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A trematode *Paradistomoides orientalis* from gall bladder of *Hemidactylus flaviviridis* of Ekma, Bihar

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Abstract: An attempt has therefore been made to project the trematode parasite of one group of class Reptilia that is lacertilians of Chapra. In present paper attempt has been made to study some trematode parasite of lacertilians of class- Reptilia of vertebrates found in and around Chapra and to present some taxonomical aspect based on statistical approach. A few new species have also been reported to fix up their taxonomical status. Statistical approach has also been followed in addition to the typological and qualitative approach. Ten trematodes were recovered from gall bladder of wall lizard (*Hemidactylus flaviviridis*) found from the suburbs of Chapra. All the flukes were very active, yellowish in colour and very thick. On comparison these were found to belong to genus *Paradistomoides* Travassos, 1944. According to Yamaguti (1958, 1971), that trematodes under investigation appears to be close to *Pardistomoides orientalis*. A few variations are of course present, but are supposed to be variations within the species.

Keywords: *Pardistomoides orientalis*, trematode parasite, Reptilia

INTRODUCTION

Ten trematodes were recovered from gall bladder of wall lizard (*Hemidactylus flaviviridis*) found from the suburbs of Chapra. All the flukes were very active, yellowish in colour and very thick. On comparison these were found to belong to genus *Paradistomoides* Travassos, 1944.

The genus *Paradistomoides* was erected by Travassos in 1944 with *Paradistomoides gregarinum* as its type species. In 1929 Narian and Das reported *Pardistomoides orientalis* and *Paradistomoides indicus* from *Hemidactylus flaviviridis* and *Uromastix hardwicki* respectively. In the same year Bhalerao discovered *P. geconum* from *Gecko gecko*. In 1935 Tubangui and Masilungan discovered *Paradistomoides exacalotes* from *Calotes versicolor*. Sinha, 1958 reported *Paradistomoides intestinalis* from *Calotes numoricolla* and *Paradistomoides lanceolatum* in *Chameleon zeylanicus*. Singh, 1980 has described *P. calotei* from *Calotes versicolor*. In 1984 Verma also described *Paradistomoides anantramani* and *Paradistomoides patnensis* from *Calotes versicolor*. Verma 1984 added *Paradistomiodes singhi, Paradistomoides srivastavai* and *Paradistomoides ovatus* (In his Ph.D thesis submitted in

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Patna University) from *Calotes versicolor*. In 1985, Sinha described yet another species *Paradistomoides flaviviridii* (In her Ph. D. thesis in Patna University) from *Hemidactylus flaviviridis*. Sahay and Sahay, 1986 added another species *Paradistomoides chauhani* from *Hemidactylus flaviviridis* from Ranchi, (Jharkhand). Gupta and Saxena in 1989 described *P. vinodae* from *Calotes vericolor* at Lucknow (Uttar Pradesh). Kumar in 2002 added *Paradistomiodes hajipurensis* and *Paradistomoides devendrai* (In his Ph. D. thesis submitted in B. R. A. Bihar University) from *Calotes versicolor*. In 2003, Singh described yet another species *Paradistomoides majumdari* and *Paradistomoides fotedari* (In his Ph. D. thesis submitted in B. R. A. Bihar University) from *Hemidactylus flaviviridis*.

An attempt has therefore been made to project the trematode parasite of one group of class Reptilia that is lacertilians of Chapra. In present paper attempt has been made to study some trematode parasite of lacertilians of class – Reptilia of vertebrates found in and around Chapra and to present some taxonomical aspect based on statistical approach. A few new species have also been reported to fix up their taxonomical status. Statistical approach has also been followed in addition to the typological and qualitative approach.

