

PATAGIFER ALYKHANI SP. N. DIETZ, 1909 (DIGENEA: ECHINOSTOMATIDAE) FROM THE BIRD LARGE EGRET (*ARDEA ALBA*) IN DISTRICT HYDERABAD, SINDH, PAKISTAN

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ABSTRACT

During a helminthological survey of the bird, large egret (*Ardea alba*) (Ciconiiformes: Ardeidae), in Hyderabad, Sindh, Province of Pakistan, Nine specimens of trematode belonging to genus *Patagifer* Dietz, 1909 were recovered from small intestine of the three host birds. A new species *Patagifer alykhani* is proposed. The new species is characterized by having: The body of fluke is aspinose, elongated and large in size, tapering at both ends, maximum width at the middle of the body. Head collar is well developed, It has 38 spines of which 19 are on each lobe, arranged in a single dorsally interrupted row. The oral sucker is terminal and well developed, pharynx is globular, short esophagus, Ventral sucker is prominent larger than oral sucker, Ovary is elliptical and median, Uterus full of eggs, restricted between the acetabulum and ovary. Testes are elongated, slightly lobed, tandem, sub-equal post-equatorial and slightly overlapping each other, The eggs are numerous and thin-shelled, Excretory vesicle is Y-shaped and excretory pore is terminal. This is new species and host recorded in Hyderabad, Sindh, Pakistan.

Key words: *Patagifer alykhani*, new species, large egret (*Ardea alba*), Hyderabad, Sindh, Pakistan.

INTRODUCTION

Trematodes of the genus *Patagifer* Dietz, 1909 have been recorded from different birds throughout the world, including India as well as Pakistan. The species of this genus reported from the avian hosts of India include *P. parvispinosus* Yamaguti, 1933, *P. chandrapuri* Srivastava, 1952 in white ibis, *Thresciornis melanocephalus*; *P. sarai* Saksena, 1957 in white ibis *Thresciornis melanocephalus* Raipur; *P. simarai* Nigam, 1944 in *Platalea leucorodia major*; *P. wesleyi* Verma, 1936 in curlew (*Ibis* and *Numenius*) India., Dharejo, 2006 reported *Patagifer hyderabadense* from the intestine of bird Black Coot *Fulica atra* in Hyderabad, Sindh, Pakistan, Whereas the present new specimens are recorded from the small intestine of large egret (*Ardea alba*) in District Hyderabad, Sindh, Pakistan. While large egret (*Ardea alba*) is first host record and Hyderabad is new locality of Host.

MATERIALS AND METHODS

The birds large egret (*Ardea alba*) were shot down from the District, Hyderabad. The viscera were taken out and brought to the laboratory for detailed examination for helminth parasitic infections. The trematodes thus recovered were fixed in F.A.A. fixative under slight pressure of cover glass for 24 hours. Later the parasites were removed, washed well with 70% ethanol, stained with Mayer's carmalum, dehydrated in graded series of alcohol, cleared in clove oil, rinsed with xylene and mounted permanently in Canada balsam. Line drawings were prepared with the help of a Camera Lucida; all measurements are in millimeters (mm) whereas, eggs are in micrometers (μ m). Specimens are deposited in the senior author's collection, Department of Zoology, University of Sindh, Jamshoro.

RESULTS

***Patagifer alykhani* sp.n.
(Figs. 1-3)**

Host:	large egret (<i>Ardea alba</i>)
locality:	Hyderabad, Sindh, Pakistan
Site of infection:	Small Intestine
Number of hosts examined/ infected:	12/03
Number of specimens recovered:	09
Prevalence:	25%

DESCRIPTION

DESCRIPTION IS BASED UPON NINE, STAINED, PERMANENTLY MOUNTED, EGG BEARING, MATURE SPECIMENS:

The body of fluke is aspinose, elongated and large in size, tapering at both ends, body measured 16.09 –16.19 by 3.92 –3.87 with a maximum width at the middle of the body. Head collar is well developed, measuring 0.92 – 0.94 x 1.62 – 1.63 distinctly bilobed dorsally and ventrally. It has 38 spines of which 19 are on each lobe, arranged in a single dorsally interrupted row.

