SCHULZIA CHIRIBITA N. SP. (NEMATODA, TRICHOSTRONGYLINA, MOLINEOIDEA) PARASITE OF LEPTODACTYLUS RHODONOTUS (AMPHIBIAN) FROM PERU

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Summary :

A third species of the genus *Schulzia* Travassos, 1937 a parasite of *Leptodactylus rhodonotus* (Amphibian, Leptodactylidae) originating from Peru is described. By the pattern of the caudal bursa, the specimens are closely related to the two other species. They are distinguished from *Schulzia uzu* Lent & Santos, 1989, parasite from *Atelopus oxyrhynchus* in Venezuela, by the shape of the ovejector and from *Schulzia travassosi* Durette-Desset, Baker & Vaucher, 1985, parasite from *Bufo crucifer* in Brasil, *Bufo granulosus* and *Leptodactylus bufonius* in Paraguay, by the shape of the spicules. The presence of a new species in Peru points out the wide geographic distribution of the genus in the Neotropical region.

KEY WORDS : *Schulzia chiribita* n. sp., Nematoda, Trichostrongylina, Molineoidea, Molineidae, Peru.

Résumé : *SCHULZIA CHIRIBITA* N. SP. (NEMATODA, TRICHOSTRONGYLINA, MOLINEOIDEA) PARASITE DE *LEPTODACTYLUS RHODONOTUS* (AMPHIBIEN) AU PÉROU.

Description d'une troisième espèce du genre *Schulzia* Travassos, 1937, parasite de *Leptodactylus rhodonotus* (Amphibiens, Leptodactylidae) au Pérou. Les spécimens sont proches des deux autres espèces par leur caractères bursaux. Ils se différencient de *Schulzia uzu* Lent & Santos, 1989, parasite d'*Atelopus oxyrhynchus* au Venezuela, par la forme de l'ovejecteur et de *Schulzia travassosi* Durette-Desset, Baker & Vaucher, 1985, parasite de *Bufo crucifer* au Brésil, *Bufo granulosus* et *Leptodactylus bufonius* au Paraguay, par la forme des spicules. La présence de cette nouvelle espèce au Pérou met en évidence la large distribution biogéographique du genre dans la zone néotropicale.

MOTS CLÉS : *Schulzia chiribita* n.sp., Nematoda, Trichostrongylina, Molineoidea, Molineidae, Pérou.

INTRODUCTION

According to Ben Slimane *et al.*, 1996, the Trichostrongylina parasites from amphibians and reptiles can be divided into three groups: the "relict" genera characterised by a well developed buccal capsule; the "old" genera characterised by the lack of the buccal capsule but remarkable by one or several primitive morphological elements and the "modern" genus *Oswaldocruzia*. The genus *Schulzia* Travassos, 1937, parasites from Bufonidae and Leptodactylidae belongs to the "old" group. It is known only by two species parasites of Bufonidae and Leptodactylidae: *Schulzia travassosi* Durette-Desset, Baker & Vaucher, 1985 which is a parasite from *Bufo crucifer* in Brasil, *Bufo granulosus major* and *Leptodactylus bufonius* from Paraguay and *Schulzia uzu* Lent & Santos, 1989 which is a parasite from *Atelopus oxyrhynchus* in Venezuela. Nematodes

collected in Peru allowed us to describe a third species from a Leptodactylidae, *Leptodactylus rhodonotus*.

MATERIAL AND METHODS

The host was killed in the field with Chlorobutanol. The specimens were collected from the gut and stored in 70 % ethanol. They were studied as temporary wet mounts, firstly in water and then, if necessary, cleared in lactophenol. *En face* view and sections were mounted and studied in lactophenol. The measurements are given in micrometers except where otherwise stated.

The nomenclature used above the family-group is that of Durette-Desset & Chabaud (1993). The synopse was studied following the method of Durette-Desset (1985), and the nomenclature used for studying the caudal bursa is that of Durette-Desset & Chabaud (1981). The nomenclature used for describing the spicules is that of Ben Slimane *et al.* (1996).

The genital apparatus of the female is described after a paratype since it was necessary to dissect the worm to see the various parts.

The type-specimens were deposited in the helminthological Collections of the Museo de Historia Natural from Peru (MHNJP).

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DESCRIPTION OF *SCHULZIA CHIRIBITA* N. SP.

Type material: holotype male MHNJP 1311, allotype female MHNJP 1312, one male, six female paratypes. MHNJP 1313.

Host: *Leptodactylus rhodonotus* (Günther, 1868) (Leptodactylidae).

Site: Small intestine.

Locality: Yulitunqui, District of Pozuzo, Pasco Department, Peru. Decembre 1993.

Small nematodes, without marked sexual dimorphism concerning size. Excretory pore and deirids (the latter seen only with high magnification), situated at same level as junction of second and third part of oesophagus.

Head: Cephalic vesicle present, lips and buccal capsule absent; rounded triangular buccal opening; in *en face* view, 6 externo-labial papillae, 2 small amphids and 4 cephalic papillae; dorso-oesophageal gland visible (Fig. 1B, C).

Synlophe: (studied in transverse sections of body in one male and one female).

