ON A NEW MONOGENETIC TREMATODE (MONOGENEA : MICROCOTYLIDAE) FROM THE FISH *JOHNIUS RUBER* (BLOCH AND SCHNEIDER)

ABSTRACT

Biocotyle johnii a new Microcotylid species is recorded from the gill filaments of *Johnius ruber* (Bloch and Schneider) collected from Bombay. The present species is differentiated from *Biocotyle stromates* Tripathi, 1954 the only known representative of the genus in possessing a symmetrical haptor, clamps on one side are smaller than those on the other side and also in some morphometric features.

MONOGENETIC TREMATODES, ectoparasitic for the most part have been studied extensively in marine fishes by Yamaguti (1934, 1948) ; Hargis (1956) ; Mac Callum (1913, 1915) and Sproston (1946). Most of the information regarding the trematode parasites in marine fishes of India comes from the contributions of Chauhan (1945, 1953) and Tripathi (1954). The present work deals with the study of an interesting monogenetic trematode belonging to the family Microcotylidae Taschenbery, 1879, from the gills of *Johnius ruber* (Bloch and Schneider).

Material

Out of the 15 specimens of *Johnius ruber* (Bloch and Schneider) examined, 9 were found infected with this trematode. 32 specimens of the parasite were collected from the gill-filaments of the fishes.

Description (Fig. 1 a-c ; Fig. 2)

Body elongated, fusiform, length 7.1 - 11.3 mm, anterior region long, narrow, central broad while posterior tapering ; widest at the level of ovary, measuring 2.8 - 3.4 mm.

Posterior part of body or caudal disc bears two rows of clamps (Fig. 1 c) of unequal size. Large clamps on left side varying from 30 to 55 in number, smaller clamps on right side varying from 16 to 20 in number ; clamps on both sides decrease in size antero-posteriorly ; number of clamps varies with the size of animal. All clamps of microcotylide type, each supported by chitinous skeleton consisting of five pieces, unpaired central piece (Fig. 1 b, c - cp) and two pairs of lateral pieces (Fig. 1 b, c - Lp) ; anchors absent.

Mouth subterminal with two cuticular suckers inside ; two spherical, aseptate suckers (As) situated on either side of oval, muscular pharynx (Ph) ; oesophagus (Oe) thin, straight tube measuring 1.32 - 2.00 mm in length ; intestinal bifurcation in front of genital atrium (Ga) ; caeca (Ic) send out large number of lateral branches both inwards and outwards forming a sort of reticulum.

Intestinal caeca divide body roughly into three longitudinal zones, central zone contains reproductive organs while two lateral zones are occupied by vitellarium (Vt).

Tests (Ts) occupy posterior portion of central zone, situated immediately behind ovary (Ov), oval in shape, vary in number from 40-50 ; Vas deferens (Vd) coiled, ventral to uterus (Ut) and vagina (Vg), opens into genital atrium (Ga) by male pore (Mp) which is armed with a corona of 10-12 hooks.

Ovary (Ov) pretesticular, tubular, looped or curved, posterior end continued as narrow short oviduct which bends forward and enlarges into ootype (Ot), latter surrounded by cells of shell gland whose ducts open into ootype. Beyond ootype, oviduct continued as uterus (Ut) which opens into genital atrium (Ga) by female pore (Fp).

Vitellarium (Vt) diffused, consisting of number of rounded follicles starting behind genital atrium and extending right upto posterior end

of body, pair of vitelline ducts (Vtd) converge medially to form common vitelline duct (Cd), latter opens into ootype ; Vagina (Vg) present and opens mid-dorsally a short distance behind genital atrium.

Biocotyle Tripathi, 1954, but to differ considerably from *B. stromatea* Tripathi, 1954, the only known species of the genus. The present record *Biocotyle johnii* is therefore considered as a new species. It has a sym-

