

# ***Rhabdochona uvaginus*, New species (Nematoda: Rhabdochonidae) from the Fish *Tor putitora* of River Bolan, Balochistan**

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**Abstract:** A new nematode species *Rhabdochona uvaginus* is described here from the intestine of a freshwater fish *Tor putitora* of Bolan, Balochistan. The new species is characterized by having eight teeth in the prostome, males with two very unequal spicules, large spicule about four times longer than the small spicule which is slightly bent ventrally, spatulate in shape, with flat basal end having pointed sides, basal part is small, anterior large, rounded at the tip, large spicule narrower distally pointed and slightly curved dorsally. Pre-anal papillae eight and post-anal five pair. The female is peculiar in having u-shaped, voluminous, muscular vagina, occupying almost the whole body-width leading externally into a bilobed vulva, which is post-equatorial in position, eggs rounded to oval in shape, 0.006-0.007 by 0.008-0.009 mm in size. Excretory pore pre-equatorial. Species name refers to the voluminous u-shaped vagina

**Key words:** *Rhabdochona uvaginus* new species, *Tor putitora*, Bolan, Balochistan.

## INTRODUCTION

Relatively few species of the genus *Rhabdochona* Railliet 1916, are known from the fishes of Pakistan. One species *R. parastromatei* Bilqees, 1979 has been described from a marine fish *Parastromateus niger* and from freshwater fishes including *R. (R) cavasius* Rehana and Bilqees, 1973 from the fish *Mystus cavasius*; *R. (R) magna* Khan and Yaseen, 1969 from the fish *Rita rita*; *R. (R) chanawenensis* Zaidi and Khan, 1975 from the fish *Eutropiichthys vacha*; *R. (F) charsaddiensis* Siddiqi and Khattak, 1984 from the fish *Nemachilus* sp.; *R. (F) schizothoracis* Siddiqi and Khattak, 1984 from the fish *Schizothorax labiatus*; *R. (R) megasacculata* Ghazi and Rahim, 1999 from the fish *Barilius vagara*; *R. (R) rahimi* Ghazi et al., 2003 from the fish *Barilius vagra*; *R. (R) kharani* Asmatullah et al., 2006 from the fish *Labeo gedrosicus*. The present new species *Rhabdochona uvaginus* is described from the fish *Tor putitora* of River Bolan, Balochistan. This is the first report of *Rhabdochona* species from River Bolan and from a different fish

species. Actually, this is the first report of any parasite including nematode from this locality. River Bolan is situated about 40 km west of Sibi on the Bolan pass road to Quetta. Location is latitude 29° 27'N, longitude 67° 30'E. This river in Balochistan has a rich fish fauna but the parasites of these fishes were not investigated previously.

## MATERIALS AND METHODS

A sample of five freshwater fish *Tor putitora* (Hamilton-Buchanan) were collected on 14 October, 2004 from River Bolan at Gokurd, District Bolan, Balochistan. Fish were preserved in 10% formaldehyde and were carried to the Departmental laboratory of Zoology, University of Balochistan. For collection of parasites, all fishes were dissected, the gastrointestinal tract was removed, placed in physiological saline, cut open longitudinally, and examined for nematode parasites by naked eye then under the binocular microscope. Specimens were fixed in 70% alcohol, preserved in glycerin and 70% alcohol mixture (50+50) and cleared in lactophenol. Temporary mounts of nematodes were made in pure glycerin and examined under light microscope. Diagrams were made with the aid of camera lucida.

Measurements are given length by width in millimeters. Holotype, and allotype specimens were deposited in the Fish Parasitology Collection, Department of Zoology, University of Balochistan, Quetta.

*Rhabdochona (Rhabdochona) uvaginus*, new species  
(Figs.1-3)

