



“STUDIES ON A NEW SPECIES OF THE GENUS *TETRAGONOCEPHALUM* SHIPLEY ET HORNELL, 1905 FROM *DASYATIS WALGA* (MULLER AND HENLY, 1841)”

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ABSTRACT

Present study deals with a new species of the genus *Tetragonocephalum*, Shipley et Hornell in 1905 spiral valve of *Dasyatis walga* (Muller and Henly, 1841) at Kalambadevi, Bhatye, Mirya, Mirkarwada, Harne Dist. Rarnagiri, West Coast of Maharashtra, India. New species *Tetragonocephlum suryajii* Sp.Nov. comes closer to all known species of the genus *Tetragonocephalum* in general topography of organ but differs due to having size of worm 42-45 in length and 0.63 in width. The scolex is globular anteriorly and cushion like posteriorly, neck broader than long, mature proglottids three to four times broader than long, testes 55-65 in numbers, genital pores oval, sub-marginal, irregularly alternate, vagina posterior to cirrus pouch, ovary ‘U’ or ‘W’ shaped with many acini, vitellaria granular, gravid proglottids two to three times longer than broad and uterus sacular.

Key words- Cestoda, *Dasyatis walga* (Muller and Henly, 1841), *Tetragonocephlum suryajii* Sp.Nov.

INTRODUCTION

The genus *Tetragonocephalum* was erected by Shipley et Hornell in 1905 from *Trygon walga* at Ceylon as type species *T. trygonis*. Later on 14 species are added to this genus viz. *T. uarnak*, Shipley et Hornell, 1906; *T. minutum*, Southwell, 1925; *T. raoii*, Deshmukh & Shinde, 1979; *T. alii*, Deshmukh & Shinde, 1979; *T. sepheni*, Deshmukh & Shinde, 1979; *T. shipleyi*, Shinde, Mohekar & Jadhav, 1985; *T. bhagwati*, Shinde, Mohekar & Jadhav, 1985; *T. yamaguti*, Murlidhar, 1988; *T. ratnagiriensis*, Shinde and Jadhav, 1990; *T. aurangabadensis*, Shinde and Jadhav, 1990; *T. singhi*, Pawar and Jadhav, 2005; *T. ratnagiriensis (minuta)* Bhagwan, 2007; *T. sepheni* Lanka et al., 2013 and *T. murudensis* Pathan and Bhure, 2018.

The present investigation deals with *Tetragonocephalum suryajii* Sp. Nov. from the spiral valve of *Dasyatis walga* (Muller and Henly, 1841) at Kalambadevi, Bhatye, Mirya, Mirkarwada, Harne Dist. Rarnagiri, West Coast of Maharashtra, India.

MATERIAL AND METHODS

One hundred fourteen specimens of the cestode were collected from different place such as Kalambadevi, Bhatye, Mirya, Mirkarwada, Harne Dist. Rarnagiri, West Coast of Maharashtra, India. Out of them nine parasites are taken for taxonomical studies and rest of the others used for histopathological studies. The parasites preserved in 4% formalin, passed in various alcoholic grades and stained with borax caramine mounted in D.P.X. for taxonomical studies.

RESULTS

Description Based on Nine alike specimens) (*Tetragonocephalum suryajii* Sp.Nov. Figure- 1)

The parasite measures 42-45 mm in length and 0.43 mm in width and consists of 18 immature proglottids, 13 mature proglottids and 07 gravid proglottids. The scolex is divided into two regions, the anterior and posterior. The scolex measures 1.04845 (0.8786-1.2181) in length and 0.7644 (0.5096-1.01934) in width. The anterior region is smaller, globular, muscular measures 0.2693 (0.1747-0.3640) in length and 0.6261 (0.5339-0.7184) in width. The posterior region is large, cushion like measures 0.3786 (0.2427-0.5096) in length and 0.7523 (0.5339-0.9708) in width and bearing four circular or rounded suckers, two are placed centrally one behind the other, two are placed marginally with small papillae protruded and measures 0.08009 (0.06310-0.9708) in length and 0.7766 (0.06796-0.8737) in width. Scolex followed by neck, which is broader than long, narrow anteriorly and broad posteriorly and measures 0.4004 (0.3883-0.4126) in length and 0.3154 (0.2669-0.3640) in width. The mature proglottids are three to four times broader than long, tubular and measures 1.4961 (1.4393-1.5529) in length and 0.4317 (0.4242-0.4393) in width. The testes are oval to rounded in shape, pre- ovarian in position, arranged in a rows, 55-65 in numbers and measures 0.04545 in diameter. Cirrus pouch is large, elongated, transversly placed and measures 0.2158 (0.2045-0.2272) in length and 0.06817 (0.04545-0.09090) in width. The cirrus is thin, tubular, contained within cirrus pouch and measures 0.1893 (0.1818-0.1969) in length and 0.01514 (0.00757-0.02272) in width and forms vas deferens which is long tube and measures 0.2045 (0.1969-0.2121) in length and 0.01514 (0.007575-0.02272) in width. The cirrus and vagina open into a common genital pores, which is sub-marginal, oval, irregularly alternate and measures 0.06817 (0.06060-0.07575) in length and 0.01893 (0.01515-0.02272) in width. The vagina is thin, opens from genital pores, posterior to cirrus pouch, takes a turn and runs posteriorly and measures 0.2727 (0.2651-0.2803) in length and 0.01514 (0.00757-0.02272) in width and forms receptaculum seminis, which is long, swallowed tube, measures 0.4355 (0.4166-0.4545) in length and 0.3030 (0.02272-0.03787) in width and reaches to ootype, which is small, rounded, compact and measures 0.03030 in diameter. From ootype two ovarian lobes starts and form 'U' or 'W' shaped ovary with many acini on each side, placed posteriorly and measures 0.4924 (0.4545-0.5303) in length and 0.0871 (0.06060-0.1136) in width. The gravid proglottids is two to three times longer than broad and measures 1.6835 (1.6287-1.7423) in length and 0.7006 (0.6060-0.7953) in breadth. Form ootype, the uterus starts, which is sacular, filled with eggs and measures 1.5453 (1.4999-1.5908) in

