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# *PHARYNGODON ODEROLALENSIS* SP.N. (NEMATODA: OXYURIDAE) FROM THE COMMON AMPHIBIAN *RANA TIGRINA* IN SINDH

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## ABSTRACT

A new oxyurid Nematode *Pharyngodon oderolalensis* is described from the common frog *Rana tigrina* collected from the vicinity of the agricultural area of Oderolal in Sindh, Pakistan. The new species is characterized by having distinct, membranous and semi-circular lips and bearing a pair of small papilla, excretory pore in preoesophageal region, vulva being situated in the mid body region, eggs oval to globular in shape and in having slender filiform larvae inside the uterus and a different host and locality. This is a first record of the genus from Pakistan.

**Keywords**: Nematode, *Pharyngodon oderolalensis* n.sp., Amphibian, Pakistan

## INTRODUCTION

Nematode parasites of the common amphibian *Rana tigrina* have little been studied in Pakistan. Present specimens although show morphological variations in the general body structures, are assigned to the genus *Pharyngodon* Diesing, 1861 on the basis of common generic characters.

This is however, a first report of the genus from an amphibian of Pakistan, the only other species reported is *Pharyngodon frenatus* Gupta, 1959 from the fish (*Hemidactylus frenatus*) from Pakistan (Bilqees, 2007).

## MATERIALS AND METHODS

Numerous minute nematodes were recovered from the small intestine of the common frog *Rana tigrina* collected from Oderolal, Sindh. The nematodes were first rinsed with saline before fixation; these were fixed with hot alcohol, formalin-acetic acid (AFA) and subsequently transferred to 70% ethanol for storage. For light microscopic study specimens were cleared in glycerine by gradual evaporation from a 10% solution of glycerine in 70% ethanol in order to avoid distortion of the outer layer of the cuticle. The line drawings were prepared with the help of a camera Lucida. All the measurements are based on adult males and upon egg/larvae bearing gravid females and are in millimeters (length by width). The specimens (Holotype, Allotype, and Paratypes) are deposited in the Junior Authors Collection at Crop Diseases Research Institute, Southern-Zone Agricultural Research Centre, Pakistan Agricultural Research Council, Karachi University Campus, Karachi-75270.

Type host: *Rana tigrina*
Type locality: Oderolal, Sindh
Number of hosts examined/infected: One out of 4
Number of specimens recovered: 2 ♂, 55 ♀
Site of infection: Small intestine

***Pharyngodon oderolalensis* sp.n.**
(Figs. 1-3)

Description is based on observations of two adult males and over (55) fifty-five egg and larvae bearing females. Small and delicate worms. Anterior ends are tapering in both sexes, while the posterior region are abruptly constricted behind the anus to form a long terminal spike in both sexes. Cuticle is thin, with fine transverse striations. Mouth surrounded by three membranous lips, protruded out in some specimens, each lip bearing a pair of small papilla. Esophagus, a slender, muscular tube, surrounded with a nerve ring at its anterior mid-region and ending into a bulb posteriorly. Excretory pore pre-bulbar, lateral alae absent. Spicule single, lightly chitinized. Vulva near mid-body region. Eggs oval, globular and thin shelled. Long filiform larvae are also present in uterus of some female specimens.

**Male:**

(Holotype and one paratype). Relatively small and thin worms. Body tapering at both anterior head end and posterior caudal region which abruptly ends in a long spike-like spiny process. Body length 2.5 – 2.65, maximum width is attained in anterior mid-body body 0.14 – 0.16. Surface of the cuticle with fine transverse striations. Anterior end roughly rounded in lateral view. Three membranous lips are present which directly lead to the oesophagus, each lip bears a pair of small papilla on its lateral sides. No buccal cavity is present. The head diameter ranges from 0.06 – 0.065 just below the lips. The nerve ring lies a little above the mid length of the oesophagus, at a distance of 0.24 – 0.25 from the anterior head end. Oesophagus is cylindrical with a prominent bulb, oesophagus length 0.42 – 0.45 excluding the posterior bulb. Oesophagus width 0.025 – 0.029 at the anterior end while it ranges up to 0.03 – 0.032 at its posterior region. The posterior bulb is 0.07 – 0.08 in its diameter. Intestine simple, leads to the cloacal opening, some distance above the terminal spike-like process. Spicule single, feebly developed 0.09 – 0.095 in total length, while its anterior region is somewhat rounded in shape and 0.012 – 0.015 wide. Caudal papillae three pairs, sessile, one pair pre-anal, just above the cloacal opening, the next pair lies just below the cloacal opening, while the third pair is 0.03 – 0.032 distance away from the 2$^{nd}$ pair of papilla. The terminal spike is long and pointed 0.12 – 0.14 long.

