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*Short communication*

# A PRELIMINARY INVESTIGATION OF RESISTANCE TO ANTHELMINTICS IN STRONGYLES OF CATTLE IN SHAKI, NIGERIA

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*A survey was conducted and the occurrence of anthelmintic resistance in strongyles of cattle was detected. Ten herds of cattle in Shaki, Oyo state of Nigeria were studied. Larval Development Assay (LDA) was used as the test method. Four drugs were tested. Resistance to the four drugs were detected. Resistance to albendazole were detected in two herds and in one herd for febantel with $LD_{50}$> 0.10 µgml$^{-1}$. Resistance to levalmisole and morantel was detected in three and in two herds respectively with $LD_{50}$>1.0µgml$^{-1}$*

**Keywords:** Cattle-nematoda; Anthelmintics; Resistance, Larval Development Assay: Shaki.

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## INTRODUCTION

The most important factor curtailing the use of anthelmints in controlling parasitic nematodes so as to boost animal production is the emergence of resistant population. The occurrence of anthelmintic resistant populations of parasitic nematodes has been widely reported more especially in the small ruminants (Prichard, 1990). Mbah *et al* (1992) reported benzimidazole resistance in strongyles of sheep in Nigeria. Anderson (1977) observed levamisole resistance in *Ostertagia ostertagi* in cattle in Australia. Geerts *et al* (1987) also reported evidence of levamisole resistance in this cattle parasites in Netherlands.

This problem cuts across the major groups of anthelmintics (Prichard *et al*, 1980, Waller and Prichard, 1986, and Waller 1987). Urquhart *et al*, (1982) noted that resistance to anthelmintics occurred chiefly in the geographical areas where *Heamonchus contortus* predominates and the annual number of cycles of infection and anthelmintic treatments are numerous. Such is the case in Southern Nigeria as reported by Obasaju and Grey (1984).

There is paucity of information on anthelmintic resistance in Nigeria especiallay in strongyles affecting cattle. The present study therefore provide preliminary information on the status of anthelmintic resistance in cattle in a part of Nigeria which have not been surveyed previously.

## MATERIALS AND METHODS

Ten herds were investigated separately. Only five herds were investigated for febantel. Fresh bulk faecal samples were randomly collected from representative number of cattle in each herd. These were pooled for each herd. The samples were transferred into thermoproof plastic container with ice packs. They were transported to the laboratory and processed immediately for recovery of strongyle eggs, larva development assay and lethal dose were carried out using serial dilutions of pure levamisole, febantel, albendazole and morantel tartrate ranging from $10^2$ to $10^3$µg/ml, as described by Tinner, (1958) and Hubert and Kerbouef, (1992), water was used for control.

## RESULTS

Ten herds were surveyed. The herd populations ranged between 21 to 160 cattle. The total population of cattle surveyed was 630. Local breeds of cattle were encountered during the study. The result of anthelmintic resistance status for the ten herds for imidazothiazole group and benzimidazole group are presented in Table I and II respectively.

The tables were subdivided into three according to the degree of efficacy of the drugs. Resistance was detected in 20% of the herds to all the four drugs except levamisole with 30%. The remaing 80%

and 70% respectively are still susceptible to the anthelmintics

**Table 1.** Result of anthelmintic sensitivity of the ten herds to imidazothiazole group [Levamisole & Morantel]

| $LD_{50}/\mu gml^{-1}$ | Levamisole Number of herds (%) | Morantel Number of herds (%) |
|---|---|---|
| <1.0 | 5 (50) | 6 (60) |
| ≈ 1.0 | 2 (30) | 2 (20) |
| > 1.0 | 3 (20) | 2 (20) |
| Total | 10 (100) | 10 (100) |

**Table 2:** Result of anthelmintic sensitivity of the herds to Benzimidazole group (albendazole & Febantel)

| $LD_{50}$ /$\mu gml^{-1}$ | Albendazole Number of herds (%) | Febantel Number of herds (%) |
|---|---|---|
| <0.1 | 5 (50) | 3 (60) |
| ≈0.1 | 3 (30) | 1 (20) |
| > 0.1 | 2 (20) | 1 (20) |
| Total | 10 (100) | 5 (100) |

## DISCUSSION

This study reveals that resistance to both imidazothiazole and benzimidazole group of drugs exists. In the area. This supported the finding of Anderson (1978) and Geerts *et al* (1987) in cattle industry. The possibility of introducing resistance worm from another place was ruled out. This is because local breeds of cattle were encountered through out the study. Also stocking is done locally.

The level of resistant population of strongyle is still low. It is important that the resistant population will be increasing as reliance on anthelmintics to control nematodes continue unabated. The result obtained in the study was the outcome of worm control practiced in the area. The factors which would have contributed to this include depending solely on anthelmintics, underdosing, continued and prolonged use of a particular drug or indiscriminate change of drugs without good understanding of the principles that govern such practise among others. Wherever resistant pupulations of strongyles to anthelmintics have been reported, it heralded the failure of the anthelmintics concerned in that area. This will make the control of such worms very difficult. In South Africa, several reports of resistance to all the classes of anthelmintics occur and as a result of anthelmintic failure some sheep farms have closed down (Van Wyk, 1991).

There is need for concerted effort to curb the spread of anthelmintic resistance in Shaki area before it becomes difficult to manage.

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