The oral sucker is terminal, measured 0.73 – 0.73 x 0.63 – 0.63, followed by globular pharynx 0.53 – 0.57 x 0.22 – 0.22 in diameter. Esophagus is short 0.7 – 0.8 in length. Cecae are long terminating near posterior extremity. Ventral sucker, larger than oral sucker, cup-shaped situated in the middle of the first quarter of the body measuring 2.61 – 2.82 x 2.88 – 2.88 in size.

Ovary is elliptical, median, and equatorial 0.77 – 0.78 x 2.23 – 2.34 in size. Vitellaria consist of plentiful rounded to irregular follicles more numerous posteriorly, extending backward from the lower level of the ventral sucker to the posterior extremity of the body in the lateral fields. Uterus full of eggs, restricted between the acetabulum and ovary.

Testes are elongated, slightly lobed, tandem, sub-equal, post-equatorial testes and slightly overlapping each other. Anterior testis measuring 1.37 – 1.36 x 0.92 – 0.92 and posterior testis is 1.6 – 1.6 x 0.99 – 0.98 in size. Cirrus pouch of worm is small 0.99 – 0.82 x 0.52 – 0.62 in size, anterodorsal to acetabulum. Its genital opening is post-bifurcal.

The eggs are numerous and thin-shelled, 132 – 144 x 59.7 – 86.4 in size. Excretory vesicle is Y-shaped and excretory pore is terminal.

DISCUSSION

Present specimens *Patagifer alykhani* is distinguished from the earlier reported species of the genus *Patagifer* Dietz, 1909 recovered from avian hosts in Pakistan, mainly in having following differentiating characters:

Varying length of pharynx and esophagus; Size of collar spines; Different sucker ratio; Shape and size of ventral sucker; Shape and size of cirrus sac; Shape and size of ovary; Shape and size of testes; uterine loops; Larger egg size.

The genus *Patagifer* Dietz, 1909 a small cosmopolitan genus, was erected to accommodate trematodes from birds. Type species is *Patagifer bilobus* (Rud, 1819) Dietz, 1909 in *Ibis falcinellus* Europe; also in *Ibis*, *Plagadis*, *Platalea*, *Theristicus*; Azerbaidzhan, Africa, Australia – Dietz (1909); – Looss (1899). Other species recorded from different birds throughout the world are *P. acuminatus* Johnston, 1917 in *Ibis molucca* Australia; *P. brygoi* Richard, 1964 in *Lophotibis cristata* Madagascar; *P. coerulescens* Brazil; *P. fraternus* Johnston, 1917 in *Herodias timoriensis* Australia; *P. consimilis* Dietz, 1909 in *Geronticus albigollis*, *Molybdophanes* in *Podiceps ruficollis* sub sp. Japan, Siberia, Azerbaidzhan SSR; *P. lamothei* Dronen & Blend 2008; *P. oweni* Faltynkova, Gibson & Kostadinova 2008; *P. skrjabini* Hilmy, 1949 in *Plegadis falcinellus* Egypt; *P. srivastavai* Peter, 1954 in pigeon (experimental); *P. vioscai* Lumsden, 1962 in *Eudocimus albus* Louisiana.

The species of this genus reported from the avian hosts of India include *P. parvispinosus* Yamaguti, 1933 *chandrapuri* Srivastava, 1952 in white ibis, *Thresciornis melanocephalus*; *P. sarai* Saksena, 1957 in white ibis *Thresciornis melanocephalus* Raipur; *P. simarai* Nigam, 1944 in *Platalea leucorodia major*; *P. wesleyi* Verma, 1936 in curlew (*Ibis* and *Numenius*); whereas, *P. bilobus* (Rud, 1819) Bhutta and Khan, 1975 and *P. hyderabadense* Dharejo, 2006 are the only species, which have been reported from Pakistan.

