

## ANTI-BRUCELLA AGGLUTININS IN BATS AND "CALLITHRIX" MONKEYS

ILVAN D. RICCIARDI, MARLY P. NUNES, CLAUDIO M. ANDRADE and ALPHEU G. DA SILVA<sup>1</sup>,  
Department of Medical Microbiology, Institute of Microbiology,  
Federal University of Rio de Janeiro, Brasil<sup>2</sup>

**Abstract:** Anti-Brucella agglutinins were found in 5 of 53 (9.4%) vampire bats *Desmodus rotundus*, captured in the State of Bahia, Brasil. Two specimens of *Diphylla ecaudata* were negative. Fifty specimens of the small monkey, *Callithrix penicillata*, were also negative.

### INTRODUCTION

Serologic investigations for anti-brucella agglutinins are generally made in cattle, swine, goats and horses. A few reports have been published on similar investigations in other domestic animals (dogs, cats, chickens, etc.) and wild species. No work has been reported on serological tests for brucellosis in bats or monkeys in Brasil.

The opportunity of having at our disposal sera from several bats and monkeys during work on arboviruses prompted us to look for anti-brucella agglutinins.

### MATERIALS AND METHODS

Fifty-five hematophagous bats were captured in the localities of Amargosa, Elísio Medrado, Irajuba, Barra da Estiva e Iramaia, in the State of Bahia, in the Central Eastern part of Brazil (Figure 1). Fifty-three were *Desmodus rotundus* and two others were *Diphylla ecaudata*; two specimens of the omnivorous bat, *Phyllostomus hastatus*, were included. At the same time, 50 specimens of the miniature monkey, *Callithrix penicillata*, were examined.

Animals were bled from the heart and sera was separated in the conventional

way. Antigen was prepared with the standard strain 1119-3 of *Brucella abortus* and stained with 2,3,5-triphenyltetrazolium-chloride, according to the technique described by Mello and Mello.<sup>3</sup> Antigen was standardized with the international anti-*Brucella abortus* serum from the Pan American Zoonosis Center.<sup>1</sup> The slow tube method was used throughout. Each serum was serially diluted (two-fold) beginning with the 1:20 dilution. The observation of stained agglutinated or no agglutinated brucella cells was made after 48 h incubation at 37 C. Results were expressed in International Units (I.U./ml).<sup>1</sup>

### RESULTS

Five of the 55 *D. rotundus* sera (9.4%) agglutinated brucellae at the 1:80 dilution (80IU/ml) or greater. Sera of the two other bat species and of the monkeys did not produce agglutination (Table 1).

### DISCUSSION

While only a few animals were tested, the results indicate that the vampire bat, *D. rotundus*, can be infected with *Brucella* species. We are tempted to hypothesize that vampire bats have some role

<sup>1</sup> Member of the staff of the Biological Institute, Secretary of Agriculture, Salvador, Bahia, Brazil.

<sup>2</sup> Address: Instituto de Microbiologia, UFRJ, Centro de Ciências Médicas Bloco I, Ilha do Fundão, Rio de Janeiro, GB, Brazil.