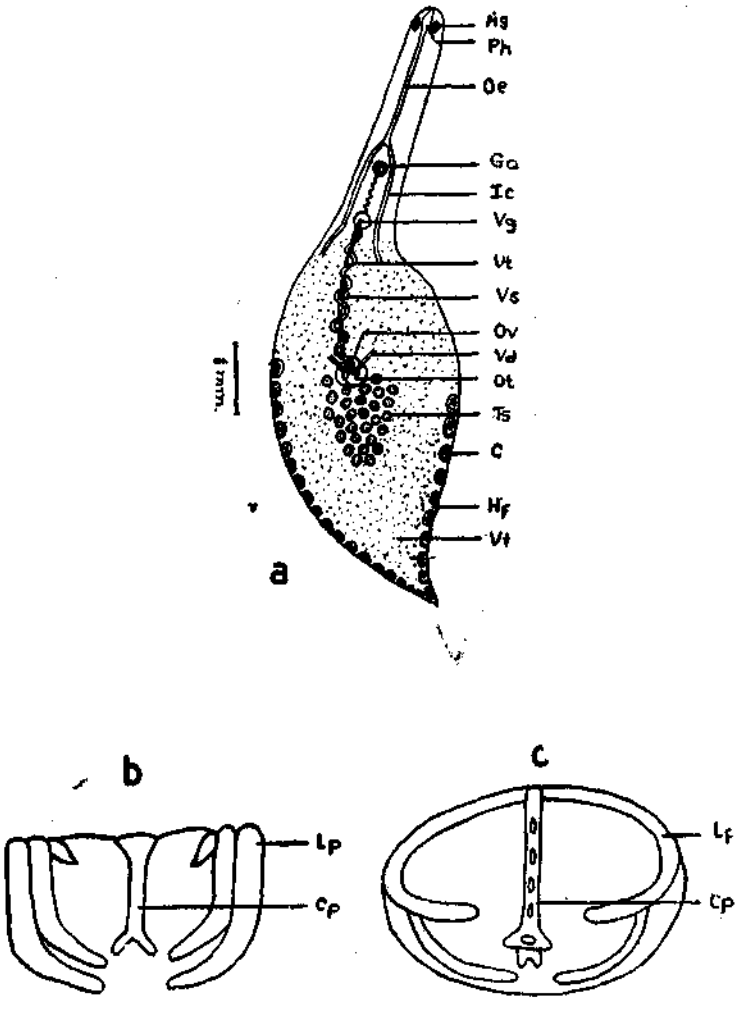

Fig. 1. *Biocotyle johnii* n. sp. - a. Entire animal ventral view ; b. Smaller clamp and c. Larger clamp (As—anterior sucker ; C—clamp ; Cp—central piece ; Ga—genital atrium ; Hp—haptor ; Ic—intestinal caeca ; Lp—lateral piece ; Oe—oesophagus ; Ot—ootype ; Ph—pharynx; Ts—testes; Ut—uterus ; Vd—vas deferens ; Vg—vagina ; Vt—vitelline follicles).

Discussion

The study of the species under discussion reveals the organism as belonging to the genus metrical haptor which is the main character of the genus *Biocotyle*. *B. johnii* possesses clamps, which on one side are smaller than

those on the other side a character seen in the genus *Megamicrocotyle*. Thus the new species appears to be intermediate between the two generic characters. The species *B. johnii* has superficial resemblance to *B. stromatea* yet it differs from the latter in some morphometric features as shown in the Table 1.

TABLE 1 *Showing the differences between* B. stromatea *and* B. johnii*

Biocotyle stromatea Tripathi, 1954	*Biocotyle johnii* n. sp. (present record)
Length of body 7.4 mm	9.2 mm
No. of larger clamps 10-17	16-20
No. of smaller clamps 35-40	30-55
No. of testes—Many	40-50
Ovary—Single, coiled	Single, curved
Size of clamps—Clamps on both the sides decrease in size antero-posteriorly.	Clamps on one side smaller than those on the other and decrease in size anteroposteriorly.
Genital atrium—Armed with 12-15 hooks	Armed with a corona of generally 10 hooks.
Host — *Stromateus argenteus* (Euphra)	*Johnius ruber* (Bloch & Schn.)
Habitat—Gills	Gills
Locality—Calcutta	Bombay

* Measurements of length, breadth, etc. represent the average of 12 observations.

The present new species is named *Biocotyle johnii* with reference to the type host *Johnius ruber* (Bloch & Schneider). The two species *B. johnii* and *B. stromatea* were also subjected to electrophoretic studies by using polyacrylamide gel to find out the interspecific variations

