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Introduction of taxanometry to evaluate a new *Davaineidae* tapeworm *Cotugnia tuljapurensis* Sp. Nov. from *Colmbia livia* from Osmanabad district (M.S.), India

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Abstract

The present communication deals with a new *Davaineidaen* tapeworm belonging to the genus *Cotugnia* Viz*, Cotugnia tuljapurensis* Sp. Nov. has been described from the intestine of *Columba livia*, at Tuljapur, Osmanabad district, (M.S.) of India and compared with the existing species. Due to possession scale squarish, mature segment squarish in shape testes 260 in number, ovary horse shoe shaped, longitudinal excretory canals are medium it has been separated from all the known species.

Keywords: Tapeworm, *Cotugnia tuljapurensis* Sp. Nov, *Colmbia livia,* Osmanabad

INTRODUCTION

The genus *Cotugnia* was erected by Diamare [3] with its type species *C. digonopora* [21] collected from the domestic fowl, *Gallus domesticus* from Africa, India, Burma, Indonesia, Phillipines. So far following species of the avian cestode Genus *Cotugina* are reported.

Since then thirty six species have been reported till to date under this genus. The genus *Cotugnia* is the sole representative of the family *Davaineidae* from birds. The present communication deals with the description of a new species under the same genus viz. *Cotugnia tuljapurensis* Sp. Nov collected from *Colmbia livia.*

MATERIALS AND METHODS

Fifteen specimens of the cestode parasites were collected from the intestine of the pigeon *Colmbia livia* at Tuljapur Tq. Tuljapur, Dist. Osmanabad (M. S.) India. The worms were collected, washed with saline water, flattened and preserved in 4% formalin, the parasites were stained with Harris haematoxylin passed through various alcoholic grades, cleared in xylene, mounted in D.P.X. and whole mount slides were prepared, for further anatomical studies. Sketches are drawn with the help of Camera Lucida and all measurements are in millimeters. The identification is made with the help of Systema Helminthum [32].

Description: (Based on Eleven Species)

The complete strobilae measure 34 mm in length and 3.44 in width. All the tapeworm are long, consisting of scolex, immature and mature proglottids. The scolex is medium in size, squarish in shape with concave on convex irregular margin, distinctly marked off from the strobila with four suckers armed rostellum and measure 0.022 - 0.121 in length and 0.762 – 0.776 in length. The suckers are medium in size, oval in shape, placed at four corners, arranged in two pairs, one pair in each half of the scolex, equidistantly placed and measure 0.160 – 0.199 in length and 0.146 – 0.160 in breadth. The rostellum is large in size oval in shape, occupy major portion of the scolex, situated near the anterior margin and in the anterior half of the same, transversely elongated, armed with rostellar hooks, which are in a single circle and measure 0.286 – 0.403 in length and 0.170 – 0.286 in breadth. The rostellar hooks are small in size, single pronged, 260 - 270 (264) in number with a pin head like base and pointed apex and measure 0.024 – 0.029 in length and 0.005 in breadth.

The neck is medium in length, squarish in shape, broad anteriorly, narrow anteriorly with straight lateral margins and measures 0.481 – 0.538 in length and 0.490 – 0.791 in breadth.

The mature proglottid are large in size, squarish in shape, broader than long, almost 5 – 6 times broader than long, craspedote, each segment with a double set of reproductive organs, narrow anteriorly, broad posteriorly with short, blunt, round projections at the posterior corners of the segment and measure 0.544 – 0.602 in length and 3.838 – 4.292 in breadth.

The testes are medium in size, oval in shape 255 – 265 (260) in number, in a single field, evenly distributed, mostly distributed in the posterior 2/3rd or less region of the segments, anterior 1/3rd region of the segment is blank, except few preovarian at the anterior corner of the segments, laterally bounded by the longitudinal excretory canals and measures 0.034 – 0.079 in length and 0.084 – 0.057 in breadth. The cirrus pouch on each side, medium, flask shaped in appearance, obliquely placed, posteriorly directed, situated in the anterior 1/3rd region of the segment extends or not up to the longitudinal excretory canals and measure 0.159 – 0.193 in length and 0.022 – 0.102 in length. The cirrus is a thin, coiled tube, contained within the cirrus pouch and measures 0.225 – 0.259 in length and 0.011 in breadth. The vas deferens is a thin, long, coiled tube, runs obliquely, up to or beyond the ovary and measures 1.033 – 1.067 in length and 0.011 in breadth. The genital pores are medium in size, oval in shape, bilateral, marginal at ¼th from anterior margin of the segments and measures 0.045 – 0.068 in length and 0.011 – 0.034 in breadth.

