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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<sup>-1</sup>. 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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