

Triatoma dimidiata capitata, a natural vector of Trypanosoma rangeli in Colombia*

by

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It is generally accepted that only species belonging to the genus *Rhodnius* are able to acquire salivary gland infection with *Trypanosoma rangeli*. Romeo de León, cited by ZELEDON (2), reported intestinal infections of *Triatoma dimidiata*, *T. phyllosoma* and *T. nitida* with *Trypanosoma rangeli* in Guatemala. ZELEDON was able to produce a transitory hemolymph infection with *T. rangeli* in *Triatoma infestans* (3) and in *T. dimidiata* (personal communication). Numerous efforts have been made by various investigators to infect *Triatoma* ssp. with *Trypanosoma rangeli*, but salivary gland invasion never occurred. *Triatoma dimidiata capitata* has only been reported 2 times previously from Colombia (1).

OBSERVATIONS

Over the last 2 years 98 specimens of *Triatoma dimidiata capitata* were collected from 7 localities in Colombia (Depts. of Boyacá, Cundinamarca, Huila and Santander). In San Joaquín (Dept. of Santander, average temperature 17°C). *T. dimidiata capitata* was found in many houses of the village. In 5 out of 29 adult triatomids from San Joaquín abundant forms of *Trypanosoma rangeli* were found in the salivary glands. These organisms were injected into C.F.W. mice (18 gr.) and one week later *T. rangeli* was recovered from the mouse blood and subsequently cultured in diphasic blood-agar media. These cultural forms were capable of producing a low grade blood infection in some of the baby C.F.W. mice inoculated. The cultural forms also produced salivary gland infestation in a few of the *Rhodnius prolixus* nymphs which were fed on rabbit blood to which

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the cultural forms had been added. Two of the *Triatoma dimidiata capitata* from San Joaquín showed hemolymph invasion and 8 presented intestinal invasion with crithidia of *Trypanosoma rangeli*. Another lot of triatomids from San Joaquín, consisting of 8 fourth instar larvae and 10 adults were allowed to feed on adult C.F.W. mice. Two of the 6 mice used in the experiment showed *Trypanosoma rangeli* in the tail blood 6 days after the bugs had fed on them. The pooled feces of the triatomids, collected after they fed on the mice contained crithidial stages of *T. rangeli*. The triatomids used in the latter experiment were not killed, but maintained in order to study their behaviour under laboratory conditions. It was observed that considerably higher oviposition was obtained when the triatomids were maintained at 10-18°C than when they were kept at 24-26°C.

Besides *Trypanosoma rangeli*, *T. cruzi* was found on 18 occasions in *Triatoma dimidiata capitata*. Xenodiagnosis, using fourth instar of *Rhodnius prolixus*, carried out on 8 people living in San Joaquín resulted in 3 positives for *Trypanosoma rangeli* and 3 for *T. cruzi* (one being a mixed infection).

One of the persons showing a positive xenodiagnosis for *T. rangeli* was a young Peace Corps volunteer from the U.S.A., who reported having been bitten on numerous occasions by *Triatoma dimidiata*. He had been living for about 6 months in a well-built but triatomid-infested house in San Joaquín, and had never spent a night in any other area which could be suspected to harbour triatomids infected with *T. rangeli*.

Rhodnius prolixus was not found in San Joaquín. When living *R. prolixus* were shown to the villagers, they were generally not recognized. A few hundred meters lower in the outskirts of the village, *R. prolixus* was common but *T. dimidiata* scarce or absent.

CONCLUSIONS

The above observations prove that *Triatoma dimidiata capitata* is able to act as a natural and efficient vector of *Trypanosoma rangeli* in certain areas. The negative results of other investigators might be due to the fact that only certain strains of *T. rangeli* are capable of reaching the salivary glands of certain local strains of *Triatoma dimidiata*.

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SUMMARY

Triatoma dimidiata capitata were abundant in houses of the village San Joaquín (Dept. Santander), Colombia. Five of these triatomids presented salivary gland infestation with *Trypanosoma rangeli*. Two showed hemolymph infection

and 8 showed intestinal infection with crithidia of *T. rangeli*. Mice bitten by naturally infected triatomids became infected with *T. rangeli*. The flagellates were easy to cultivate in diphasic blood agar media, and able to produce salivary gland infection in *Rhodnius prolixus*. An U.S. citizen frequently bitten by the triatomids in San Joaquín presented infection with *T. rangeli*.

RESUMEN

En el pueblo de San Joaquín (Depto. Santander), Colombia, se encontró gran cantidad de *Triatoma dimidiata capitata* dentro de las casas. Cinco de esos triatomídeos presentaron las glándulas salivares infectadas con *Trypanosoma rangeli*, dos mostraron la infección en la hemolinfa y ocho tenían crithidias de *T. rangeli* en el intestino. Ratones expuestos a estos triatomídeos se infectaron con *T. rangeli*. Los flagelados se cultivaron fácilmente en medio agar sangre difásico y resultaron infectantes para glándulas salivares de *Rhodnius prolixus*. Un ciudadano norteamericano residente en San Joaquín, quien ha sido varias veces picado por los triatomídeos, presentó una infección con *T. rangeli*.

LITERATURE CITED

1. UCROS, H.
1960. Distribución de los Triatominae en Colombia, *Rev. Fac. Méd.* (Bogotá), 28: 179-189.
2. ZELEDON, R.
1954. Tripanosomiasis *rangeli*. *Rev. Biol. Trop.*, 2: 231-268.
3. ZELEDÓN, R., & E. BLANCO
1965. Relaciones huésped-parásito en tripanosomiasis *rangeli*. I. Infección intestinal y hemolinfática comparativa de *Rhodnius prolixus* y *Triatoma infestans*. *Rev. Biol. Trop.*, 13: 143-158.