INT. J. BIOL. BIOTECH., 12 (4): 571-573, 2015.

KNIPOWITSCHIATREMA PAKISTANENSIS SP.N. (TREMATODA: HETEROPHYIDAE) WITH A NEW HOST RECORD *STERNULA ALBIFRONS* (LITTLE TERN) IN HYDERABAD, SINDH, PAKISTAN

S. Bushra [1], N. Das Sanjota[1], Ghazi, R.R[2] and Aly Khan[3]

[1]*Department of Zoology, University of Sindh, Jamshoro, Sindh, Pakistan.*
[2]*Vertebrate Pest Control Laboratory, Southern Zone Agricultural Research Centre, Karachi University Campus, Karachi 75270.*
[3]*Crop Diseases, Research, Institute (CDRI), University of Karachi campus, Karachi- 75270, Pakistan.*
Email: syalbushra@gmail.com; drsanjota2@gmail.com

ABSTRACT

A new species *Knipowitschiatrema pakistanensis* is proposed belonging to the genus *Knipowitschiatrema* Issaitschikow, (1927) recovered from the small intestine of a bird *Sternula albifrons* in Sindh, Pakistan. The new species is characterized by having: terminal oral sucker, smaller than the acetabulum, presence of a fairly long pre-pharynx, long oesophagus, larger acetabulum, flask-shaped voluminous seminal vesicle, unequal size of testes and postero-lateral position of vitelline follicles.

Key words: *Knipowitschiatrema pakistanensis*, new species, *Sternula albifrons*, Hyderabad, Sindh, Pakistan.

INTRODUCATION

The genus *Knipowitschiatrema* Issaitschikow (1927) belongs to the family Heterophyidae Leiper, (1909). Only two species of the genus *Knipowitschiatrema* are reported from Russia, France, Britain and W. Mediterranean.

MATERIALS AND METHODS

Five live birds Little terns (*Sternula albifrons*) were purchased from Hyderabad bird market, and brought to the parasitology laboratory Department of Zoology, University of Sindh, Jamshoro, Pakistan. The birds were anesthetized, dissected and examined for collection of internal Helminth parasites. During examination of gut contents and visceral organs two mature specimens were collected from small intestine of a bird. Later these specimens were fixed in hot steaming 70% ethanol, where trematodes expand and instantly die. Later the specimens were gently placed over clean glass slide, pressed lightly with another, tied with thread and fixed in F.A.A. solution for twenty four hours, stained with Mayer's carmalum, dehydrated in graded series of ethanol, cleared in clove oil and rinsed with xylene. Finally the specimens were permanently mounted in Canada balsam for further study. Line Drawings were prepared with the aid of a Camera Lucida. Measurements were given in millimeters (mm). Photomicrographs were prepared with the courtesy of Vertebrate Pest Control Institute, Southern Zone Agricultural Research Center, Karachi University Campus, Karachi.

RESULTS

***Knipowitschiatrema pakistanensis* sp.n.**
(Figs:1-3)
Host: *Sternula albifrons*
Site of infection: Small Intestine
Locality: Hyderabad, Sindh.
Number of hosts examined/ Infected: 05/01
Number of specimens recovered: 02
Etiology: Species name refers to the host country.

Description is based upon two, mature, egg bearing, permanently mounted specimens:

Body sub cylindrical, elongated. Anterior extremity rounded, while posterior extremity is blunt shaped with nearly equal width. Total body length is 2.89-3.25(12.28). Maximum width is attained at seminal vesicle region below the acetabulum in posterior half of the body, 0.36-0.4 (1.52).