As the present specimens do not match exactly with rest of the species mentioned above particularly, Varying length of pharynx and esophagus, size of collar spines, Shape and size of ventral sucker, shape and size of cirrus sac, the size and shape of gonads, uterine loops the size of eggs which are larger than the other species reported in Pakistan. A new species *Patagifer alykhani* is proposed. The Species name is in honour of Dr. Aly Khan Ex-Director and Chief Scientific Officer (C.S.O), Crop Diseases Research Institute, SARC, PARC, Karachi.

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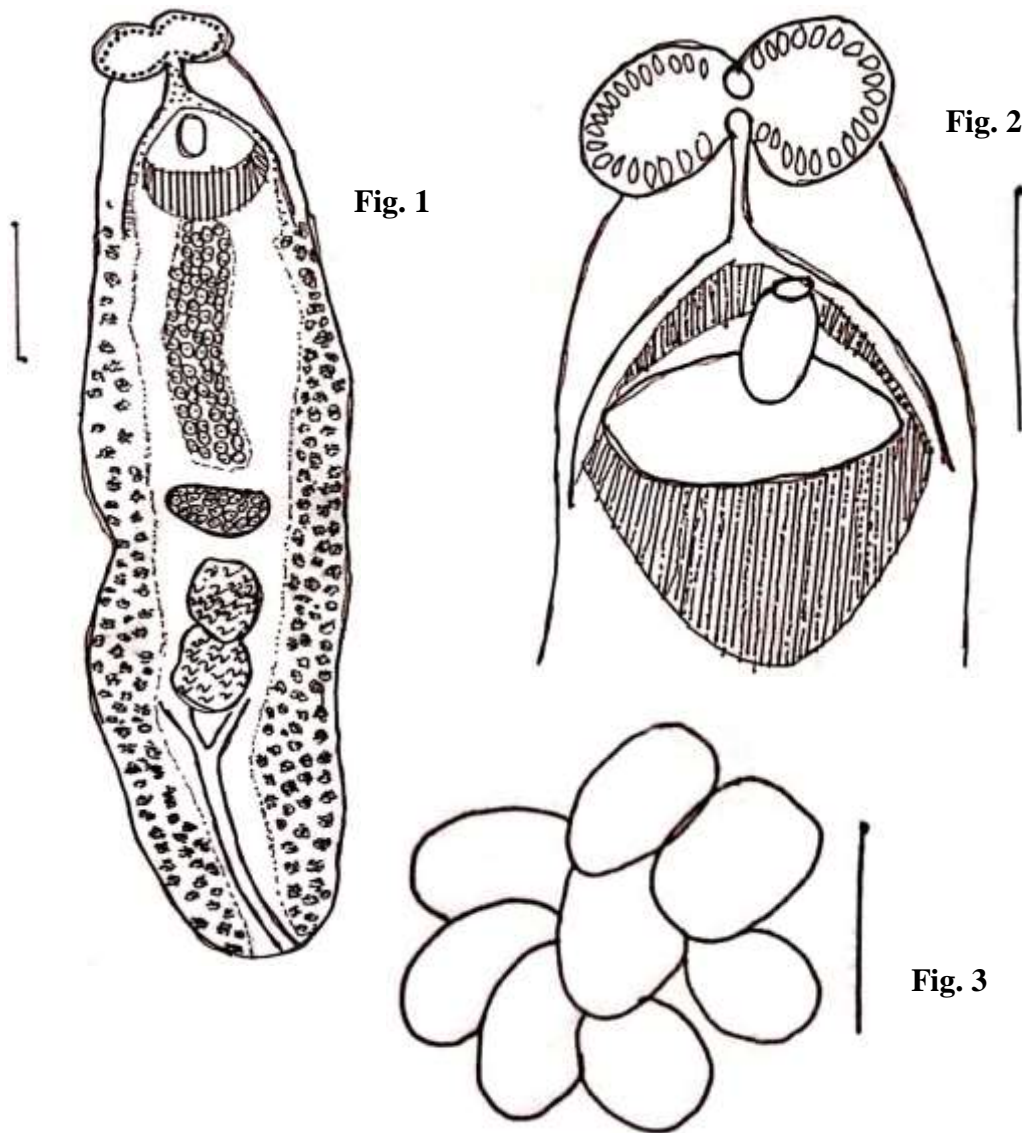