In both sexes, cuticle surface bears continuous very thin, rounded ridges beginning just posterior to cephalic vesicle and ending just anterior to caudal bursa in male, until level of tail in female. Ridges without chitinous reinforcement (Fig. 1G) except in anterior part of body (Fig. 1F). Number of ridges: 60, in both male and female at mid-body (55 ridges at oesophago-intestinal junction).

Holotype male: Length 4 mm and width 154 at mid-body. Cephalic vesicle 65×40 . Nerve ring 128, excretory pore 192 from apex, respectively. Oesophagus 378 long.

Caudal bursa sub-symmetric, almost as long as wide, of type 2-1-2. Rays 2 and 3 as long as rays 5 and 6. Rays 2 and 3 divergent at their extremities like rays 5 and 6. Rays 4 shorter than other rays. Rays 8 arising at the root of dorsal ray but shorter than it. Dorsal lobe well developed, with dorsal ray long and thick. Rays 9 separating from dorsal ray before its division and curved dorsally on their distal part. Dorsal ray divided into two branches in distal fourth, external (phasmids) shorter than internal ones (rays 10), and almost reaching edge of caudal bursa (Figs. 1H, I). Spicules subequal, alate, 300 long, ending in a sharp tip, with handle twice as short as blade (Fig. 1H). Gubernaculum absent. Genital cone lacking protuberances observed only in lateral view (Fig. 1D). Papillae zero and 7 unseen.

Main measurements of the male paratype: Length 3.2 mm and width 122 at mid-body; oesophagus 362 long; spicules 286 long.

Allotype female: Length 6.1 mm and width 182 at mid-body. Cephalic vesicle 70×40 . Excretory pore 208 from apex. Oesophagus 352 long (Fig. 1A).

Didelphic. Vulva at 1.75 from caudal extremity. Vagina vera: 40 long directed forward. It presents two diverticula just before vestibule. Ovejector Y-shaped, only possible to study after dissection. Vestibule strongly muscularised, composed of 3 branches, of equivalent length, unpaired branch situated in prolongation of vagina vera and both other branches situated in opposite directions. Sphincters short and poorly separated from vestibule, about 20×30 . Infundibula very short, anterior 30, posterior 40 long. Distal part of both anterior and posterior uterine branches about 30 wide and 40 long, then suddenly widening (Fig. 1D). Anterior uterine branch 1.1 mm long, containing 9 eggs, posterior uterine branch 1.1 mm long, containing 10 eggs. Eggs, 99×42 , non embryonated. Thin tail, with rounded tip and no spine, 192 long (Fig. 1E).

Averages, minima and maxima of the main measurements of the 5 paratypes: Length 6.06 (6.02-6.09) mm and width 193.5 (181-206) at mid-body; oesophagus 370.5 (362-378) long; vulva at 1.71 (1.69-1.72) from caudal extremity; eggs $45.5 (42-49) \times 100 (110-120)$.

DISCUSSION

The specimens from *Leptodactylus* possess the main characters of the genus *Schulzia* Travassos, 1937 (Molineidae, Molineinae): undulating synlophe with rounded ridges, caudal bursa with dorsal lobe well developed; female with an ovejector of inhabitual shape, no caudal spine in female tail. Two species are known in the genus, parasites of Neotropical Amphibians.

Schulzia uzu Lent & Santos, 1989 from Venezuela is a parasite of *Atelopus oxyrhynchus* Boulenger, 1903 (Bufonidae). Its spicules are very similar to those of the *Leptodactylus* specimens but it differs by the arising of rays 9 at the same level as the division of the dorsal ray and by very short rays 9. It is difficult to compare the other elements of the caudal bursa since the authors give two figures (11 and 13) not identical: for example, rays 2 and 3 are short in figure 11 and long in figure 13. In addition, the different parts of the ovejector are not individualised in figure 8.

Schulzia travassosi Durette-Desset, Baker & Vaucher, 1985 is a parasite of *Bufo crucifer* Wied-Neuwied, 1821 (Bufonidae) from Brasil and *Bufo granulosus* Spix, 1824 (Bufonidae) and *Leptodactylus bufonius* Boulenger, 1894 (Leptodactylidae) from Paraguay. It is closely related to the specimens of Peru by the general shape of the caudal bursa, particularly by the arising

FIG. 1. – *Schulzia chiribita* n.sp. A–E, female, A, anterior extremity, right lateral view; B, C, head, apical and right lateral view, respectively; D, ovejector, right lateral view; E, tail, right lateral view; F, G, transversal sections of body, F, female, at oesophago-intestinal junction, G, male, at mid-body; H–J, male, H, I, caudal bursa, H, ventral view, I, lateral view; J, detail of excretory pore and deirid, right lateral view.

Scales: A, 100 μ m; B, C, 20 μ m; D, 40 μ m; E, 75 μ m; F, G, J, 50 μ m; H, I, 30 μ m. Abbreviations: l: left side, v: ventral side. Transverse sections are orientated as in fig. F.

of rays 8 and 9. In addition, the ovejectors are very similar. It can be easily distinguished by the absence of a common stem between rays 2 and 3 on one side, rays 5 and 6 on the other and by the shape of the spicules which have two branches.

The specimens from Peru therefore belong to a new species which we named *Schulzia chiribita* n.sp. which means "particle of light" in Spanish.

The presence of a new species in Peru points out the wide geographic distribution of the genus in the Neotropical region: Brasil (Angra dos Reis), Paraguay and Peru.

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