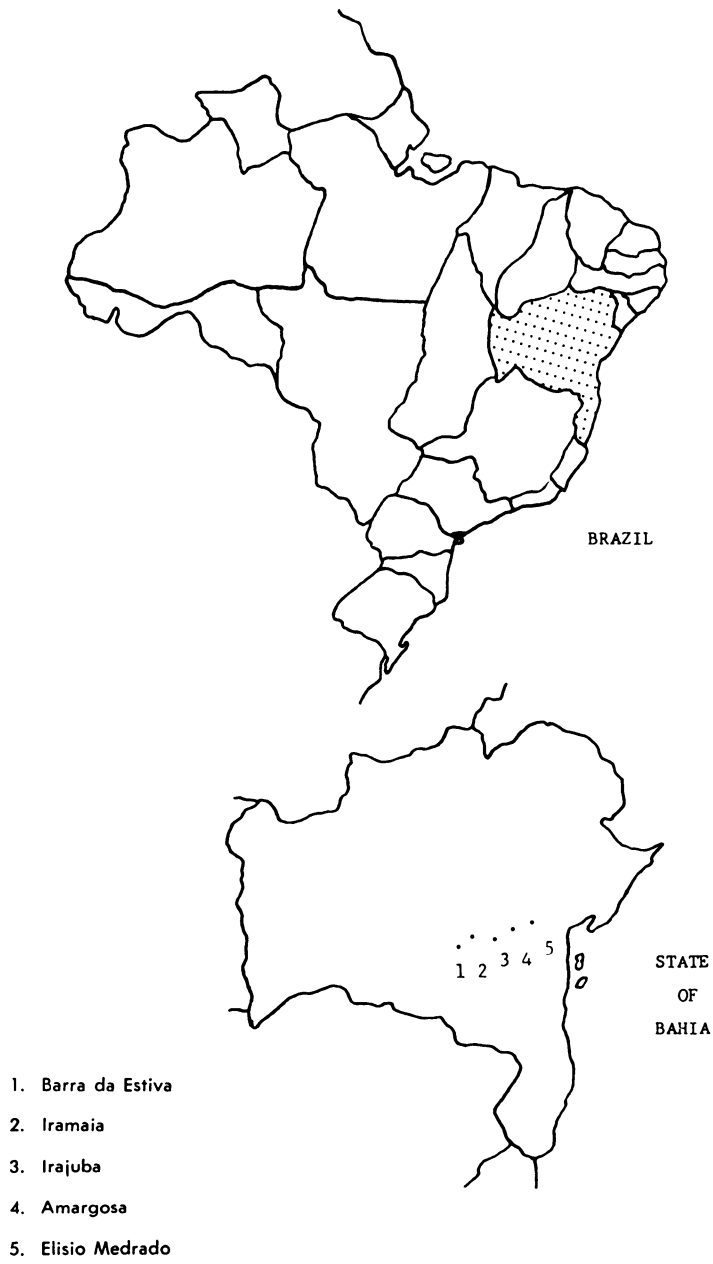


FIGURE 1. Sites where bats were captured in the State of Bahia, Brazil.

TABLE 1. Serologic tests for brucellosis in bats and monkeys.

Species	Number tested	Reactors (IU/ml)				Total ( $\geq$ 80 IU/ml)
		80	100	60	200	
<i>Desmodus rotundus</i>	53	2	1	1	1	5 (9.4%)
<i>Diphylla ecaudata</i>	2	0	0	0	0	0
<i>Phyllostomus hastatus</i>	2	0	0	0	0	0
<i>Callithrix penicillata</i>	50	0	0	0	0	0

in the perpetuation of brucellosis in areas where cattle are heavily infected with brucellae. The bats used in the present work were captured in areas where the incidence of cattle brucellosis is high. Moura Costa *et al.*<sup>4</sup> reported 16% of the cattle in some Counties of Bahia, were reactors.

The possibility of self-perpetuation of brucellosis in vampire bat colonies can be particularly serious in areas of *B. melitensis* (goat), and *B. abortus* (cattle) infections, as in the Northwestern part of Argentina where vampire bats already constitute a serious hazard for the cattle industry because of rabies.<sup>2</sup>

#### Acknowledgments

Supported by a grant from the Brazilian National Research Council (CNPq).

#### LITERATURE CITED

1. ALTON, C. C. and L. M. JONES. 1969. Las técnicas de Laboratorio en la brucelosis, OMS, Serie de Monografias, no. 55, Geneve.
2. FORNES, A., R. D. LORD, M. L. KUNS, O. P. LARGHI, E. FUENZALIDA and L. LAZARA. 1974. Control of bovine rabies through vampire bat control. *J. Wildl. Dis.* 10: 310-316.
3. De MELLO, M. T. and A. M. De MELLO. 1969. Microtécnicas serológicas para el diagnóstico de peste, brucelosis y leptospirosis. *Bol. Ofic. Sanit. Panamer.* 67: 300-309.
4. MOURA COSTA, M. D., M. PEREIRA FILHO, E. C. SANTANA, M. P. P. REBOUCAS and O. R. SILVA FILHO. 1974. Contribuição ao estudo da brucelose na Bahia. II. Prevalência nos municípios de Medeiros Neto, Itanhém e Lagedão. *Bol. Inst. Biol. Bahia* 13: 1-7.

Received for publication 27 March 1975