Although a lot of work on systematics of helminth fauna particularly of trematodes has been done in India and abroad, information from state of Bihar particularly Saran district in this respect is very meagre and is in the form of sporadic reports and hardly conveys any clear picture. The state of Bihar is known to be rich in its helminth fauna due to its topography, tropical climate and high humidity. Since parasites form a vast group of animals, the work concerning its systematics is still far from being complete. As such, much has to be done regarding systematics of parasites.

MATERIAL AND METHODS

Lacertilians were collected from different sites of Chapra and suburbs. They were dissected in the department of Zoology Jagdam College, Chapra in saline water. Search was made for parasites from each and every organ of the host concerned. The small parasites were recovered by putting the gut content scrapings in the jars containing 7% saline water, very small worms were separated from the unwanted materials by the process of sedimentation and several decantations, larger worms were picked up directly from the host body or from the scrap contents with the help of brush, needles or forceps.

KILLING AND FIXATIONS

The worms collected were cleaned thoroughly, using tap or saline water. The cleaned worms were killed and fixed quickly by using suitable reagents depending on the type of parasite. Trematodes were fixed under pressure of cover glass. The worms fixed were either processed immediately or were preserved in suitable preservative depending upon the nature and kind of parasites. The different kinds of fixatives and preservatives used for the investigation includes.

Type of parasites	Fixative	Preservative
Trematodes	1. Warm A.F.A.* solution 2. Mercuric chloride,Acetic acid 3. 7% commercial formaline	Formaline or 70% alcohol.

*A.F.A. -Ethyl alcohol 90%-		50ml.
Formaline (commercial)	-	10ml.
Glacial Acetic acid	-	2ml.
Distilled water	-	40ml.
Mercuric chloride	-	Acetic acid saturated, aqueous solution.
Mercuric chloride	-	100ml.
Acetic acid Glacial	-	5ml.

The specimens were fixed in mercuric chloride-Acetic acid till they become white. Care was taken not to touch the chemical or the specimen by any metallic tools or instruments.

The trematodes were stained in :

1. Ehrlich's haematoxylin stain
2. Gower's stain
3. Semichon's carmine stain

1. Ehrlich's haematoxylin:

Solution A	Solution B
Haematoxylin--2gms. Ethanol absolute--100ml.	Glycerol --100ml. Distilled water --100ml. Glacial acetic acid --10ml. Aluminium potassium sulphate -- 3gm.

Solution A & B were mixed and allowed to mature in bright day light for several weeks, before using the stain in the laboratory.

2. Gower's stain:

10 gms of carmine was boiled in 100 ml of 45% glacial acetic acid. The solution after cooling was filtered. The filter paper was removed carefully and dried for the preparation of the stain as follows:-

Acidified carmine	— 1 gm.
Potash alum	—10 gm.
Distilled water	—200 ml.

The ingredients were mixed and dissolved by heating. The solution was then cooled and filtered. Thymol crystals were added to the solution to prevent mould growth.

3. Semichon's carmine

Glacial acetic acid	— 50 ml
Distilled water	— 50 ml
Carmine powder	— in excess

The acetic acid was added to distilled water and then the carmine powder was added in excess. The whole solution was heated for about 15 minutes. The solution was cooled and filtered.

The following procedure was adopted for staining :-

Trematodes :-

With Ehrlich's haematoxylin
(material in 70% Ethyl alcohol)

The stain was diluted 20 times, adding ethyl alcohol.

The material was stained overnight overnight in diluted stain.

The stained material was differentiated with acid alcohol and washed in a few changes of 70% alcohol. A quick treatment with diluted (100 times) 2% potassium hydroxide was given to bring sharpness in the stain. The material was quickly washed in 70% alcohol and dehydrated through 90% and absolute alcohol. The material was cleared in methyl salicylate, then in Benzene and mounted in canada balsam or D.P.X.

With Gower's stain:

The preserved material (in 70 % alcohol) was downgraded to water or 20% alcohol and stained in Gower's stain for 12-16 hours. The stained material was washed in one or two changes of water and dehydrated through graded series of alcohols, cleared in methyl salicylate and Benzene and mounted in canada balsam or D.P.X.

