

When used separately, anti-parasitic efficacy of nutrient (MP) supplementation and bioactive forage consumption is usually considerably lower than what can be achieved through the use of pharmaceuticals, although it has been argued that the latter may not necessarily be required nor desired. It might be therefore beneficial to combine these strategies to control parasites to a greater extent than possible when they are used in isolation. This is because nutrient supplementation and PSM consumption affect differently components of parasite life cycle (epidemiology) and benefit hosts differently at different productive stages (e.g. growing vs. lactating small ruminants). This principle has just been applied in temperate systems of production with greatly promising consequences. The strategy used was the supplementation of ewes with MP and the supply of chicory as forage to their lambs, and resulted in substantially reducing the antiparasitic drug input into the system than was achieved by using either of the two strategies on its own.

The issue is whether the principles developed above could be applied to control parasites in small ruminant systems of production in the tropics, especially because the option of nutrient supplementation might not always be available. When devising such nutritional strategies one should take into account the availability of local resources on the one hand and both the antiparasitic and anti-nutritional properties of local forages on the other. Only then alternative strategies can be implemented and incorporated into local systems of production with a high degree of success. The final part of this paper will concentrate on this issue.

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Epizootiology of gastrointestinal strongyles in Pelibuey ewes in a silvopastoral system under a selective treatment program

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Introduction

The search of solutions to parasite infestations is one of the main present challenges in sheep production systems, where the occurrence of resistance to anthelmintics is increasingly frequent (Papadopoulos, 2008). The FAMACHA[®] system seems to be an appropriate parasite control tool when resistant sheep strongyles infestations occur, if used as a part of a comprehensive integrated parasite control strategy.

Material and methods

For three years an experiment was carried out in the research areas of the Grass and Forage Research Station "Indio Hatuey", Matanzas, Cuba. In order to perform the research strategy, fifty-seven Pelibuey ewes were treated under a parasite control scheme based on suppressive treatments in the mid dry season and the beginning of the mating campaign, with the application of the FAMACHA[®] system scheduled for the rest of the year. The ewes under the scheme received a supplementary feed source at the mating season, the last third of pregnancy and the first thirty days postpartum. Experimental data regarding the fecal egg count (FEC), haematocrit (PCV), body condition score (BCS) and the color of the ocular mucosa with the FAMACHA[®] card were determined on an individual monthly basis. Ewes grazed on a silvopastoral system within a rotational system of *Leucaena leucocephala*. The SPSS[®] software was used for data processing. Mean differences were assessed through an ANOVA analysis.

Results

Three years after the implementation of the selective treatment strategy, a stability of the parasite population was observed. *Haemonchus* spp remained as the principal parasite affecting the herd, which is confirmed as the main health problem of sheep in the region (Arece *et al.*, 2004). The selective drenching schedule did not allow other species to occupy its ecological niche. Ewes were found to be significantly ($P \leq 0.01$) infested in the dry season, which coincides with previous studies carried out before the adoption of the present parasite control strategy. The global herd infestation was low since 59% of the herd showed FEC lower than 300 epg, and only 26% was higher than 1000 epg. In addition to this, about 83% of the flock, on the average, was classified as "A" or "B": the FAMACHA[®] color card. The increase of the global FEC (with respect to previous years) did not affect their BCS because most of the animals had been diagnosed as having moderate to slight infestation levels. In contrast with a previous study carried out in this same flock, the non-pregnant ewes were the most infested ($P \leq 0.01$) and the drenching program about the lambing date interfered on the periparturient rise effect.

Conclusions

As expected, the use of FAMACHA[®] allowed for a drastic reduction in anthelmintics used to control infestations in ewes. The selective drenching scheme did not affect the epizootiology of strongyles infestation.

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Trypanotolerant and trypanosusceptible type dual purpose cattle in the lowlands of Venezuela: phenotypic identification and characterization

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Introduction

A sustainable strategy for the control of trypanosomiasis is to select bovines according to their tolerance to challenges by *T. vivax*, a quality trait widely studied in the African continent, using diverse methods: identification by hematological values, modulation to infection, studies of molecular genetics, among others.

Materials and methods

The present field study was carried out in order to identify cattle and characterize them as Trypanotolerant (TT) and Trypanosusceptible (TS) animals to *T. vivax* based on phenotypic markers: clinical, parasitological, hematological, serological and immunological evaluations; as well the association with average body score of animals determined by morphometric variables.

Results

By evaluating 790 bovines (females with two or more calvings and males selected randomly) from 20 herds located at Apure, Aragua, Barinas, Cojedes and Guárico states, we identified three animal types according to their size: small (41.58%), medium (26.67%) and large (29.75%). We identified 85.57% (84/98) TT and 14.3% (14/98) TS animals. According to their size, 45.91% were TT and 7.14% TS for small and medium size, while 11.2% TT and 2.04% TS were registered for large size. Prevalence values of *T. vivax* were 0.83% Apure, 8.47% Aragua, 16.66% Barinas, 17.5% Cojedes and 24.03% Guárico, with a significant difference between states ($P < 0.05$). A hematocrit mean value of 31.48% (range of 22.66 to 36.23%) was obtained with a significant association ($P < 0.05$) between ocular conjunctive color and the Hto %. Hemoglobin values (35.82%) were equal or below 10 g dL⁻¹. There was no significant association between the presence of *T. vivax* and Hto values (acceptable). A 85.76% seroprevalence by Ac-Elisa Test was obtained and 62.61% were positive to immune complexes.

Conclusions

The results show the effectiveness of the criteria used in this study to determine Trypanotolerant and Trypanosusceptible type cattle for the first time in Venezuela and America. This may be a useful tool to identify tolerant animals to one of the major illnesses in the region and can be used as a complementary element to selection and breeding programs among farmers or public and private institutions.

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