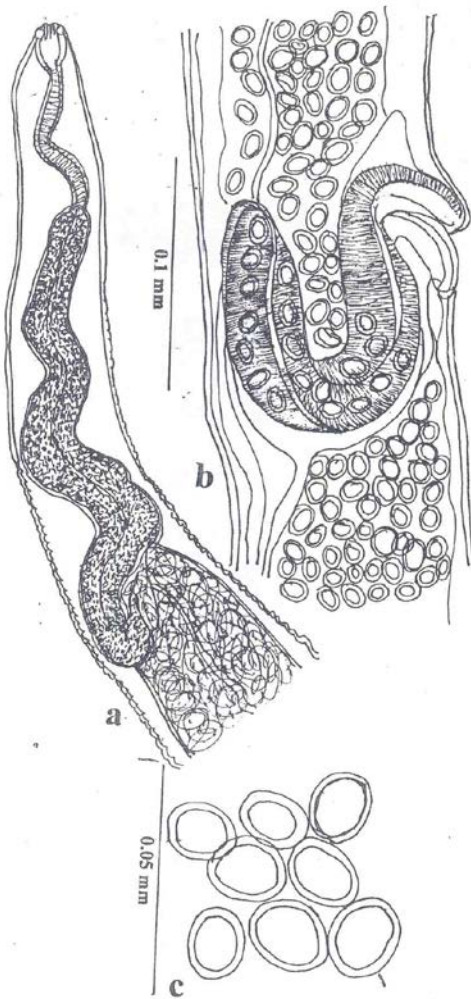


Fig. 1. *Rhabdochona uvaginus*, new species; Female, holotype showing head region; a, Anterior region showing esophagus and part of intestine; b, Region of vulva and associated structures; c, Eggs.

*Description*

Medium sized, delicate worms, females are

larger than males. Teeth 8 in anterior of prostome. Prostome is relatively small, a pair of cephalic papillae is present. The glandular part of oesophagus in female is more than two times longer than the muscular part and is curved laterally overlapping some part of intestine, while in male it is less than one and half time longer than the muscular part and is straight joining the intestine. The tail tip in male is sharply pointed while it is broadly pointed in female. In both male and female, the caudal region is posteriorly enclosed in a double membranous sheath. Vulva is post-equatorial, marginal, consisting of two elongated lips, both bent ventrally and directed backward. Vagina is u-shaped, voluminous, occupying almost whole body width.

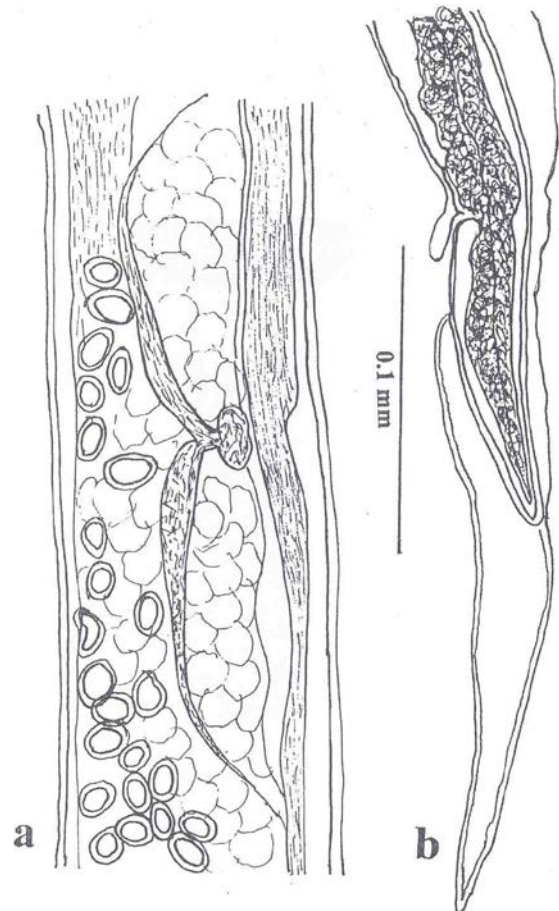


Fig. 2. *Rhabdochona uvaginus*, new species; a, Postequatorial region showing excretory vesicle and excretory tubes; b, Posterior body region showing tail and associated structures.

Eggs are numerous, small, rounded to oval. Spicules are unequal and totally dissimilar, large spicule is more than four times longer than the small spicule. Large spicule is slightly bent dorsally, narrowing at the tip and ending into a point. Tip of this spicule is slightly bent dorsally. Small spicule is spatulate and is rounded at the proximal end. Junction of the spatulate portion with the base is narrower. Small spicule is bent ventrally. Excretory pore pre-equatorial

