

THREE HELMINTH PARASITES OF THE WALL LIZARD GECKO SP

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Abstract. A cestode *Diochetos karachiensis* n. sp.; a nematode *Physalopteroides geckonis* n.sp., and a nematode of genus *Pharyngodon* Diesing, 1845, are described from common wall lizard *Gecko* sp., collected from University Campus and Landhi (Karachi). *Diochetos karachiensis* is characterised by possessing mature and gravid proglottids $1\frac{1}{2}$ times longer than broad, testis 21–35 with a tendency to be arranged in two longitudinal bands, genital pores irregularly alternating in anterior fourth of the segments, ovary with two branched lobes and large shell gland. *Physalopteroides geckonis* is characterized by possessing lips provided with a row of minute teeth-like projections at the base, a prominent collar separating the head region, short pharynx, sessile papillae arranged as three pairs of preanal and four pairs of postanal in addition to numerous papillae-like structures at the ventral caudal region, spicules similar and subequal bearing projections on the anterior margins, and vulva in anterior third of the body. *Pharyngodon* sp. is peculiar in having long tubular ovary extending anterior to esophageal bulb and winding at the base of esophagus.

The helminth parasites of the wall lizard are little known, a few species are reported from *Gecko gecko* of China^{1,2} and Geckonidae of Russia.^{3,4}

In the present paper a new cestode *Diochetos karachiensis* (Anaplocephalidae), a new nematode *Physalopteroides geckonis* (Physalopteridae), and a nematode belonging to genus *Pharyngodon* Diesing (Oxyuridae), are described from *Gecko* sp., which is commonly found in Karachi. The species of *Pharyngodon* is not determined due to lack of original literature. The cestode *D. karachiensis* refers to the locality of host and nematode *P. geckonis* to the host itself.

Materials and Methods

Wall lizards (51) were collected from University Campus and Landhi (Karachi) and were examined for helminth parasites. Cestodes and nematodes were recovered from the intestine of 35 lizards. The specimens were studied alive and for a detailed study the following procedures were used. Cestodes were relaxed in cold water and then were slightly pressed between two glass slides or between a slide and cover glass depending on the size of the specimen, fixed in F.A.A. (a solution of formalin, acetic acid, and 50% alcohol in the ratio of 6:2.5:100 ml) for 24 hr and then transferred to 70% alcohol for another 24 hr. Selected specimens were stained with Mayer's carmalum for 48 hr, dehydrated in graded alcohols, cleared in clove oil, washed with xylol, and mounted permanently in Canada balsam. Some of the nematodes were cleared and fixed in glycerine-alcohol (70%) (50 : 50), while others were cleared in lactophenol. Lactophenol-treated specimens were more clear and were used for the following descriptions. Diagrams were made with the aid of a camera lucida. Measurements are recorded in millimeters.

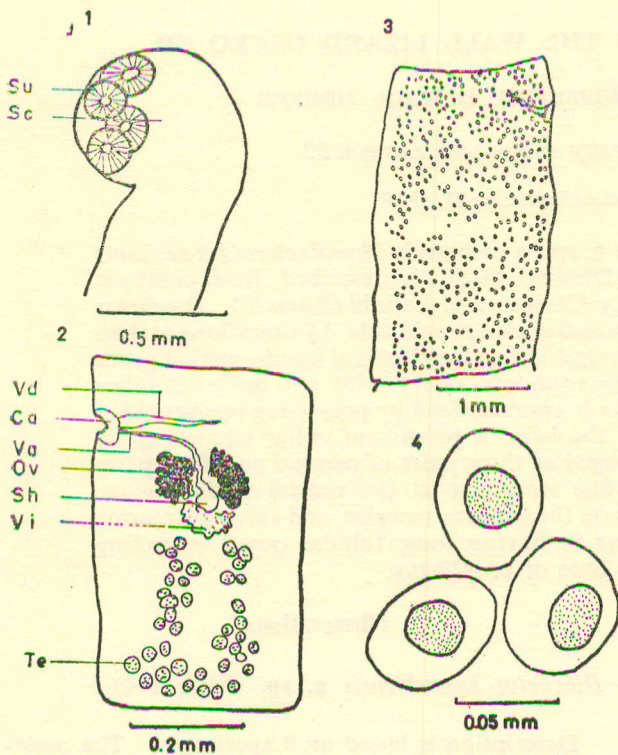
Type specimens are in the School of Parasitology, Department of Zoology, University of Karachi, Karachi 32.

