



## A new species of genus *Ganeo* Klein, 1905 collected from Indus Valley Bullfrog *Hoplobatrachus tigerinus* (Anura: Dicroglossidae) of District Umerkot, Sindh, Pakistan

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**ABSTRACT:** A survey was conducted on the helminth parasites of Indus Valley Bullfrog *Hoplobatrachus tigerinus* of district Umerkot, Sindh, Pakistan. A total of 18 hosts were collected from different aquatic habitats and examined for the presence of helminth parasites. During examination of gut contents and visceral organs, three trematodes belonging to genus *Ganeo* Klein, 1905 were recovered from small intestine and identified as the *Ganeo kabeeri* n.sp. Present species differs from its congeners on the basis of the spinose body slightly tapering anteriorly; subterminal oral sucker larger than ventral sucker; shape of cirrus sac; shape and arrangement of testes; bilobed ovary attached with ventral sucker and posterior testis; distribution and extension of vitellaria; shape and extension of ceca and egg size.

**Key words:** *Hoplobatrachus tigerinus*, Trematode, *Ganeo kabeeri*, Sindh Pakistan

### INTRODUCTION

Klein 1905 proposed the genus *Ganeo* with *G. glottoides* as the type species obtained from a Frog, *Rana hexadactyla* from India. He tentatively placed this genus under subfamily Pleurogenetinae Looss (1899). Odhner (1911) discussed its systematic position and assigned this genus to the subfamily Pleurogenetinae of the family Lecithodendriidae.

Trematodes of genus *Ganeo* reported from Pakistan are; *Ganeo gastricus* (Sarivastava, 1933) Bilqees and Kaikobad, 1976; Farooq and Khan, 1994 from *R. cyanophlyctis* and *R. tigrina*. *Ganeo kumaonensis* (Pande, 1937) Bhutta and Khan, 1975 from *Rana tigrina*. *Ganeo macrocotyle* (Bilqees and Kaikobad, 1976) Farooq and Khan 1994 from *Rana tigrina*. *G. sirinagarensis* (Kaw, 1951) Bilqees and Kaikobad, 1976 from *R. cyanophlyctis* and *G. tigrina* (Mehra and Negi, 1928) Bilqees and Kaikobad, 1976 Farooq and Khan, 1994 from *R. tigrina*. *Ganeo karachiensis* Khatoon et al., 2011, *Ganeo bicaudatum* Khatoon et

al., 2012. *Ganeo elongatum* Khatoon et al., 2012, *G. jonesae*, N. Khatoon, et al, 2016.

A survey was conducted to study helminthes parasites of frogs (*Hoplobatrachus tigerinus*) from district umerkot Sindh Pakistan. During examination of frog three trematodes were recovered from small intestine. About 6,500 amphibian species are recorded from all over the world (Frost et al., 2006) *Hoplobatrachus tigerinus*, is the Ranid frog species described is recognized as Bullfrog. It is found throughout the wetlands parts of India, Bangladesh and greatly of northern Pakistan and also present in some parts of Nepal and Myanmar (Das and Dutta 1998) Maldives, Madagascar and Nepal (Dubois and Ohler, 1995). It is diurnal but secretive, spending maximum of its time in humid environs among the roots of grasses around ponds and puddles, when alarmed instantly jumps into the water, hiding itself in the debris at the bottom. For a variety of items it is voracious feeder, containing lizards, snakes, small mammals, amphibians, insects, and birds. It also eat odd tidbits as human hairs, cattle dung and grass (Khan, 1973).

## MATERIAL AND METHODS

A total of eighteen hosts *Hoplobatrachus tigerinus* were collected from different aquatic habitats of district Umerkot, Sindh, Pakistan for the presence of helminth parasites. The collection of live specimens was made from Umerkot District of Sindh Province and brought to the Department of Zoology, University of Sindh, Jamshoro for further studies. Hosts were examined for the presence of endohelminthes. The method is given by Gracia, Ash (1979) and Schmidt (1988) were used to processed the helminthes. Diagram were made with the aid of camera lucida. Measurements of the body and other structures are given in millimeters (mm). The description given in the trematodes of the frog (*Rana tigrina*) in Karachi, Pakistan (lap lambert academic publishing 2012), descriptions and keys given by Khan, 2004 and related literature also observed.