**Female:**

Measurements based on 55 mature egg and larvae bearing specimens: Body small, slender, delicate and light brownish in colour upon fixation and preservation, tapering towards both anterior and posterior ends with a terminal, long, pointed spike-like process. Cuticle thin, with fine transverse striations. Body appears to be somewhat stouter below the oesophageal region up to the mid-body region, after which it gradually becomes slender and terminates into a long spike-like process after the anal opening. Body length 3.1 – 3.41, maximum width 0.31 – 0.32 in the anterior mid-region. Anterior end roughly rounded in lateral view. Lips three, membranous, closer to the oral opening, each bearing a pair of small papilla on its roughly spherical sides. Nerve ring is situated at a distance of 0.30 – 0.32. Buccal cavity absent. Oesophagus cylindrical, with a posterior bulb. Oesophagus length 0.52 – 0.71 excluding the posterior oesophageal bulb. Oesophagus width 0.04 – 0.045 at the anterior end, 0.05 – 0.06 at the mid region, buldging up to 0.07 – 0.075 in the mid-posterior region and 0.035 – 0.038 at the constriction of the oesophagus, posterior bulb 0.13 – 0.15 wide. Intestine simple. Vulva in the mid body region 1.5 – 1.6 from the anterior head region. Vagina muscular and opens to the exterior through simple opening. Eggs oval to rounded or globular, thin shelled, comparatively fewer in number 0.11 – 0.12 by 0.08 – 0.09 in size. In some specimens there are long, slender and delicate larvae inside the uterus, these are 0.5 – 0.54 long and 0.019 – 0.02 wide. Tail constricted to a very fine long spike and measures 0.058 – 0.061 in length.

## DISCUSSION

Present specimens recovered from the small intestine of the common frog *Rana tigrina*, belong to the genus *Pharyngodon* Diesing, 1861; Syn. *Parathelandros* Baylis, 1930 on the basis of important generic characters.

Very few species of the genus are reported from Amphibian host. (Anderson *et al.*, 1976; Chitwood and Chitwood, 1977). These are known from Europe, America and Japan. Additionally thirty three species of the genus have been recorded from Reptilian hosts from various localities including Europe, Australia, Africa, America and Asia including a single species from India (Yamaguti, 1961).

Comparatively there are very few reports concerning helminth parasites of Amphibians in Pakistan, present paper is an addition to it.

The male in the present species have three caudal papillae whereas *P. basii* Walton, 1940 has four pair if caudal papillae. *P. mastigurus* Baylis, 1930 has two pair of caudal papillae and *P. armatus* (Walton 1933) Holoman, 1969 has six pair of caudal papillae.

Present specimens can be distinguished from *P. spinicauda* (Dujardin, 1845) syn. *Ascaris acanthura* Dies., 1851 in *Laceria muralis* Jr. Nalo. *P. spinicauda* was also reported in other species of *Lacerta; Ameiva; Ptycho dactylus; Tupinambis; Tarentola triton* and *Triturus* etc. in Europe and Algeria, in having distinct, membranous, semicircular lips each bearing a pair of small papilla on its lateral sides. In most of the specimens the lips are very well protruded out of the body, the excretory pore is preesophageal in position, the post anal papilla are sessile instead of being pedunculate in *P. spinicauda*. The tail in *P. spinicauda* bears spines, while in present specimens the tail is smooth without spines. Vulva in present specimens is situated near about mid body region, while it is post esophageal in *P. spinicauda*. Uterus in most of the specimens is packed with oval to rounded feebly developed eggs, while the developing eggs contain big nuclei and are in different stages of development. Some female specimens are ovoviviparous with well-developed, long and slender larvae. Present specimens are therefore regarded new and the

name *P. oderolalensis* is proposed. Species name refers to the locality of the host. This is a first record of the genus from an amphibian from Pakistan.

