

A preliminary report on the use of FAMACHA® for haemonchosis in goats in the Eastern Cape Province of South Africa during the late autumn/early winter period

C Sri Jeyakumar^a

ABSTRACT

From May to July 2005 a study was conducted on the prevalence and effects of haemonchosis in goats farmed on communal grazing belonging to resource-poor farmers at two study sites, namely Mlungisi (26°53'E, 31°53'S) and Ezibeleni (26°58'E, 31°53'S), situated within the Chris Hani District Municipality in Eastern Cape Province of South Africa. The usefulness of the FAMACHA® system for identifying goats needing treatment was confirmed. It allowed stock owners to identify badly affected goats accurately, as borne out by the agreement between FAMACHA scores and corresponding haematocrits.

Key words: faecal egg count, FAMACHA® system, haematocrit, *Haemonchus* spp., nematodes.

Sri Jeyakumar C A preliminary report on the use of FAMACHA® for haemonchosis in goats in the Eastern Cape Province of South Africa during the late autumn/early winter period. *Journal of the South African Veterinary Association* (2007) 78(2): 90–91 (En.). Provincial Veterinary Laboratory, Private Bag X7093, Queenstown, 5320 South Africa.

From May to July 2005 a study was conducted on the prevalence and effects of haemonchosis in goats farmed on communal grazing belonging to resource-poor farmers at two study sites, namely Mlungisi (26°53'E, 31°53'S) and Ezibeleni (26°58'E, 31°53'S), situated within the Chris Hani District Municipality in Eastern Cape Province of South Africa. The objective of the trial was to establish the usefulness of the FAMACHA® system based on evaluation of the colour of the mucous membranes of the conjunctivae, in relation to haematocrit determination as ultimate standard.

^aProvincial Veterinary Laboratory, Private Bag X7093, Queenstown, 5320 South Africa.
E-mail: chuppramaniam.srijeyakumar@agr.ecprov.gov.za
Received: November 2006. Accepted: May 2007.

Thirty mainly indigenous goats were sampled in Mlungisi and 32 indigenous and Boer crossbred goats in Ezibeleni. There was no feed supplementation at either site, the goats having to rely on whatever they could forage from the communal grazing with very few management interventions. None of the goats had ever been treated with an anthelmintic. Both trial sites were visited twice, one month apart for sampling and examinations. The goats were scored for the level of anaemia using the FAMACHA system at the first visit. Only goats evaluated according to the FAMACHA chart to be in categories 3, 4 of 5 were treated with a commercial albendazole/closantel product at a dosage of 3.8 mg albendazole and

7.9 mg closantel/kg live mass (Prodose Orange, Virbac, South Africa).

Pre- and post treatment faecal worm egg counts were done on faeces collected per rectum from each goat at the first and second visits, respectively, and the efficacy of the anthelmintic product used, calculated accordingly^{3,4}. Only infective larvae of *Haemonchus* spp. were recovered from cultures of the faeces, and the egg counts were negative for *Fasciola* spp. ova. Only at the 1st visit was each goat bled into a vacuum tube containing EDTA as anticoagulant. Microhaematocrit determinations were done in duplicate per sample, and the average of the two readings compared with the clinical FAMACHA evaluations.

While 13 and 11 goats from Mlungisi and Ezibeleni areas, respectively, scored 5 in the FAMACHA anaemia guide before treatment, only 2 of these from each site showed no improvement after treatment.

The faecal egg count reduction test results were calculated as follows, using the geometric mean counts, and drug resistance is defined as efficacy below 95%^{3,6}.

$$\text{Faecal egg count reduction \%} = \frac{T_1 - T_2}{T_1} \times 100,$$

where T_1 and T_2 represent, respectively, the mean pre- and post-drenching faecal

Table 1: Results faecal egg count reduction tests of 62 goats identified by the FAMACHA® system as suffering from haemonchosis.