The ovary is medium in size almost inverted horse shoe shaped in appearance, indistinctly bilobed, central in position, situated just posterior to the middle of the segments, obliquely placed, almost 1/4th from the lateral margin of the segments and measures 1.033 –

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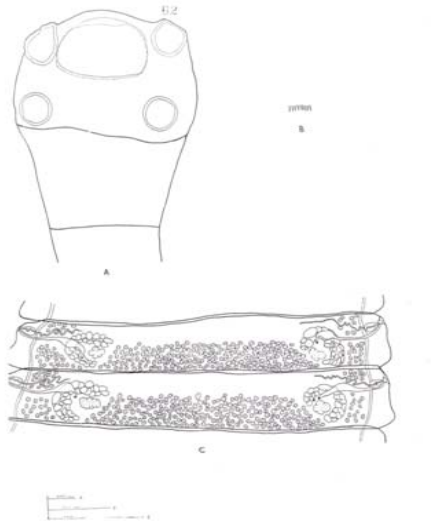
1.181 in length and 0.068 – 0.216 in breadth. The vagina is medium in width, situated posterior to the cirrus pouch, starts from the genital pore, extends posteriorly, up to the lateral excretory canals turns and runs anteriorly up to the ovary, again turns posteriorly, runs, reaches and opens in to the ootype and measures 0.760 – 0.886 in length and 0.011 – 0.125 in breadth. The ootype is small in size, round in shape, postovarian situated or not in the concavity of the ovarian lobes and measures 0.011 – 0.028 in diameter. The receptaculum seminis is large in size, spindle shaped, in appearance, broad at the middle, tapering at both the ends, obliquely placed, just anterior from the middle of the segments on the ovary and measures 0.304 – 0.454 in length and 0.234 – 0.125 in breadth. The vitelline gland is medium in size, irregular in shape, post ovarian, with 4 – 6 lobes, situated at the middle or just posterior to the middle of the segments and measures 0.170 – 0.216 in length and 0.079 – 0.148 in breadth. The longitudinal excretory canals are medium in width and measure 0.011 – 0.033 in breadth. The gravid segments were not available.

DISCUSSION

The genus *Cotugnia* was erected by Diamare in 1893, with its type species *C. digonopora* from *Gallus gallus dometicus*. So far no of species of *Cotugnia* was added to this genus.