With semichon's carmine:

The fresly fixed and preserved material was first treated with stain (diluated 10 times with 70% alcohol) for an hour(timings depend on the size of parasite).

The stained material was differentiated in acid alcohol and washed thoroughly in 70% alcohol to remove acid from the material. The flukes then were dehydrated, cleared in methyl salicylate, then treated with Benzene and mounted in canada balsam or D.P.X.

RESULTS

Description

(All measurement are in mms.)

The leaf like body of flukes are oval and elongated, some are slender with narrow anterior end and a blunt tapering posterior end is 2.730 – 4.670 in length and 1.245–2.405 in breadth respectively.

Oral sucker is subterminal, rounded and also situated in the anterior half of the body and measures 0.355-0.489 in length and 0.325 – 0.445 in breadth.

The pharynx is small, globose and measures 0.115–0.160 length and 0.104–0.122 in breadth.

The oesophagus is narrow and of moderate length and is 0.106 – 0.162 in length.

The intestinal caeca is fairly broad , extending up to the posterior end of the body. The ventral sucker is almost round and is situated in the equatorial region of the body. The ventral sucker is 0.226–0.290 in length and 0.320 - 0.350 in breadth.

Testes are two in number. They are rounded, oval or slightly lobed, symmetrical. They are situated at the posterolateral aspect of ventral sucker and covering the corresponding intestinal caecum ventrally one on either side. The right testis (T_1) measures is 0.250–0.450 in length and 0.390–0.500 in breadth respectively while the left testis (T_2) is 0.250-0.380 x 0.380–0.450 in measurement.

Ovary ovoid, rounded, post acetabular and post testicular and is placed near the right testis (T_1). The ovary measures 0.150–0.240 in length and 0.240–0.330 in breadth respectively.

The receptaculum seminilis is prominent, post ovarian and closely placed to Mehli's gland complex. The vitellaria are follicular and extracaecal. The uterine coils are extended in the posterior one third region of the body.

Eggs are numerous. The excretory vesicle is tubular.

DISCUSSION

Paradistomoides have been categorised in three category by Sahay and Sahay (1982) as far as the oral sucker and ventral sucker is concerned. These are as follows :-

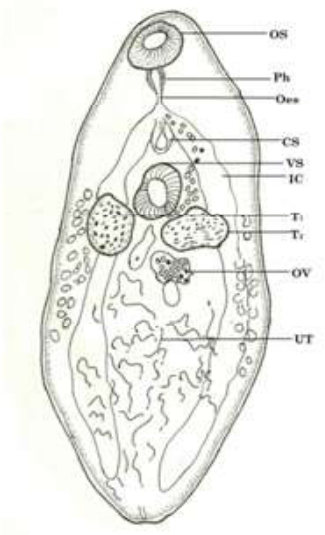
(i) Where oral sucker is larger than ventral sucker.

(ii) Where oral sucker and ventral sucker is equal.

(iii) Where oral sucker is smaller than ventral sucker.

In first category fall *Paradistomoides orientalis* Narian *et*. Das, 1929 *Paradistomoides lanceolatus* Simha 1958, and *Paradistomoides chauhani* Sahay and Sahay, 1980 fall where as in third category *Paradistomoides spatulatus* Simha, 1958, *P. pandeyi* Gupta 1980, *P. simhai* Gupta, 1981.

The genus *Paradistomoides* was created by Travassos (1944). The flukes under consideration have been compared with *P. orientalis* Narain and Das (1929). Arora and Agarwal (1960 & 1962), made thorough study of different species of *P. orientalis* and found a wide range of difference in the extent of vitellaria and they shows assymetry on two sides. They together with Krishna Swami and Ananta Raman (1958) concluded that *P. moghei* described by Bhalerao (1933), *P. banarasensis* by Baugh (1956), were synonyms of *P. orientalis*. But according to Yamaguti 1958, 1971 the genus *Paradistomum* has mainly post-testicular vitellaria, large suckers where as *Paradestomoides* has relatively small sucker and vitellaria starts from the level of acetabulum and testes.