Goats (<i>n</i>)	FAMACHA score	Before treatment				After treatment		
		Haematocrit		Faecal egg count		Faecal egg count		Egg reduction (%)
		Mean ± SD	Range	Mean ± SD	Range	Mean ± SD	Range	
Mlungisi								
8	3	19.1 ± 0.83	18–20	638 ± 381	100–1200	37 ± 52	0–100	~
9	4	15.7 ± 1.3	13–17	1855 ± 1095	500–4100	67 ± 87	0–200	~
13	5	9.6 ± 0.88	9–11	1423 ± 1212	700–5400	162 ± 119	100–500	~
Total 30		14	9–20	1343	100–5400	100	0–500	92.5
Ezibeleni								
10	3	19.6 ± 1.07	18–21	820 ± 352	100–1200	100 ± 47	0–200	~
11	4	15.4 ± 1.42	13–17	1391 ± 411	800–1900	127 ± 110	0–400	~
11	5	9.4 ± 1.37	8–12	2645 ± 696	1800–4400	191 ± 151	0–600	~
Total 32		13	8–21	1644	100–4400	140	0–600	91.5

worm egg counts of the treated animals.

The results indicate the possibility of a low level of resistance to the two compounds with which the goats were treated (Table 1). However, as regards pharmacokinetics, it is well known that goats metabolise and eliminate anthelmintics relatively fast, thus more akin to cattle than to sheep^{1,2}. Hence the present results cannot be regarded as a definite indication of anthelmintics resistance. On the other hand, in view of the fact that both albendazole and closantel were previously close to 100% effective against susceptible populations of *Haemonchus* spp. in small ruminants⁶, it seems most likely that both populations of this parasite tested in these trials have developed a considerable degree of resistance.

The usefulness of the FAMACHA system for identifying goats needing treatment was confirmed by this study, since it allowed stock owners to identify badly affected goats accurately, as borne out by the agreement between FAMACHA scores and corresponding haematocrits (Table 1). What was particularly noticeable was that all goats at both sites were

either anaemic or borderline (FAMACHA category 3). All animals were therefore treated. This is not surprising as the trials were conducted in late autumn to early winter, when haemonchosis is likely to be high following a summer build-up of worms in the goats that had grazed the available pastures continuously. If monitoring had started earlier, as is recommended⁵ and pasture management had been feasible, the severity of the parasite challenge could probably have been lower and therefore the need for treatment less.

ACKNOWLEDGEMENTS

Virbac RSA (Eastern Cape) is thanked for donating Prodose Orange for the treatment of the anaemic goats in these trials; Prof. G Bath and Dr J A van Wyk, Faculty of Veterinary Science, Onderstepoort, for guidance; and Mr B M Zazi, specialised auxiliary services officer, for the help during the course of the trials.

REFERENCES

1. Hennessy D R, Sangster N C, Steel J W, Collins G H 1993a Comparative pharmacokinetic disposition of closantel in sheep and goats. *Journal of Veterinary Pharmacology and Therapeutics* 16: 254–260
2. Hennessy D R, Sangster N C, Steel J W, Collins G H 1993b Comparative pharmacokinetic behaviour of albendazole in sheep and goats. *International Journal of Parasitology* 23: 321–325
3. Presidente P J A 1985 Methods for detection of resistance to anthelmintics In Anderson N & Waller P J (eds) *Resistance in nematodes to anthelmintic drugs*. CSIRO Division of Animal Health, Australian Wool Corporation Technical Publication: 13–27
4. Reinecke R K 1973 The larval anthelmintic test in ruminants. Department of Agricultural Technical Services, Republic of South Africa (*Technical Communication* No. 106)
5. Van Wyk J A, Bath G F 2002 The FAMACHA[®] system for managing haemonchosis in sheep and goats by clinically identifying individual animals for treatment. *Veterinary Research* 33: 509–529
6. Van Wyk J A, Malan F S, Van Rensburg L J, Oberem P T, Allan M J 1997 Quality control in generic anthelmintics: Is it adequate? *Veterinary Parasitology* 72: 157–165
7. Van Wyk J A, Stenson M O, Van der Merwe J S, Vorster R J, Viljoen P G 1999 Anthelmintic resistance in South Africa: surveys indicate an extremely serious situation in sheep and goat farming. *Onderstepoort Journal of Veterinary Research* 66: 273–284