Observations

Diochetos karachiensis n. sp. (Figs. 1–4)

Description is based on 9 specimens. The cestodes were found attached to the luminal surface of small intestine of the host. The worms were delicate, whitish and opaque when alive. The scolex is simple, small with four suckers and rostellum is absent. The scolex is almost rounded, 0.21×0.21 in size. Diameters of suckers 0.02–0.021. The scolex is followed by a narrow neck measuring 0.09–0.10 in length. The worms attain an approximate length of 50–70 containing 155–200 proglottids. All proglottids are approximately $1\frac{1}{2}$ times longer than broad and posterior gravid proglottids are even much longer. The number of immature proglottids vary from 50–60, mature segments 60–80, and gravid segments 45–60. Mature proglottids are $2.32-0.4 \times 0.62-0.67$ in size and contain testis 21–35 with genital pores irregularly alternating in the anterior quarter of the proglottids. The testis are arranged in two separate longitudinal bands which become confluent at the base of proglottid. The ovary is pretesticular, lying near the anterior region of the proglottid measuring $0.28-0.33 \times 0.13-0.18$ and consists of two branched lobes. The vitellaria are semilunar in shape, $0.18-0.19 \times 0.15-0.16$ in size; the shell gland is relatively larger ($0.01-0.13$ in diameter and spherical in shape. The vagina lies posterior to the cirrus sac and measures $0.21-0.30$ in length. In the gravid proglottid the uterus is filled with evenly distributed egg capsules. The mature eggs measure $0.05-0.07 \times 0.046-0.06$ in size.

Discussion. The present cestode from the wall lizard belongs to the genus *Diochetos* Hawrood, and reported here as a new species. *Diochetos karachiensis* n.sp., is differentiated from the two previously described species *D. phrynosomatis*⁵ and *D. parvovaria*,⁶ from *Phrynosoma cornutum* of N. America and



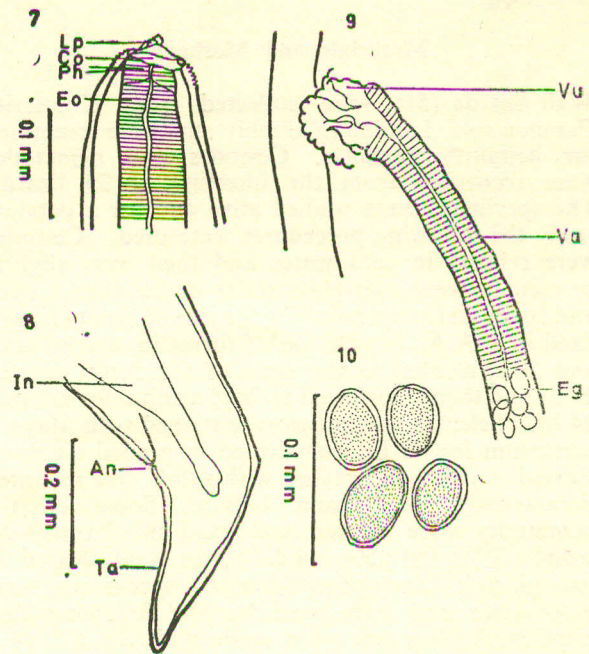
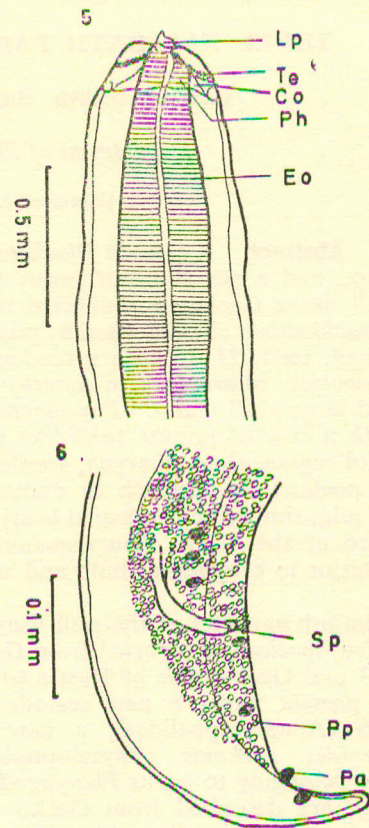
Figs. 1-4. *Diochetos karachiensis* n. sp., holotype. (1) scolex, (2) mature segment, (3) gravid segment, (4) eggs.

Texas. These two species differ from the present species by possessing much longer mature proglottids, more numerous testis, unbranched ovary, indistinct genital atrium and genital pore in anterior half of the proglottid in contrast to being in anterior quarter of the proglottid in the new species.

Physalopteroides geckonis n.sp. (Figs. 5-10).