Paradistomoides orientalis
(Narain and Das, 1929) Travassos, 1924

According to Yamaguti (1958, 1971), that trematodes under investigation appears to be close to *Pardistomoides orientalis*. A few variations are of course present , but are supposed to be variations within the species.

Host - *Hemidactylus flaviviridis*
Location - Intestine
Locality - Chapra

The specimens on the slides have been deposited in P.G Deptt. of Zoology, Jagdam College, Chapra .

REFERENCES

1. **Agrawal, S.M.,Agrawal M.M.and Arora, S. 1962** Studies on some intraspecific variations in *Paradistomum orientalis* Narain and Das, collected from the gall bladder of *Calotes versicolor*. *Ind. J. Helm.* **14(1):** 5-15.

3. **Arora, S. & Agrawal, S. M. 1960.** Studies on intraspecific variations in *Paradistomoides orientalis*. Narin et. Das, 1929 collected from the gall bladder of *Calotes versicolor* Daud Part I. (Dicrocoeliidae-Trematode). *Bull.Zool.Coll.Sci. Nagpur.* **3:**43-52

4. **Arora, S. *et. al.* 1962.** Studies on some intraspecific variations in *Paradistomum orientalis* , Narain et Das, collected from the gall bladder of *Calotes versicolor. Ind.Jour.Helm.***14(1):** 5-15.

5. **Bair J. G. 1959.** Helminth parasites. Pracs. Nationaux du cango. Belge.I. Fase,163.PP

6. **Sinha, D. P. and Hakim, A. 1967.** On Postorchigenes mazeedi n. sp. (Prosthodendriidae) from Indian house gecko, *Hemidectylus flaviviridis*. *Zool. Anz.* **178(1-2):** 39-42.

7. **Lal, A.K. and prasad, D. 1979.** On a new trematode *Postorchigenes* sp. from *Hemidactylus flaviviridis*. *Ind.Jour.Helm.* **31(1):** 1-5.

8. **Lal, A. K. 1979.** Studies on the digenetic trematodes of some vertabrates of Bihar. Unpublished Ph.D.Thesis Patna Univ.Patna.

9. **Tubangui,& Masilungan, 1935.** Trematode parasite of Philippine vertebrates VII. Additional recordes on new species. *Philipp.J.Sc.* **70(4):** 397-401 58.

10. **Singh, V. S. 2003.** Studies on digenetic trematodes of *Hemidactylus flaviviridis* of Tirhut division of Bihar. Unpublished Ph.D. Thesis, B.R.A. Bihar University, Muzaffarpur.

11. **Verma, U. P. 1984.** Studies on the trematode parasites of vertebrates in and around Vaishali district. Ph.D. thesis. Patna University, Patna.

12. **Kumari, Mina 1991.** Studies on digenetic trematodes of Poikilothermic Vertebrates of Sonepur, Dist.- Saran. Unpublished Ph. D. Thesis, B.R.A. Bihar University, Muzaffarpur.

13. **Singh, Anita.1999.** Statistical obervations on certain helminths of Vaishali in and around. Ph.D. thesis, B.R.A. University, Muzaffarpur.

14. **Sinha, S. S. 1958.** Studies on the trematode parasites of Reptile found in Hyderabad State.*Z. Parasit.* **18:** 161-218.

15. **Yamaguti, S. 1958.** Systema Helminthum, the digenetic trematodes of vertebrates, Part- I and II. 1-1575 New York. Inter-Science publishers. INC.

16. **Yamaguti, S. 1971.** Synopsis of digenetic trematodes of Vertebrates vol.-I-1074 Keigaku Publishing Co. Tokyo, Japan.

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