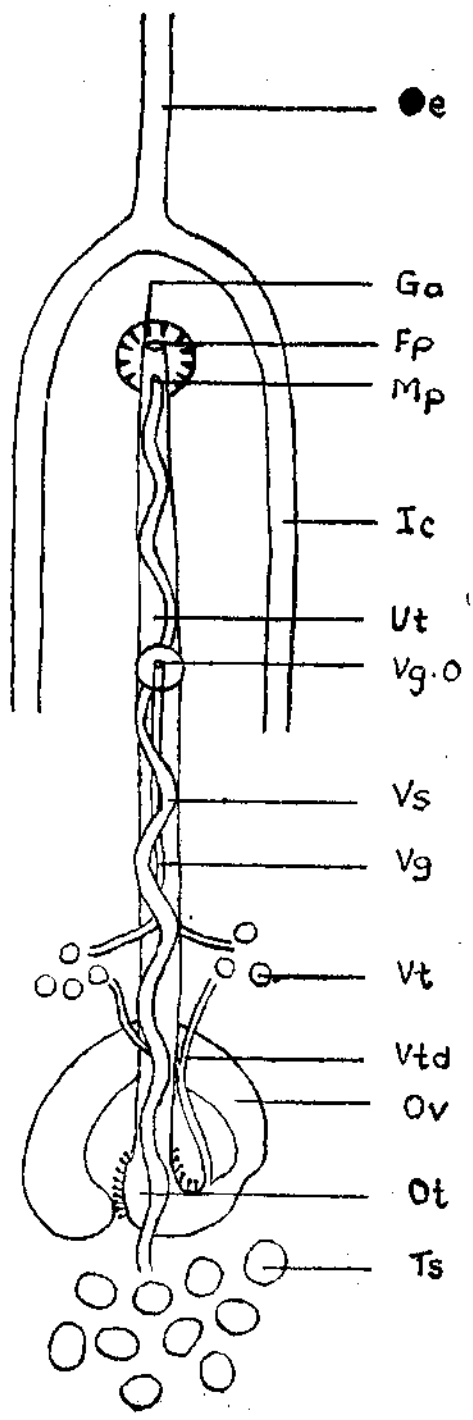

Fig. 2. *Biocotyle johnii* n. sp. Reproductive organs (Fp—female pore ; Ga—genital atrium ; Ic—intestinal caeca ; Mp—male pore ; Oe—oesophagus ; Ot—ootype ; Ov—ovary; Ts—testes ; Ut—uterus; Vd—vas deferens ; Vg—vagina ; Vt—vitelline follicles ; Vtd—vitelline duct ; Vgo—opening of vagina.)

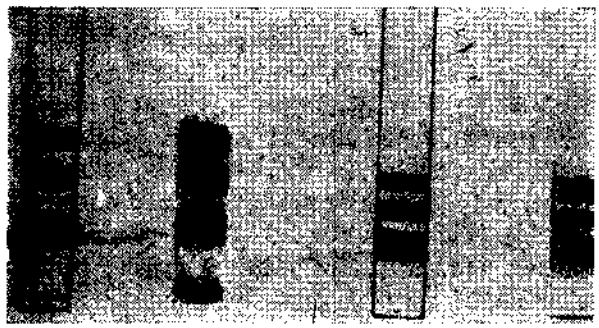

Fig. 3. a. Electropherogram of *Biocotyle johnii* n. sp. and b. Electropherogram of *Biocotyle stromatea* Tripathi, 1954.

if any in the protein patterns of their body muscles. Tsuyaki *et al.* (1965) have carried out similar studies on the members of the fish family Salmonidae. The electropherograms of the muscle proteins of *B. johnii* shows the muscle myogen pattern of the species (Fig. 3). The corresponding electropherogram of the closely allied species *B. stromatea* also collected during the course of the present investigations, is given for comparison. In the case of the former species 4 distinct protein bands are seen, whereas in the latter case only 3 are seen. The thickness of the bands also shows a considerable variation. Thus the two species show distinct intraspecific differences with regard to their protein patterns, justifying the creation of a new species.

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REFERENCES

CHAUHAN, B. S. 1945. *Proc. Ind. Acad. Sci.*, **21** (B) : 160-173.

——— 1953. *Rec. Ind. Mus.*, **51** (2) : 113-393.

HARGIS, W. J. 1956. *Expt. Parasit.*, **6** : 610-625.

MAC CALLUM, M. A. 1913. *Zool. Jahrb. Syst. Bd.*, **35** : 389-402.

——— 1915. *Ibid.*, **38** : 71-78.

SPROSTON 1946. *Trans. Zool. Soc.*, **25** : 185-600.

TRIPATHI, Y. R. 1954. *Ind. J. Helminthology*, **9** : 1-49.

TSUYUKI *et al.*, 1965. *J. Fish. Res. Bd. Canada*, **23** (10) : 1599-1608.

YAMAGUTI, S. 1934. *Jap. J. Zool.*, **5** (2) : 281-342.

——— 1948. *Ibid.*, **8** (26) : 226-228.

A REDESCRIATION OF *CIRRHITICHTHYS APRINUS* (PISCES : CIRRHITIDAE) FROM TUTICORIN, SOUTH INDIA

ABSTRACT

The redescription of the little known perch *Cirrhitichthys aprinus* (Cuvier and Valenciennes, 1829) based on fresh material from Tuticorin, South India is given here.

Cirrhitichthys aprinus was originally described by Cuvier and Valenciennes (1829). Day (1875) and Fowler (1931) described *C. aureus* which was synonimised by De Beaufort (1940) under *C. aprinus*. Jordan and Tanaka (1913), Munro (1955) and Smith (1961) described this species subsequently.

Recently we obtained 23 specimens of *C. aprinus* (78 mm to 100 mm in total length)