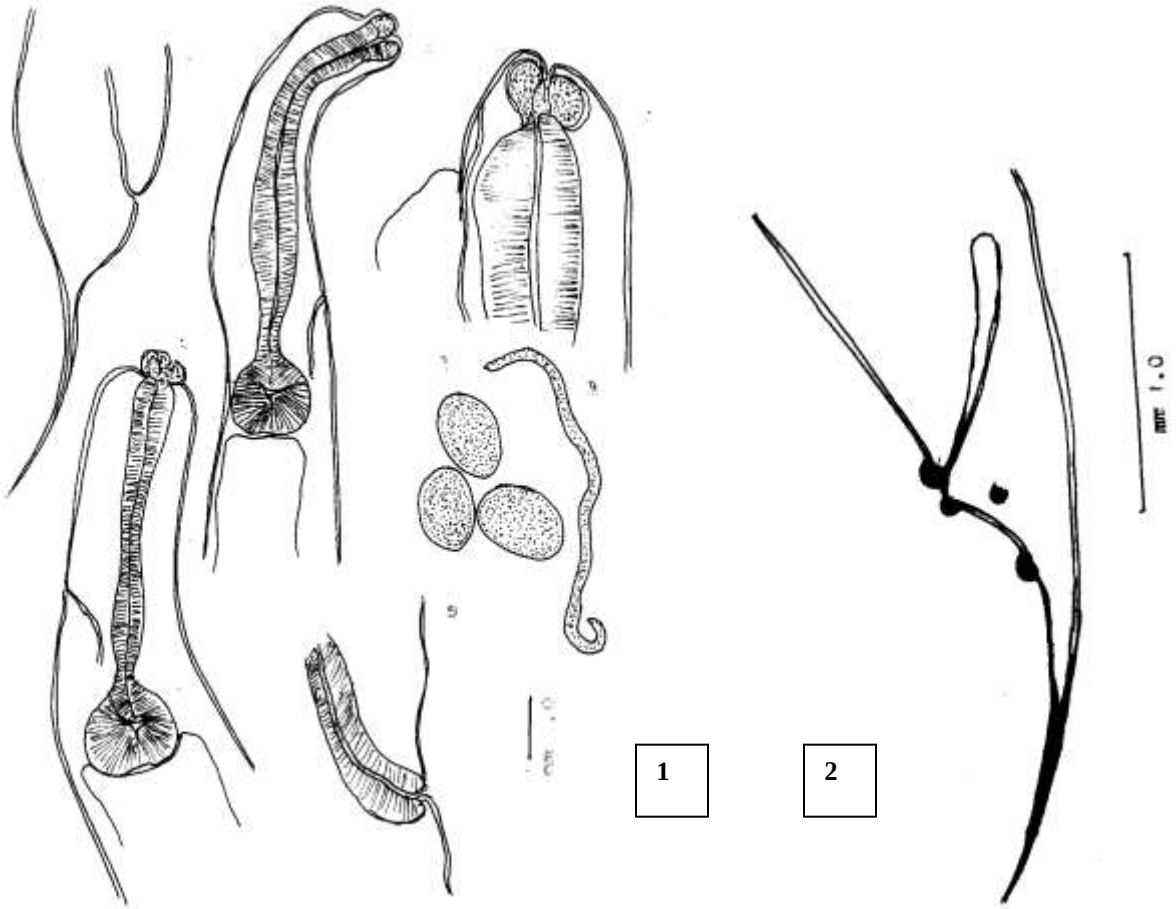


Fig. 1 (a-g) *Pharyngodon oderolalensis* sp.n. (Female).
a.Anterior head end, lateral view, b. Anterior region showing muscular oesophagus, esophageal bulb and excretory pore (lateral view), c.Anterior region of a paratype (lateral view),d.Caudal region,e. Vulval opening with part of muscular vagina, f & g. Eggs and newly hatched larvae.
Fig. 2. *Pharyngodon oderolalensis* sp.n., male, a.Caudal region (lateral view).
Fig. 3 (a-c)*Pharyngodon oderolalensis* sp.n. Photomicrographs. Paratype (Female).
a.*Pharyngodon oderolalensis*. Entire worm, female (X 20), b. Anterior esophageal region, lateral view (X 100), c.Caudal region, showing spine like tail (X 100).

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