## RESULTS

**Description:** Body of the worm is completely spinose, small, pyriform, measuring 2.2-0.98mm in size. Maximum width in posterior half of body. Oral sucker small, sub-terminal and measuring 0.13-0.18mm in size. Ventral sucker is little bit larger then oral sucker. Ventral sucker is measuring 0.146-0.16 mm in size. Prepharynx absent. Pharynx small. The oesophagus is moderate and 0.173-0.053 mm in size. The Ceca long, measuring 1.4-0.133 mm in size and end blindly in posterior half of body. Testes two almost round, anterior testis pre-acetabular, intercecal, 0.413-0.28mm in size and posterior testis postero-lateral to ventral sucker and overlapping the ceca measuring 0.28-0.253mm in size. Cirrus sac elongate, claviform, anterior one third tubular while posterior two third is much broader measuring 0.68-0.186mm in size. Seminal vesicle looped, consisting of 5 loops. Genital pore sinistromarginal at level of esophagus. Ovary kidney-shaped, bi-lobed, smaller in size, one larger lobe and one smaller lobe, intercecal, overlapped by ventral sucker and posterior testes measuring 0.28-0.253 in size. Uterus long, coiled extending up to posterior extremity. Vitellaria composed of minute follicles forming small clusters starting from posterior level of ventral sucker, extending backward up to cecal end, not reaching posterior extremity. Ceca broader, starting and ending points of ceca are at same distance from anterior and posterior extremities. Eggs oval, numerous, having almost same size, measuring 0.2 -0.35 by 0.093-0.012.

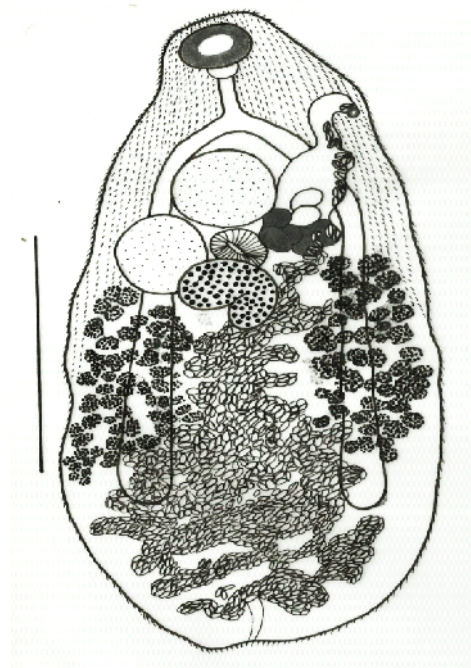
### Taxonomic summary

**Family:** Lecithodendriidae Odhner, 1910

**Order:** Ganeoninae Yamaguti 1958

**Genus:** *Ganeo*, Klein, 1905.

**Species:** *Ganeo kabeeri* n.sp.



**Fig. 1.** *Ganeo kabeeri* n.sp. Entire worm.



Scale bar:

**Fig. 2.** Photograph of the *Ganeo kabeeri* n.sp.

**Number of specimens:** 03

**Number of hosts found positive:** 1

**Site of infection:** Intestine

**Type host:** Bull frog, *Hoplobatrachus tigerinus*

**Locality:** Umerkot, Sindh, Pakistan.

**Record:** New locality record.

## DISCUSSION

Species of genus *Ganeo* have been commonly reported from amphibian hosts mainly from *Rana* species (Yamaguti, 1958). Trematodes of genus *Ganeo* reported are; *Ganeo gastricus* (Sarivastava, 1933) Bilqees and Kaikobad, 1976; Farooq and Khan, 1994 from *R. cyanophlyctis* and *R. tigrina*. *Ganeo kumaonensis* (Pande, 1937) Bhutta and Khan, 1975 from *Rana tigrina*. *Ganeo macrocotyle* (Bilqees and Kaikobad, 1976) Farooq and Khan 1994 from *Rana tigrina*. *G. sirinagarensis* (Kaw, 1951) Bilqees and Kaikobad, 1976 from *R. cyanophlyctis* and *G. tigrina* (Mehra and Negi, 1928) Bilqees and Kaikobad, 1976 Farooq and Khan, 1994 from *R. tigrina*. *Ganeo karachiensis* Khatoon *et al.*, 2011, *Ganeo bicaudatum* Khatoon *et al.*, 2012. *Ganeo elongatum* Khatoon *et al.*, 2012, *G. jonesae*, N. Khatoon, *et al.*, 2016.

Shaikh and Ahmed 1989 observed frogs from Hyderabad for *Ganeo* sp. infection, *Ganeo korkei* Bhalariao, 1936 reported from India. *Ganeo* species reported from Africa (Ehtopian Region) include *G. africana* and *G. glottoides*.

The present specimen are described from the Bull frog (*Hoplobatrachus tigerinus*). These appear closer to *G. Karachiensis* Khatoon *et al.*, 2011 reported from *Rana tigrina* in Karachi. Therefore, on the basis of shape of body, shape of cirrus sac, presence of pharynx, spines are present, bilobed ovary attached with ventral sucker and posterior testis, distribution and extension of vitellaria, shape and extension of ceca.

On the basis of differentiating characteristics the present flukes described as *Ganeo kabeeri*. The name of new species refers to the Kabeer Ahmed, the father of research scholar.

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