length and 0.4772(0.4393-0.5151) in width. Eggs are oval to rounded in shape and measures 0.05302(0.04545-0.06060) in length and 0.03029(0.02272-0.03787) in width. Vitellaria are granular, placed cortically except the cirrus pouch region and pre-ovarian. Excretory canal runs either side of the proglottids, which is tubular, long and measures 1.4772(1.4393-1.5151) in length and 0.02272(0.01515-0.03030) in width.

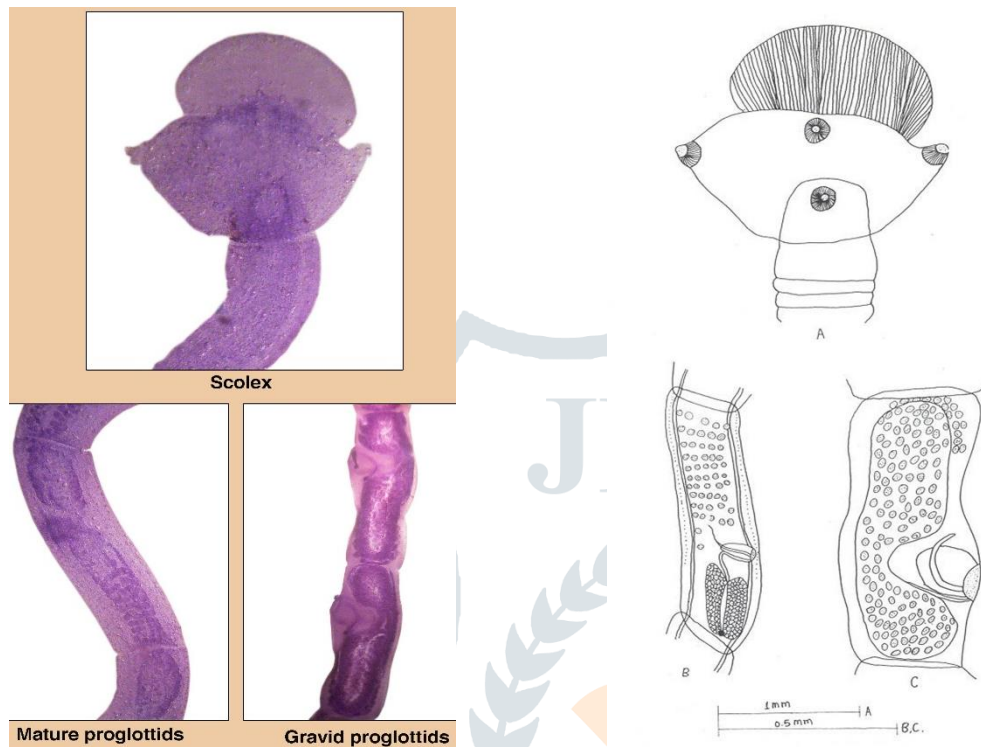


Fig.1: Microphotoplate and Camera Lucida diagram of *Tetragonocephalum suryajii* Sp. Nov. (A-Scolex; B-Mature Proglottids and C-Gravid Proglottid)

DISCUSSION

The genus *Tetragonocephalum* was erected by Shipley et Hornell in 1905 with its type species *T. trygonis* from *Trygon walga* at Ceylon. So far 12 species of *Tetragonocephalum* are added to this genus.

The present form having the largest worm 42-45 in length and 0.63 in width. The scolex is globular anteriorly and cushion like posteriorly, neck broader than long, mature proglottids three to four times broader than long, testes 55-65 in numbers, genital pores oval, sub-marginal, irregularly alternate, vagina posterior to cirrus pouch, ovary 'U' or 'W' shaped with many acini, vitellaria granular, gravid proglottids two to three times longer than broad and uterus sacular.

