

Evaluation of the efficacy of anthelmintic treatments against sheep gastro-intestinal nematodes in Sardinia

Scala A., Nieddu M.S., Urrai G.¹, Maricosu G.¹, Contini L.¹, Polinas L., Tanda B., Basciu M., Sanna Coccone G.N., Fiori I.¹, Pilo C.

Dipartimento di Biologia Animale, Sezione di Parassitologia e Malattie Parassitarie, Università degli Studi di Sassari, Italy;

¹*Associazione Regionale Allevatori della Sardegna, Italy.*

Despite the rising of new methodologies for the control of endoparasites in animals of zootechnic value, such as phytotherapy, homeopathy, and genetic selection for screening of resistant individuals (Gruner L, 2002, Acta SIPAOC, 15: 80-89; Carta A, Scala A, 2004, Parassitologia, 46: 251-255) and hypothetic vaccinations against NGI (Vercruysse J, 2004, Parassitologia, 46: 261), anthelmintic treatments still remains the most applied measure in the field.

In Sardinia, where over 3,000,000 sheep are raised, in every farm an average of 5.28 anthelmintic treatments per year were performed (Scala A *et al*, 1999, Acta Fe.Me.S.P.Rum. Congress: 267-272).

In 58 sheep farms, for a total of 15,612 bred animals of Sardinian race (13,204 sheep, 2,267 lambs and 41 rams), where the farm veterinarians had scheduled an anthelmintic treatment against gastro-intestinal Nematodes (NGI), samples were collected in order to monitor the methods of treatment and also to evaluate their real effectiveness on parasites.

Individual faecal samples from rectum were taken at day 0 (D0) from at least 10 animals per flock and data on the drug used and the administration method were collected.

Treatments were then applied according to the manufacturer's recommendation and dosage with the following drugs: Benzimidazoles (No.22-37.9%); Macrocytic lactones (24.1%); Pro-Benzimidazoles (Netobimin) (No.8-13.8%); Imidazoles (No.6-10.4%); Levamisole + Oxytoclozanide (No.6-10.4%); Closantel (No.1-1.7%); Oxfendazole + Closantel (No.1-1.7%).

After 15 days (D15), a further collecting of individual coprological samples of the same subjects that had previously been sampled and marked was carried out.

A total of 1,891 coprological analyses were performed with the McMaster technique according to Raynaud JP (1970, Ann Par Hum et Comp, 45: 321-342).

The effectiveness of the treatments was evaluated through the reduction in the number of eggs per gram of faeces (EGF) using the FECR (faecal egg count reduction) calculated by the following formula:

$$\text{FECR} = (\text{GA EGF D0 group} - \text{GA EGF D15 group}) / \text{GA EGF D0 group} * 100$$
, where "GA" means Geometric average (x+1).

Anthelmintic treatments were performed with an EGF average for NGI of 425.8 (SD 267.7) with a range from 23.1 to 1.170 EGF. In 30 of the examined farms (51.7%) 90 copro-negative animals to NGI eggs (9% of the total animals screened) were present; this percentage varied in the different farms from 3.3% to 43.8%. FECR at D15 was more than 99% for all the anthelmintic treatments performed. The number of positive animals for eggs of NGI at D15 was of 123 (13.7%); however these animals eliminated extremely contained levels of EGF (<45 EGF).

The complete absence of NGI eggs in all treated sheep at D15 was found in 48.3% of the farms (No. 28). To sum up, we can affirm that anthelmintic treatments for NGI of sheep in Sardinia are primarily performed with Benzimidazoles (37.9%) and Macrocytic lactones (24.1%) and that the same are effected in 19% of cases in the presence of moderate quantities of EGF (< 200). This confirms that not all interventions are effected on rational grounds. In fact many anthelmintic treatments were carried out without any previous copromicroscopic diagnosis, which results in a waste of financial resources and energies (i. e. in the choice of the appropriate drug), and increasing the potential selection of drug-resistant nematode populations. In spite of this, our work did not show any phenomena of drug resistance by NGI, as instead reported in other districts.