Fig. 1-3. *Patagifer alykhani* sp.n. Entire worm; Scale-bars: 2 mm

Fig 1. Camera Lucida of Entire worm	2 mm
Fig 2. Camera Lucida of anterior portion	1 mm
Fig 3. Camera Lucida of Eggs	100 μ m

REFERENCES

- Bhutta, M. S. and D. Khan (1975). Digenetic trematodes of vertebrates from Pakistan. Bulletin Department of Zoology University of Punjab, (N.S.), article 8, pp. 1-175.
- Dharejo, A. M. (2006). *Trematode parasites of birds of different feeding habits of Hyderabad District, Hyderabad, Sindh, Pakistan*. Ph.D thesis, Faculty of Natural Sciences, University of Sindh, Jamshoro, Pakistan.
- Dietz, E. (1909). Die Echinostomiden der Vogel. *Zoologischer Jahrbucher*, Suppl., 12: 265-5.
- Dronen, N.O. & Blend, C.K. (2008) *Patagifer lamothei* n. sp. (Digenea: Echinostomatidae: Nephrostominae) from the white ibis *Eudocimus albus* (Threskiornithidae) from Texas, USA. *Revista Mexicana de Biodiversidad*, 79 (supplemento), 23 S – 32 S.
- Faltýnková, A., Gibson, D.I. & Kostadinova, A. (2008). A revision of *Patagifer* Dietz, 1909 (Digenea: Echinostomatidae) and a key to its species. *Syst Parasitol* 70: 159.

- Hilmy, I. S. (1949). *Patagifer skrjabini* n. sp. (Echinostomatodae) from the glossy ibis, *Plegadis facinellus facinellus*, with a note on the genus. *Proceedings of the Egyptian Academy of Science* 4: 20-23.
- Johnston, J.C. (1917). The life cycle of *Echinostoma revolutum* Froel, 1802. *Univ. Calif. Publ. Zool.*, 19: 335-88.
- Looss, A. (1899). Weitere Beitrage zur Kenntniss der Trematoden-Fauna Aegyptiens, zugleich Versuch einer naturlichen gliederung des Genus *Distomum* Retzius. *Zoologist Jahrbucher. Abtheilung Fur Systematik, Geographie und Biologie der Thiere*, 12: 521-784.
- Lumsden, R. D. (1962). Four echinostome trematodes from Louisiana birds including the description of a new species. *Tulane studies in Zoology*, 9: 301-308.
- Nigam, V. V. (1944). New trematodes of the family Echinostomatidae Poche, 1925. III. Genus *Patagifer*. *Allahabad University Studies, Biology Section*, pp.1-8.
- Peter, C. A. (1954). A note on the life cycle of *Patagifer srivastavai* n. sp., raised experimentally. *Proceeding of the 41st Indian Science Congress*. Hyderabad. Part3, section. 9. 221p.
- Richard, J. (1964). Trematoae d'oiseaux de Madagascar. Note III. Espèces de la famille Echinostomatidae Poche, 126. *Bull. Mus. Nat. Hist. Nat.*, 39: 607-620.
- Rudolphi, C.A (1819). Entozoorum synopsis cui accedunt mantissa duplex et indices locupletissimi. *Berol.*, Pp. 811.
- Saksena, J. N. (1957). Studies on the genus *Patagifer* Dietz, 1909 (Echinostomatidae). *Proceedings of the Natural Academy of Science, India*. Part b6:165-168.
- Srivastava, O.N. (1952). A new trematode, *Patagifer chandrapuri* n. sp. of the family Echinostomatidae Poche. 1925. *Allahabad University Studies*, 1952: 51-66.
- Verma, S. C. (1936). Notes on trematode parasites of Indian birds Pt. I *Allahabad. Univ. Stud.*, 12: 147-188.
- Yamaguti, S. (1933). Studies on the helminth fauna of Japan. I. Trematodes of birds, reptiles and mammals. *Jap. J. Zool.*, 5: 1-134.

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