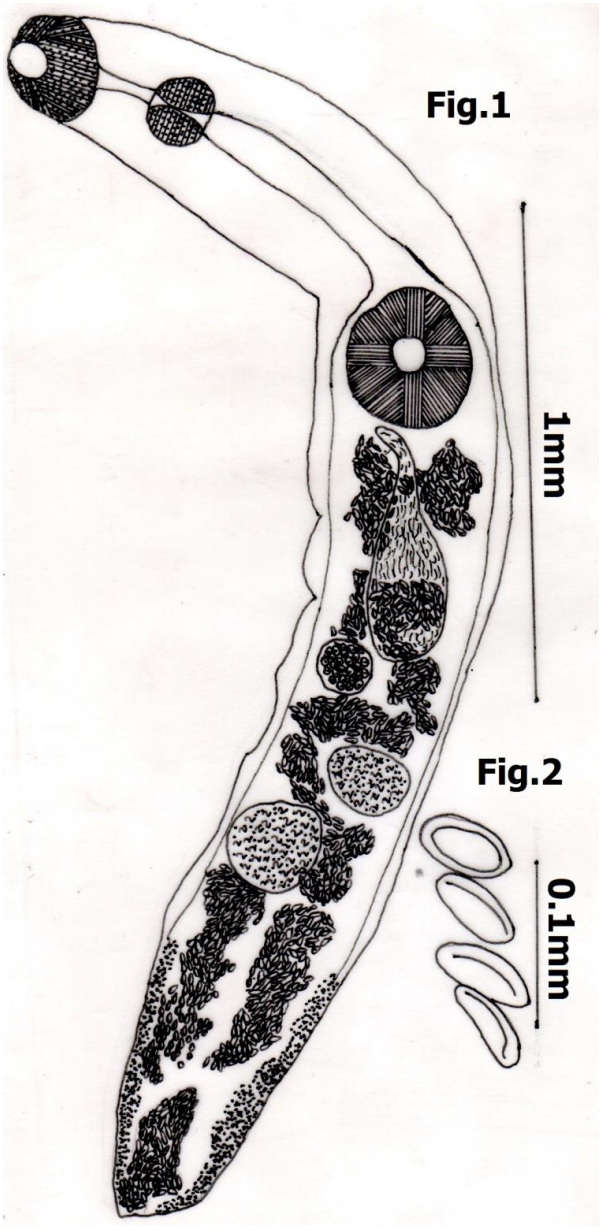

Fig.1. Knipowitschiatrema pakistanensis sp.n., entire worm, holotype, lateral view.
Fig. 2. Enlarged eggs.
Fig.3. Entire worm, holotype, Photomicrograph 60x.

The oral sucker is terminal, smaller than acetabulum, measure 0.13-0.16(0.58) by 0.17-0.19(0.18) in size. Pre-pharynx is fairly long 0.09-0.1 (0.095) by 0.02-0.03 (0.025) in size. Pharynx well developed, globular, rounded 0.11-0.11 (0.11) by 0.13-0.13(0.13) in size.

Esophagus long 0.49-0.51 (0.5) by 0.09-0.09 (0.09), bifurcating anterior to acetabulum. Acetabulum muscular, much larger than oral sucker, located at 2$^{nd.}$ quarter of the body, measure 0.26-0.27 (0.265) by 0.23-0.23 (0.23) in size. The distance between oral and ventral sucker is 0.71-0.75 (0.73) in size. Sucker ratio being: 1:1.8-2.0.

Seminal vesicle large, flask shaped, quite voluminous in size, lie just above the ovary, with genital opening below the acetabulum, measure 0.42-0.47 (0.445) by 0.11-0.13(0.21) in size.

Ovary small, rounded, pre-testicular located near the posterior region of the body measure 0.09-0.09 (0.09) by 0.1-0.1(0.1) in size. Testes tandem post-equatorial, anterior testis roughly spherical, posterior testis is oval, larger

than anterior testis, both testes larger than the ovary. Anterior testis measure 0.1-0.11 (0.105) by 0.12-0.15 (0.135) and posterior testis is 0.14-0.18 (0.16) by 0.15-0.16 (0.155) in size.

