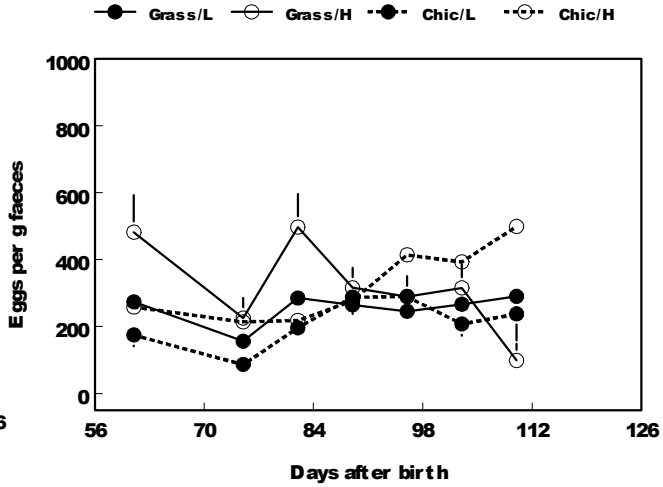

Figure 2 Backtransformed FEC of lambs grazing either on grass or chicory, low (L) or high (H) contaminated pastures, with 95% confidence intervals.

Conclusion Grazing on chicory did not affect the level of parasitism in lactating ewes grazing on low or high parasite contaminated pastures. However, lambs grazing on chicory grew better than those grazing on grass, both in high and low contaminated pastures. There was also evidence that lambs grazing on chicory excreted fewer eggs per gram faeces compared to their counterparts grazing on grass. These data support previous evidence on antiparasitic effects of chicory on growing lambs and their lack in lactating ewes. The low FEC of lambs could be attributed to effects of chicory against incoming parasites, and thus was not observed in ewes that carried an established parasite population.

Reference

Athanasiadou, S., Gray, D, Cowie, R., Tzamaloukas, O. Kyriazakis, I., Jackson, F. 2004. The use of chicory to control parasitism in organic lactating ewes and their lambs. *Proceedings of the British Society of Animal Science*:54