Description is based on one male and 13 female specimens.

Male. Body elongated, smooth, 7.57 in length, maximum width 0.18 at the middle region. Lips two, simple, roughly triangular in shape and at the base provided with a row of minute teeth-like projections. Head region separated from the body by a prominent collar-like thickening of the cuticle. A short pharynx is present which is 0.1×0.13 in size. Esophagus divided into an anterior muscular portion 0.4 in length and a glandular posterior portion 3.2 in length. Size of esophagus 3.6×0.019 intestine simple, tubular. Reproductive organs consist of tubular testis, large seminal vesicle, a sperm reservoir and ejaculatory duct opening into the cloaca. Spicules short, stout, sub-equal 0.08 and 0.09 in length, bearing projections on the anterior margins. The caudal region is ventrally provided with numerous small papillae-like structures aggregating around the cloaca and associated structures. Caudal alae prominent, caudal papillae are sessile; 3 pairs are preanal, 4 pairs are postanal in position, adanal papillae absent. The distance between posterior



Figs. 5-10. *Physalopteroides geckonis* n. sp. (5) anterior end of male, holotype, (6) posterior end of male, (7) anterior end of female, allotype, (8) posterior end of the same, (9) region of vulva, (10) eggs. Figs. 7,9 are drawn to the same scale.

tip of body and cloaca is 0.25.

Female. Body length 18.84–23.05 maximum width 0.21–0.30 at the middle region. Cephalic alae and lateral alae are prominent. Lips similar to male but a row of minute teeth at the base of lips not prominent. Pharynx short. Esophagus divided into an anterior muscular portion 0.4–0.45 in length, and posterior glandular portion 3.2–4.3 in length. Total length of esophagus 3.6–4.7. A collar-like thickening of cuticle between head region and trunk is prominent. Vulva slightly anterior to esophageal bulb, 2.7–3.4, far from the anterior tip of the body. Vagina is long tubular, 0.27–0.29 × 0.04 in size. Uterine branches, two lying parallel to each other. Ova thick-shelled and measure 0.06–0.08 × 0.04–0.06. Anus is at a distance of 0.18–0.27 from the posterior tip of the body.

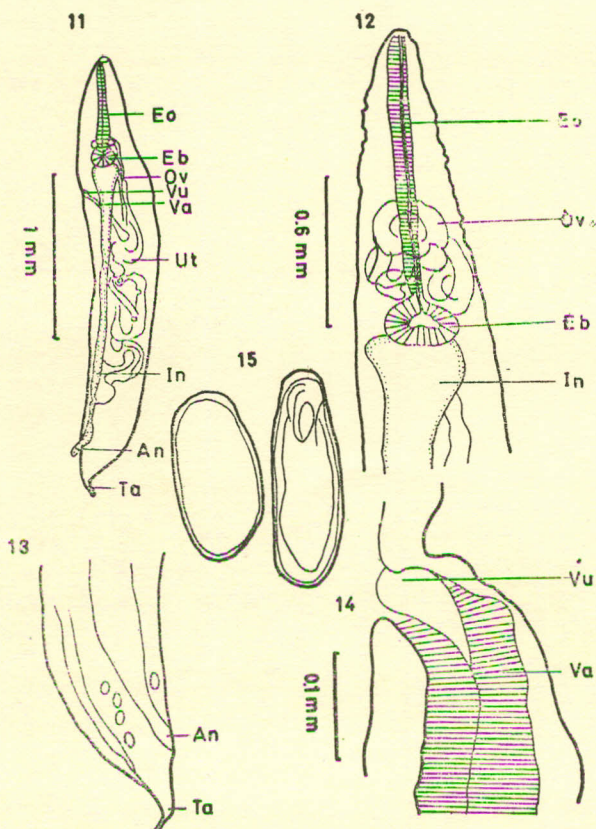
Discussion. *P. geckonis* n.sp. is sufficiently different from the only known species of the genus, *Physalopteroides dryophisi*,⁷ in its body size, presence of a row of minute teeth-like structures at the base of lips, prominent collar separating the head region from the trunk, presence of pharynx, absence of adanal papillae, sessile caudal apillae, spicules with projections on the anterior part, and more anteriorly situated vulva. Host and locality of *P. dryophisi* is also different.

