

Tritrichomonas batrachorum PERTY
from some Colombian Toads

By

CORNELES J. MARINKELLE

Resumen

Los sapos colombianos *Bufo marinus*, *B. typhoni*us *ockerdeni*, *B. guttatus* y *B. blombergi* fueron infestados con *Tritrichomonas batrachorum*. Se obtuvieron muestras de excrementos directamente de sapos vivos y se hicieron cultivos de los flagelados. Los *B. marinus* no infectados se mantuvieron con individuos de *B. typhoni*us *ockerdeni* que contenían pequeñas *T. batrachorum*. Después de 42 días todos los *B. marinus* estaban infestados con la cepa más grande de *T. batrachorum*, aislada originalmente de esas especies huéspedes. La ingestión de trofozoitos y quistes se considera ser la ruta normal de la infección. Las trichomonas se ajustan a la descripción original de *T. batrachorum* y la diferencia en el tamaño se considera debida a la adaptación al huésped.

La *T. batrachorum* no ha sido aún comunicado para Colombia, y todos los sapos excepto *B. marinus* son huéspedes nuevos.

Abstract

The colombian toads *Bufo marinus*, *B. typhoni*us *ockerdeni*, *B. guttatus* and *B. blombergi* were infested with *Tritrichomonas batrachorum*. Samples of feces obtained directly from live toads and cultures made of the flagellates. Uninfected *B. marinus* were kept with individuals of *B. typhoni*us *ockerdeni* harbouring small *T. batrachorum*. After 42 days all *B. marinus* were infested with *T. batrachorum* of the large strain, originally isolated from that host species. Ingestion of trophozoites and cysts is considered to be the normal route of entry. The trichomonads fit the original description of *T. batrachorum* and the difference in size is considered to be due to host adaptation.

T. batrachorum has not yet been recorded for Colombia, and all toads except *B. marinus* are new hosts.

Introduction

The colombian toads, *Bufo marinus*, *B. typhoni*us *ockerdeni*, *B. guttatus* and *B. blombergi* were found to harbor *Tritrichomonas batrachorum*. All except *B. marinus* (A. GABALDON 1930, A. RUIZ 1960) are here re-

ported as new hosts for this trichomonad, and all are new host records for Colombia.

A. BISHOP (1934) succeeded in infecting tadpoles of *Rana temporaria* and *Bufo vulgaris* by feeding them on cultures of *Tritrichomonas batrachorum*. D. H. WENRICH (1947) found that *T. batrachorum* is able to survive several months in pond water. These two observations suggest that infection occurs in nature by the oral route.

Materials and Methods

Toads were collected in the Departamento del Valle near the city of Cali, and at Rio Raposo, south of the port city of Buenaventura.

Fecal samples were obtained with a Pasteur pipet, introduced directly into the lower part of the intestine of the live animal. Observations were made on living trichomonads, on culture forms and on stained specimens. Measurements were made using an ocular micrometer and from camera lucida drawings.

A total of 268 *B. marinus* and 26 individuals of the other toads were examined for trichomonads.

To investigate the possible route of infection 18 *Bufo marinus* which did not show trichomonad infection after 12 weekly examinations were placed together with 6 individuals of *B. typhonioides ockerdeni* harbouring *Tritrichomonas batrachorum*. The animals were checked weekly for a 6 week period. The *B. marinus* were fed manually every other day with at least 3 grams of fresh liver, in order to prevent their eating the smaller *B. typhonioides ockerdeni*. The *B. typhonioides ockerdeni* were fed with small insects and mealworms. All toads were kept in glass containers with 2 cm of water in the bottom, which was not replaced during the time of the experiment.

Results

The trichomonads found in all the toads were similar. They had a broadly ovoidal body and measured 10,8 (6,9—13,6) microns by 7,4 (4,2—13,6) microns in *B. marinus*; 9,8 (6,6—12,9) microns by 6,8 (3,9—12,0) microns in *B. typhonioides ockerdeni*; 8,9 (5,6—11,9) microns by 5,9 (2,9—11,6) microns in *B. guttatus*; and 9,1 (5,1—12,3) microns by 6,1 (3,1—12,1) microns in *B. blombergi*.

The flagellates presented three anterior flagellae of unequal length, a fine costa, a well developed undulating membrane slightly shorter than the body, and an axostyle which was slender and projected one-fourth to one-eighths of the body length beyond the body.

Of the 268 *B. marinus* examined, 137 harbored *T. batrachorum* and all other toads except *B. typhonioides ockerdeni* harbored the flagellate.

Forty-two days after the experimental toads were placed together, all of the originally "clean" toads showed trichomonad infestation.

At each of the 6 weekly examinations, trophozoites and cysts of trichomonads were found in the surrounding water, esophagus, and anterior intestine. One hundred of the trophozoites were identified as *T. batrachorum* measuring 9,6 (5,8—11,3) microns by 6,6 (4,1—11,6) microns.

Discussion

Undoubtedly all the trichomonads isolated fit B. M. HONIGBERG'S (1953) description of *Tritrichomonas batrachorum*. Differences in size between the flagellates isolated from the colombian toads, especially those from *B. marinus* and *B. typhoni* *ockerdeni*, were not considered significant enough to describe them as distinct forms.

The observations made suggest that the route of infection is by ingestion of trophozoites and/or cysts.

Acknowledgments

Thanks are due to Dr. D. M. COCHRAN, U.S. National Museum, Washington, D.C., U.S.A., for identifying the toad species and to Dr. W. A. THORNTON, University of Illinois, U.S.A. for his cooperation in collecting the toads.

References

- BISHOP, A.: The experimental infection of amphibia with cultures of *Trichomonas*. — *Parasitology*, **26**, 26—33, London 1934.
- GABALDON, A.: Nota histórica sobre las protozoos señalados en Venezuela. — *Gac. Méd. Caracas*, **37** (9), 131—140, Caracas 1930.
- HONIGBERG, B. M.: Structure, taxonomic status and host list of *Trichomonas batrachorum* (PERTY). — *J. Parasit.*, **39** (2), 191—208, Lawrence (Kansas) 1953.
- RUIZ, A.: *Tritrichomonas batrachorum* from the toad *Bufo leutkeni* and *B. marinus*. — *J. Parasit.*, **46** (5), Section 2 (supplement), 8, Lawrence (Kansas) 1960.
- WENRICH, D. H.: Cultural experiments on intestinal flagellates. III. Species from amphibians and reptiles. — *J. Parasit.*, **33** (1), 62—70, Lawrence (Kansas) 1947.

Address of the author:

Dr. CORNELES J. MARINKELLE, Universidad de los Andes, Apartado Aéreo 4976, Bogotá D. E., Colombia.