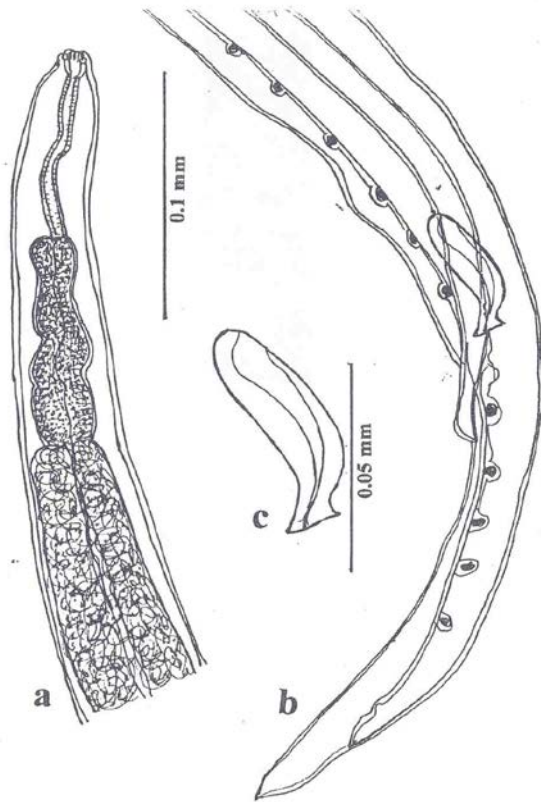


Fig. 3. Male allotype of *Rhabdochona uvaginus*, new species; a, Anterior region showing head region, esophagus and intestine; b, Posterior body region showing spicules, caudal papillae and tail region; c, Small spicule. Note the spatulate ventrally curved small spicule.

#### Measurements

##### Female

Body length 6.05, width 0.013. Prostome 0.001 x 0.005, mesostome 0.01 x 0.08, muscular esophagus 0.07 x 0.006, glandular esophagus 0.23 x

0.025, Vagina 0.0245 by 0.031, anterior vulvar lip 0.04, posterior 0.04, large egg 0.003 x 0.0035, small egg 0.003 x 0.0022, tail 0.03 from the tip to anal pore.

##### Male

Bogy length 3.04, width 0.012. Prostome 0.001 x 0.005, mesostome 0.0012 x 0.0017, muscular oesophagus 0.08 x 0.01 glandular oesophagus 0.09 x 0.03, large spicule 0.21 x 0.012, small spicule 0.091 x 0.031, tail 0.02 from the tip to anal pore.

##### Material examined

Pakistan: Balochistan: Five fishes *Tor putitora* collected from River Bolan in October 2004, were examined, one holotype, female and one allotype, male was recovered from only one host. Holotype No: ZBU-N32, allotype No: ZBU-N33 deposited in UOB.

##### Etymology

The species name *R. uvaginus* refers to voluminous, u-shaped vagina in female.

#### DISCUSSION

Genus *Rhabdochona* Railliet 1916, is world wide in distribution, found more commonly in freshwater fishes. More than 100 species of the genus are known from various localities of the world in different fish species. The genus was divided into three subgenera by Moravec (1972) including *Rhabdochona*, *Globochona* and *Filochona*. Later, Moravec (1975) raised the number of subgenera into four, namely *Rhabdochona*, *Globochona*, *Globochonoides* and *Sinonema* including more characteristics for diagnosis other than egg filaments, such as number and arrangement of teeth in the prostome, presence of cervical alae, shape of female tail tip and shape of deirids. But Chabaud (1975) considered three subgenera, *Rhabdochona* (*Globochona*) Railliet 1916, *Rhabdochona* (*Rhabdochona*) Moravec, 1972 and *Rhabdochona* (*Filochona*) Saidov, 1953. This classification is widely used now and we also follow the same.

The present new species is included in the subgenus *Rhabdochona* in lacking egg filaments and

is distinctly different from the species previously described from Pakistan in having a large voluminous, u-shaped vagina in female extending almost whole body width, 13 caudal papillae including preanal, postanal and different shapes of spicules in male.