Pharyngodon sp. (Figs. 11–18)

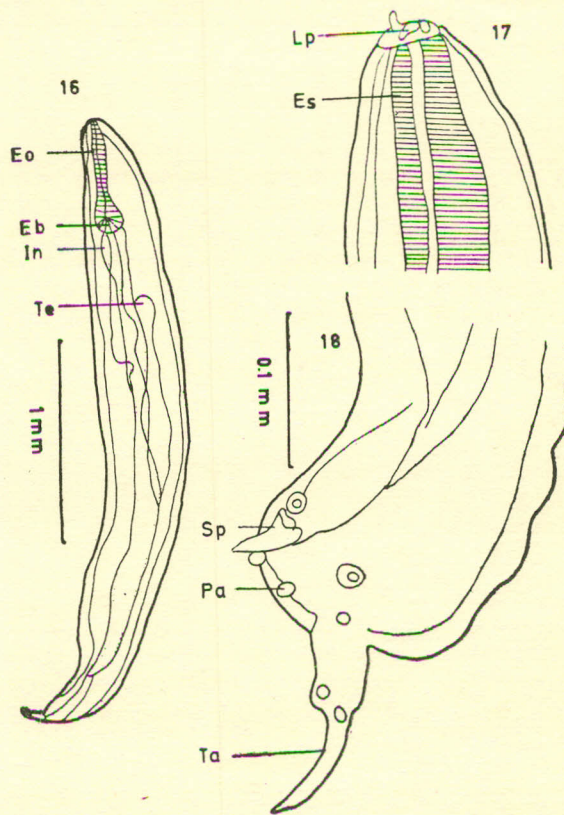
Description is based on 71 females and one male.

Male. Small worm, body length 2.9, maximum width 0.34 at the middle region gradually tapering towards the posterior end. Anterior extremity bluntly pointed, tail constricted at the level of cloaca and continued dorsally into a conical caudal appendage. Cuticle smooth throughout the body. Mouth bounded by three minute lips, each provided with a papilla. Esophagus muscular, 0.37–× 0.02 in size, terminating into a prominent esophageal bulb 0.093 in dia. Intestine simple, tubular, lying parallel to testis. Cloaca at a distance of 0.04 from the posterior extremity of the body. Spicule single, short and stout 0.05 × 0.02 in size. Caudal papillae eight including a pair of papilla-like structure on caudal appendage, two preanal and four postanal papillae.

Female. Body cylindrical, tapering at both ends. Posterior end pointed and curved ventrally, anterior end bluntly pointed. Body length 5.91–7.6, maximum width 0.6–0.72 at the middle region. Lips similar to male, esophagus strongly muscular 1.01–1.18 ×



Figs. 11–15. *Pharyngodon* sp., female worm. (11) entire female, (12) anterior region, (13) posterior region, (14) region of vulva, (15) eggs.



Figs. 16–18. *Pharyngodon* sp., male worm. (16) entire male, (17) anterior end, (18) posterior region.

Su- sucker, Sc- scolex, Vd- vas deferense, Va- vagina, Ga- genital atrium, Ov- ovary, Sh- shell gland, Vi- vitellaria, Te- testis, Li- lip, T- teeth, Co- collar, Ph- pharynx, Eo- esophagus, Eb- esophageal bulb, Sp- spicule, Pp- papillae like structures, Pa- papillae, In- intestine, An- anus, Ta- tail, Vu- vulva, Eg- egg, Ov- ovary, and Ut- uterus.

0.05–0.08 in size. Esophageal bulb 0.16–0.18 × 0.21–0.23 in size and contains a bifid valvular structure in its cavity. Ovary long, tubular extending anterior to esophageal bulb and winding around the base of esophagus. Vulva in anterior half of body and posterior to esophageal bulb, at a distance of 1.50–2.28 from the anterior extremity of the body. Vagina is a muscular tube 0.06–0.07 × 0.04 in size. Ova large, thick-shelled, 0.05–0.08 × 0.04–0.045 in size.

Discussion. The specimens belong to *Pharyngodon* due to (a) the presence of a postesophageal excretory pore, (b) tail abruptly constricted posteriorly in male and continued as a long dorsally directed conical process, (c) 3 pairs of caudal papillae, (d) sharp-pointed single spicule, (e) vulva postesophageal in anterior half of the body, (f) elongated ova containing unsegmented embryos. Thirty-four species of the genus *Pharyngodon* have been described and all except two are found in reptiles other than the wall lizard *Gecko* sp. These two species are *Pharyngodon apapillosus* Koo, 1938, and *P. geckonis* Liu et Wu, 1941⁸; from Geckonida of Canton. (China). A single species *P. lindlei* Thapar, 1925,

parasitising *Tiliqua scincoides* was described from India.⁸ At present species identification is not made due to inavailability of the original literature. This unnamed species is peculiar by possessing the uterus which extends anterior to esophageal bulb and all the papillae sessile.

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