The present tapeworm differs from *C. diagonopra* [3, 21] in the size of the scolex 1.5 in diameter, testes 100-150 in number. The present tapeworm differs from *C. polycantha* [4] in the size of the scolex 0.45 in diameter, rostellar hooks 420 in number, testes 100 in number. The present tapeworm differs from *C. cuneata* [17] having scolex rounded, rostellum rounded, rostellar hooks 400 in number, testes 50 in number. The present tapeworm differs from *C. joyeux* [1] in the size of scolex 0.67 in diameter, size of rostellum 0.19 in diameter, testes 30-50 in number. The present tapeworm differs from *C. parva* [1] in the size of scolex 0.49-0.68 x 0.69-0.85, size of rostellum 0.4505 Vs 0.15, rostellar hooks 378-396 in number, testes 32-41 in number. The present tapeworm differs from *C. fleari* [18] in the size of scolex 0.45-0.58 in diameter, testes 28-44 in number. The present tapeworm differs from *C. bhali* [9] having the size of scolex 0.50 in diameter, Size of rostellum 0.34 in diameter, rostellar hooks 332 in number, testes 69-74 in number. The present tapeworm differs from *C. intermedia* [9] having the size of scolex 0.44-0.525 testes 69-74 in number. The present tapeworm differs from *C. noctua* [9] having the size of scoelx 0.51 in diameter, testes 170-182 in diameter. The present tapeworm differs from *C. taiwanensis* [32] having the size of scolex 0.54-0.74, rostellar hooks 200 in number and testes 12-13 in number. The present tapeworm differs from *C. rimondoi* [30] having the rostellar hooks 300 in number and testes 100-136 in number. The present tapeworm differs from *C. magna* [2] having the size of scolex 0.58-0.62, rostellar hooks 480-500 in number, testes 150 in number. The present tapeworm differs from *C. aurangabadensis* [24] having scolex broad shape and rostellum Flat, rostellar hooks 500 in number ,testes 80-90 in number. The present tapeworm differs from *C. columbae* [24] having scolex wide, rostellar hooks 1200 in number, testes 12-14 in number, cirrus sac narrow, short, absence of vitelline gland. The present tapeworm differs from *C. srivastavai* [16] in the size of the scolex 0.726, testes 80-85 in number. The present tapeworm differs from *C. magdoubii* [13] having the size of scolex 0.44-0.55. The present tapeworm differs from *C. satpulensis* [15] having the rostellar hooks 337 in number and testes 43-52 in number. The present tapeworm differs from *C. yamagutii* [25] having scolex globular, rostellum rounded, rostellar hooks 500 in number, testes 190-200 in number. The present tapeworm differs from *C. vishakhapatnamensis* [16] having size of scolex 28-35 x 0.336-1.056. The present tapeworm differs from *C. rajivji* [6] having scolex oval, rostellar hooks 350-400 in number, testes 60-65 in number. The present tapeworm differs from *C. kamatiensis* [11] having size of rostellum 0.068 x 0.152, hooks 200-210 in number, testes 95- 105 in number, cirrus sac oval, cylindrical, vitelline gland medium, oval post ovarian. The present tapeworm differs from *C. chengmaii* [31] scolex quadrangular, rostellum spinose, , rostellar hooks numerous, testes 30-35 in number, vitelline gland small. The present tapeworm differs from *C. manishae* [27] having the size of the scolex 0.462 x 0.485 size of rostellum 0.22 x 0.227, rostellar hooks 110-120 in number, testes 85-90 in number, ovary oval and vitelline gland triangular. The present tapeworm differs from *C. ganguae* [26] having rostellum big, oval, rostellar hooks 275-300, testes 155-160 in number, cirrus pouch cylindrical, ovary bilobed, lobes unequal in shape. The present tapeworm differs from *C. mehdii* [14] having the size of scolex 0.985 x 1.516, rostellar hooks 110 in number, testes 140- 150 in number. The present tapeworm differs from *C. alii* [28] in the size of scolex 0.450-0.456 x 0.639-0.657, rosterllar hooks 100-110 in number and testes 80-85 in number. The present tapeworm differs from *C. sillodensis* [7] having the scolex quadrangular, rostellum oval, rostellar hooks 120-130 in number, Vitelline gland small. The present tapeworm differs from *C. singhii* [23] having the size of scolex 0.363 x 0.436, hooks 200-210 in number, testes 65-70 in number, genital pore marginal, Ovary 'H' shaped and vitelline gland post-ovarian. The present tapeworm differs from *C. lohaensis* [5] having scolex oval, rostellar hooks 190-210 in number, testes 28-30 in number, vitelline gland post- ovarian. The present tapeworm differs from *C. shankari* [29] having scolex quadrangular, rostellar hooks 105-205 in number, testes 27-40 in number, Genital pore marginal, vitelline gland medium,post-ovarian. The present tapeworm differs from *C. liviae* [22] having size of rostellar hooks 120-130 in number, testes 120-125 in number. The present tapeworm differs from *C. streptopelii* [8] having size of scolex 8.04-5.36 x 9.82-5.36, testes 27-30 in number. The present tapeworm differs from *C. hafeezi* [19] having shape of scolex quadangular, rostellar hooks 55-60 in number, testes 150- 160 in number. The present tapeworm differs from *C. indiana* [10] in having rostellar hooks 110-120 in number and testes 115-120 in number. The present tapeworm differs from *C. tetragona* [20] having scolex is tetragonal, rostellar hooks 120 – 130 in number, mature proglottid four times broader than long, testes 60 – 70 in number.

In view of the above differences justify the recognition of the present tapeworm, as a new species and hence the name *Cotugnia tuljapurensis* Sp. Nov. is proposed, is proposed as it is reported from Tuljapur, Dist. Osmanabad, (M.S.) India.



A) Scolex

B) Hooks

C) Mature Segment

Taxonomic summary

Genus : *Cotugnia* Diamare [3]
Species : *Cotugnia tuljapurensis* Sp. Nov.
Type host : *Columba livia*
Habitat : Intestine
Locality : Tuljapur, Dist. Osmanabad, (M.S.) India.
Holotype : Deposited in Helminthology Research Lab.
Para type : Dept. of Zoology, Dr. B. A. M. U. Aurangabad.
Date of collection : August, 2004
Etymology : As the cestode species reported from Bendsura Dam, Dist Beed, (M.S) India

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