*R. megasacculata* Ghazi and Rahim, 1999 also has peculiar morphology of vaginal complex consisting of simple vulva leading to a voluminous, bulbous, saccular structure containing vagina, directed backward and not u-shaped. The description of this species is based on female specimens only. In females of other species *R. (R) magna* Khan and Yaseen, 1969; *R. (R) cavasius* Rehana and Bilqeess, 1973; *R. (R) chanawensis* Zaidi and Khan, 1975; *R. (R) parastromatei* Bilqeess, 1979; *R. (F) charsadiensis* Siddiqi and Khattak, 1984; *R. (F) schizothoracis* Siddiqi and Khattak, 1984 and *R. (G) rahimi* Ghazi *et al.*, 2003; *R. (R) kharani* Asmatullah *et al.*, 2006 have simple elongate vagina directed upward or backward. While in the present female specimens as mentioned above the vagina is huge, u-shaped, occupying the whole body width with the two prominent elongated vulvar lips. The males of the present new species are also different from the above mentioned species in the number of caudal papillae, shapes and relative size of the large and small spicules, in addition to these differences, in the relative length of muscular and glandular esophagus.

Species described from other parts of the world can also be separated from the present specimens in having different number of caudal papillae, variable sizes and shapes of spicules and in female mainly on the basis of voluminous u-shaped vagina. There are a total of 13 caudal papillae in the present new species while most of the species have more than 13. In *R. denudate* Dujardin, 1845 (15-20); *R. anguillae* Spual, 1927 (15); *R. bariliusi* Soota and Dey Sarkar, 1981 (16); *R. barusi* Majumdar and Dey, 1971 (15); *R. californiensis* Maggneti *et al.*, 1992 (19); *R. chanawensis* Zaidi and Khan 1975 (20); *R. ergensi* Moravec, 1968 (14-15); *R. garuai* Agrawal, 1965 (15-20); *R. paski* Baylis, 1928 (16-19); *R. dasi* Sahay and Prasad, 1965 (15); *R. smythi* Agrawal, 1965 (17). *R. labeonis* Kalyankar, 1972 (20); *R. ghaggari* Sood, 1972 (17); *R. lichtenfelsi* Sanchez-Alvarez *et al.*, 1998 (14); *R. kisutchi*

Margolis *et al.*, 1975 (16); *R. mazededi* Prasad and Sahay, 1965 (15-17); *R. mexicana* Capesta-Mandujano *et al.*, 2000 (15); *R. paxamni* Maggneti *et al.*, 1992 (15-16); *R. kharani* Asmatullah *et al.*, 2006 (17-18).

Number of papillae overlap with present species in *R. gnedini* Skrjabin, 1946 (13-16); *R. guerreroensis* Capesta-Mandujano *et al.*, 2002 (12-14); *R. hellichi* Sramek, 1901 (12-21); *R. oncorhynchi* Fujita, 1921 (13-15); *R. poxini* Moravec, 1968 (11-14); *R. salmonis* Maggneti *et al.*, 1992 (13-20); *R. glyptothoracis* Karve and Naik, 1951 (12-21); *R. versterae* Boomker and Peter, 1993 (12-15).

Eggs in the female specimens of the present new species are without any extensions or polar filaments while polar filaments are present in *R. acuminata* (Molin, 1860); *R. chabaudi* Mawson, 1956; *R. ergensi* Moravec, 1968; *R. fortunatowi* Dinnik, 1933; *R. glyptothoracis* Kerve and Naik, 1951; *R. guerreroensis* Capesta-Mandujano *et al.*, 2002; *R. hellichi* Sramek, 1901; *R. hospiti* Thapar, 1950; *R. longleyi* Moravec and Hoffman, 1988; *R. smythi* Agrawal, 1965. Many other species also have long or small filaments one to four in number. Some species have cuticular floats or flock-like coating as in *R. barusi* Manjumdar and Dey, 1971; *R. singhi* Ali, 1957; *R. bariliusi* Soota and Sarkar, 1981; *R. mazededi* Prasad and Sahay, 1965 and many others which are absent in the present species.

A combination of characters such as 8 teeth in the prostome, simple long tail with smooth pointed tip, prominent caudal alae, u-shaped, voluminous vagina extending through out body width, smooth rounded eggs in female and very unequal spicules in male, small spicule spatulate bent ventrally, pointed at both side at the base, narrower at the junction of spatulate part and base, long spicule more than three times longer than small spicule, anterior part broader, posteriorly pointed, tip slightly bent dorsally, caudal papillae 13 in number 8 preanal and 5 postanal, separate the present species from all the previously described species of the genus. Therefore, a new species *R. uvaginus*, new species is proposed, recovered from *Tor putitora* of Bolan river, Balochistan. This is the new host record for the genus from this locality and also a new locality recorded.

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