

## TRYPANOSOMA CRUZI: ASSOCIATION BETWEEN SEROREACTIVITY OF CHILDREN AND INFECTION RATES IN DOMESTIC PANSTRONGYLUS MEGISTUS (HEMIPTERA: REDUVIIDAE)<sup>1</sup>

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**Abstract.** In Castro Alves, Bahia, Brazil, the presence of children seroreactive to *Trypanosoma cruzi* was associated with high infection rates in household *Panstrongylus megistus* (Hemiptera: Reduviidae). In a survey of 63 infested houses, 54% of bugs collected from houses with seroreactive children were infected. In contrast, only 14% of triatomines from houses with seroreactive adults and no seroreactive children were infected. Infection rates in *P. megistus* were significantly correlated with the number of seroreactive children present per household. To selectively reduce transmission of *T. cruzi* in a community, protection of infested homes housing children should receive primary attention.

Castro Alves, Bahia, Brazil, lies in a region highly endemic for Chagas' disease. *Panstrongylus megistus* Burmeister is the sole triatomine that commonly infests houses in Castro Alves (Sherlock & Muniz 1975). The proportion of populations of this triatomine infected with *Trypanosoma cruzi*, the etiologic agent of Chagas' disease, has varied in different surveys. Overall infection rates of 12.5% (Sherlock & Serafim 1974), 38.0% (Sherlock & Muniz 1975), and 25.0% (Sherlock et al. 1983) have been observed in Castro Alves. In nearby São Felipe, Bahia, infection rates of domestic *P. megistus* populations varied from 0-95% (Minter 1978). We have no explanation for the variable rate of infection with *T. cruzi* in domestic *P. megistus* populations.

Human infection with *T. cruzi* is common in Castro Alves. Over 44% of residents examined were seroreactive for *T. cruzi* (Mott et al. 1976). Houses infested with *T. cruzi*-infected *P. megistus* often contained seroreactive children, while houses lacking infected triatomines rarely contained such children (Mott et al. 1978). In addition, blood cultures and xenodiagnosis revealed parasitemia in seroreactive children more frequently than in sero-

reactive adults (Hoff et al. 1979, Maguire et al. 1982). In the present study we examined the association between seroreactive children and the infection rate of *P. megistus*.

### MATERIALS AND METHODS

#### Study area

The study area consisted of 247 houses located in 14 "fazendas" in the municipality of Castro Alves, Bahia, Brazil. A 10-fazenda study area (Mott et al. 1976) as well as 4 adjoining fazendas (Hoff et al. 1979, Piesman et al. 1983) have been previously described. Eleven of the 14 fazendas were last sprayed with insecticide (bendiocarb) during 1981 (Sherlock et al. 1983).

#### Census

Households were censused and individuals registered as previously described (Mott et al. 1976). The 10-fazenda study area was censused in September 1982, and the 4 adjoining fazendas were censused in April-May 1982. For the purpose of this study, children were defined as persons <18 years of age at the time of the 1982 census.

#### Serology

A blood sample was obtained from each resident of the 10-fazenda area during January-June 1983, and in the 4 adjoining fazendas during November 1982. All sera were tested for seroreactivity to *T. cruzi* by the indirect immunofluorescence test (IFAT) and the enzyme-linked immunosorbent assay (ELISA). Bloodstream trypomastigotes (Y strain) were used as antigens for the IFAT as previously described (Hoff et al. 1979). Sera were tested at a 1:40 dilution. A modification of Voller's method (Voller et al. 1975) was used in the ELISA test. Ninety-six-well ELISA plates (Dynatech, Alexandria, VA) were sensitized with 20 µg/ml soluble epimastigote protein (Y strain). Serum samples were tested at a dilution of 1:200 with alkaline-phosphatase-conjugated anti-human IgG and paranitrophenyl phosphate (both from Sigma, St. Louis, MO) as the assay reagents. Optical density was mea-

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