Vitelline follicles arranged laterally in the posterior region of the body below the testes. Uterus fills the space in posterior extremity, passes between the testes, ovary, and seminal vesicle and opens into genital pore below the acetabulum. Eggs are smaller and thin shelled measure 0.06-0.07 (0.065) by 0.02-0.03(0.025) in size

DISCUSSION

Available literature indicates only two species of the genus *Knipowitschiatrema* issaitschkow, (1927) reported from Russia, France, Britian and W. Mediterranean. *K. nicolai* is the type species of the genus Issaitschkow, (1927) recovered from *larus argentatus* (larva in gills of *Belone* acus); Black sea .cf. Butskia (1952) in Russia. Body size is 3.126- 3.54 by 0.473-0.524.

K. echinatum Timon-David, 1955 recovered from *Larus argentatus michaellis* in France, from *L. fuscus* in Britian. Body size is 4.6-7 by 0.49- 0.69. 10 trematode species including *Knipowitschiatrema Nicolai* were found by Lafuente *et al*., (1998) in the Alboran Sea, South-Westen Mediterranea.

Present specimens are recovered from *Sternula albifrons* (Little tern) in Pakistan, while *K. nicolai* and *K. echinatum* are reported from *Larus argentatus* in (Russia) and (France), also in *L. fuscus* (Britian) respectively.

The body size in present specimens is 2.89-3.25 (12.28) by 0.36-0.4 (1.52), while body size in *K. nicolai* is 3.126-3.54 by 0.473-0.524 and body size in *K. echinatum* is 4.6-7 by 0.49-0.69.

The oral sucker in present specimens is terminal and smaller than ventral sucker, while in *K. nicolai* it is sub-terminal and larger than the ventral sucker. Pre-pharynx in present specimens is fairly long while in *K. nicolai* it is wider than long. In *K. nicolai* the acetabulum is enclosed in genital atrium and it is smaller than oral sucker, while in present specimens the acetabulum is not enclosed in a genital atrium and it is larger than the oral sucker.

Seminal vesicle in present specimens is flask shaped, quite voluminous in size while in *K. nicolai* it is quite larger and twisted in shape. Ovary in present specimens is rounded, located in posterior part of the body while in *K. nicolai* it is rounded and located near middle of the body.

In *K. nicolai* the testes are rounded, equal in size, while in present species the anterior testis is smaller, while posterior testis is larger in size. In *K. nicolai* and also in present species the uterus is turning back on itself at posterior extremity, passing between two testes, ovary and seminal vesicle.

In present specimens the vitellaria is confined to post testicular lateral fields, while in *K. nicolai* the vitellaria besides occupying the posterior lateral fields also appear in the mid-posterior region of the body.

Specific differences in present specimens such as terminal oral sucker, smaller than the acetabulum, presence of a longer pre-pharynx, and a long esophagus, larger acetabulum, flask-shaped, voluminous seminal vesicle and unequal size of testes, postero-lateral position of vitelline follicles and smaller size of ova suggest to propose a new species *K. pakistanensis* sp.n.

This is the first species *K. pakistanensis* and a new record of the genus from a new host *Sternula albifrons* and new locality. Hyderabad, Sindh, Pakistan. Species name refers to the host country.

ACKOWLEDGNEMENT

Authors wish to thank Mr. Muzfar Ahmed, Senior Scientific Officer, Pakistan Agricultural Research center (PARC), Southern zone Agricultural center SARC, University of Karachi 75270, for providing digital Olympus MICD camera for photography of specimens.

REFERENCES

Issaitschikow, I.M. (1927). Festschr . Knipowitsch. *Moscu*. 262-269.

Lafuente, M., Roca, V. and E. Corbonell (1998). Trematodes of Audouin's gull, *Larus audouinii* (Aves, Laridae), from Chafarinas Islands (W Mediterranean). *Mis.Zool*., 21: 105-112.

Timon-David, J. (1955). Trematodes des Groenlands de Pile de Riou. *Ann. Par*., 30: 446-476.

Leiper, R.T. (1909). London school of Tropical Medicine. Report of helminthologist for six months ending 30th April, 1908. In: *Report of Advisory committee for the Tropical Diseases Research Find for the year 1908*. London, pp. 35-39.

(*Accepted for publication September 2015*)