The present cestode differs from *T. trygonis*, Shipley et Hornell, 1905, in the worm length 27 in length and 0.8 in width, testes 7-12 in numbers and ovary massive with follicular and eggs 0.05 in diameter. The present form differs from *T. uarnak*, Shipley et Hornell, 1906, is having worm length 8.30, worm width 0.14-0.4, length of scolex 0.22-0.28, width of scolex 0.21-0.41, testes 16-27 in numbers, external seminal vesicle absent, ovary massive with follicular, length of gravid proglottids 5.00 and eggs 0.06 in diameter. The present worm differs from *T. minutum*, Southwell, 1925 with worm length 20, worm width 0.68, length of scolex 0.53, width 0.68, testes 38-

63 in numbers, ovary quadrangular and gravid proglottids 4.5 in length. The present communication differs from *T. raoii*, Deshmukh and Shinde, 1979, which is having the length of worm 16-20, width of worm 0.38, length of scolex 0.63-0.89, width of scolex 0.45-0.54, testes 50-55 in numbers, external seminal vesicle absent, ovary quadrangular with follicular and length of gravid proglottids 3.18 and length of uterus 2.94. The present parasite differs from *T. alii*, Deshmukh and Shinde, 1979, in the worm length 30-32, worm width, 0.73, length of scolex 0.74, width of scolex 0.80, absence of neck, testes 40-45 in numbers, length of gravid proglottids 2.55 and eggs 0.04 in diameter. The present Cestode differs from *T. sepheni*, Deshmukh and Shinde, 1979, in the length of worm 10, width of worm 0.72, length of scolex 0.53-0.62, width of scolex 0.53-0.55, testes 36-38 in numbers, external seminal vesicle absent, ovary quadrangular and length of gravid proglottids 2.59. The present worm differs from *T. shipleyi*, Shinde et.al. 1985, in having length of worm 40, width of worm 1.83, scolex length 0.50-0.56, scolex width 0.38-0.48, testes 12 in numbers ovary 'H' shaped and length of gravid proglottids 1.78-1.83. The present cestode differs from *T. bhagwati*, Shinde et.al., 1985 having length of worm 20-25, width of worm 0.50-0.95, length of scolex 0.40-0.46, width of scolex 0.48-0.54, absence of neck, testes 37-38 in numbers, ovary 'H' shaped and length of gravid proglottids 0.86-0.92. The present form differs from *T. yamaguti*, Murlidhar, 1988, in the length of worm 7, width of worm 0.23-0.3, scolex length 0.12-0.16, scolex width 0.21-0.26, testes 54-56 in numbers external seminal vesicle absent and ovary rectangular. The present parasite differs from *T. ratnagiriensis*, Shinde and Jadhav, 1990 in the size of scolex 0.843 in length 0.459-0.537 in width, testes 40-44 in numbers and ovary rectangular. The present Form differs from *T. aurangabadensis*, Shinde and Jadhav, 1990 in the length of scolex 0.55-0.56, width of scolex 0.29-0.60, absence of neck, testes 105-110 in numbers and ovary oval in shape. The present cestode differs from *T. singhii*, Pawar and Jadhav, 2005, in the size of scolex 0.55-0.56 in length and 0.29-0.60 in width, testes 39 in numbers, Genital pores marginal, regularly alternate and length of uterus 0.67-0.68. The present parasite differs from *T. ratnagiriensis (minor)*, H.K.Bhagwan,2007 in having scolex small,oval, 0.485 in length 0.192-0.437 in width, testes 34-36 in numbers and ovary U shaped. The present worm differs from *T. sepheni* Lanka et.al., 2013 in having anterior region of scolex is quadrangular & posterior region is oval with suckers. Neck short, cylindrical, mature segments longer than broad, testes oval to rounded, pre-ovarian, distributed in two fields, cirrus pouch oval, genital pore marginal, Ovary large, compact, 'U' shaped, vagina slight curved, ootype small, oval, uterus large saccular, occupied by numerous eggs, vitellaria granular, corticular and arranged in thin strips. The present form differs from *T. murudensis* Pathan and Bhure, 2018 in having size of worm 55-58 in length and 0.68 in width. the scolex is globular anteriorly and cushion like posteriorly, neck short, testes 50-60 in numbers, presence of external seminal vesicle, genital pores oval, sub-marginal, irregularly alternate, vagina anterior to cirrus pouch, ovary 'U' shaped with many acini, vitellaria granular, gravid segments four to five times longer than broad 3.3495-3.4466 in length and (0.5097-0.8009) in width. Uterus tubular broad anteriorly and narrow posteriorly 2.4854-3.0335 in length and 0.4611-0.6067 in width and contains eggs 0.0138 in diameter

In view of the above differences, it is regarded as a new species for which the name *Tetragonocephalum suryajii* Sp.Nov. is named in honour of author father name.

Taxonomic Summary:

Type species	<i>Tetragonocephalum suryajii</i> Sp.Nov.
Host	<i>Dasyatis walga</i> (Muller and Henly, 1841)
Habitat	Spiral valve.
Locality	Kalambadevi, Bhatye, Mirya, Mirkarwada, Harne Dist. Rarnagiri, West Coast of Maharashtra, India.
No. of specimen	09
Deposition	Cestodology Research Lab., Dept. of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.

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