

Taxonomical studies on new cestode species *Cotugnia shrirampurensis* from *Gallus gallus domesticus* at Ahmednagar district (M.S.) India

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ABSTRACT

Present investigation deals with a new *Davaineidae* tapeworm belonging to the genus *Cotugnia* viz, *Cotugnia shrirampurensis* Sp. Nov. has been described from the intestine of *Gallus gallus domesticus* At-Shrirampur, Dist.- Ahmednagar (M.S.) India and compared with the existing species. having scolex large in size, quadrangular in shape, highly muscular, rostellum small, oval, having 150-160 hooks in number, four suckers are present large in size, cup shaped, mature segment large, broader than long testes are 130 to 135 in number, medium in size, oval in shape; genital pores are small in size, bilateral in position, oval in shape; ovary on each side is medium in size, rounded shaped in appearance, compact, with irregular margin, cirrus pouch on each side is large in size, cylindrical in shape.

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Key words: Cestode, *Cotugnia shrirampurensis*, *Gallus gallus domesticus*

Introduction

Taxonomical studies play important role in the fields of applied Zoology and it provides a workable and heuristic framework within which biodiversity is recognized and species characterization occurs¹. The use of morphological taxonomic technique still dominates and is considered as a valuable tool in describing, naming and identifying the organism in a convenient manner⁹.

Helminth Parasite infection in poultry birds causes economic losses through mortalities and egg-laying capacity.¹¹ also parasites causing weakness and severe disease, which may result into death of the birds if not, treated properly⁹.

The genus *Cotugnia* was erected by ²with its type species *C. digonopora* 1890 collected from the domestic fowl, *Gallus domesticus* from Africa, India, Burma, Indonesia, Philippines. So far, forty species have been reported till date under this genus. *Cotugnia* genus is the sole representative of the family *Davaineidae* from birds.

Current classifications of cestode are mainly based on morphological traits in adult parasitic phenotypes³. The present study deals with a new species *Cotugnia shrirampurensis* from the above said genus collected from intestine of *Gallus gallus domesticus*.

MATERIAL AND METHOD:

A. Sample Collection:

The present work was carried out At- Shrirampur, Dist. - Ahmednagar (M.S.) India. Total 52 intestines were collected from slaughter house of different villages of Ahmednagar district, out of 52 intestine 31 intestines are infected, contain 58 specimens of the cestode parasites were collected.

B. laboratory Examination:

In laboratory working the gastrointestinal tract of host was opened in a longitudinal section with forceps, cestode parasites were removed from the dissected gastrointestinal tract and The worms were flattened, preserved in 4% formalin, stained with Harri's hematoxylin, passed through alcoholic grade, cleared in xylol, mounted in D.P.X and preparation of permanent slides by staining and mounting.

C. Camera Lucida and Identification

All the drawing was made with the aid of Camera Lucida. All measurements are in millimeters, unless otherwise indicated. Parasitological examinations were performed by standard methods, identify the cestode as per key⁷ and the identification of parasite is made with the help of "Systema Helminthium" Vol. II. Cestode of Vertebrates¹⁰

RESULT AND DISSECTION

About fifty-eight cestode parasites were collected from the gastrointestinal tract of *Gallus gallus domesticus* from At- Shrirampur, Dist. - Ahmednagar (M.S.) India. The characters of the cestode are sufficient to accommodate the parasites as a genus *Cotugnia* and supported by the order diagnosis, family diagnosis and generic diagnosis given by the¹¹ hence the species are identified it the genus *Cotugnia*².

The scolex is large, quadrangular in shape, highly muscular, distinctly marked off from strobila and measures 1.033 (1.022 to 1.045) in length and 1.107 (1.102 to 1.113) in breadth. The scolex bears an armed rostellum. The rostellum is small, oval, armed with about 150-160 hooks in single circle and measures 0.130 (0.125 to 0.136) in length and 0.050 (0.045 to 0.056) in breadth. Four suckers are present on the scolex, which are large in size, cup shaped, highly muscular, arranged in two pairs, one pair in anterior of the scolex and one pair half of the scolex and measures 0.232 (0.227 to 0.238) in length and 0.249 (0.227 to 0.272) in breadth.



Fig-1 Photograph showing of scolex and mature segment of parasites

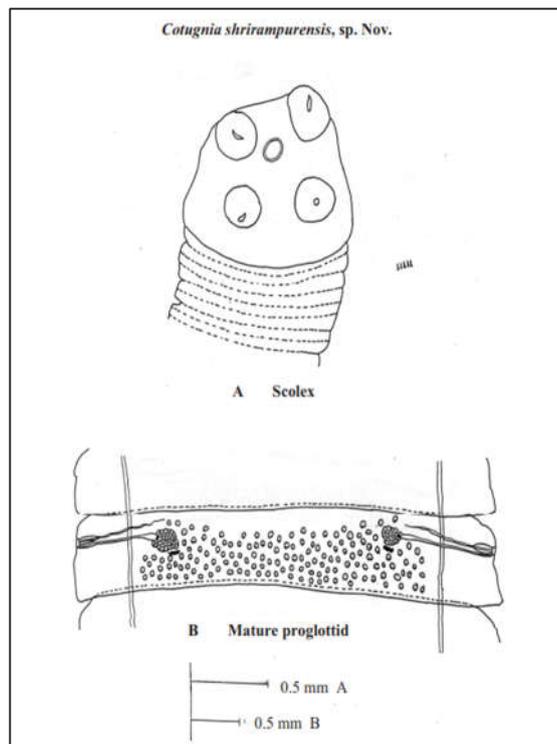


Fig-2 Camera Lucida drawing showing scolex and mature segment of parasites

The neck is absent. The mature segments are large in size, broader than long, almost six to seven times broader than long, with a double set of reproductive organs, with concave or convex lateral margins, with short blunt, round projection at the posterior corners of the segment and measures 0.749 (0.714 to 0.785) in length and 4.374 (4.339 to 4.410) in breadth. The testes are medium in size, oval in shape, 130 to 135 in number, bounded laterally by the

longitudinal excretory canal, evenly distributed and measures 0.071 in length and 0.035 in breadth. The cirrus pouch on each side is short, cylindrical in shape situated just anterior to the middle of the segment and measures 0.205 (0.196 to 0.214) in length and 0.062 (0.053 to 0.071) in breadth. The cirrus is thin long, anteriorly directed, contained within the cirrus pouch and measures 0.187 (0.178 to 0.196) in length and 0.017 in breadth. The vas deferens is thin, elongated, anteriorly directed, coiled and measures 0.696 (0.678 to 0.714) in length and 0.017 in breadth. The ovary is medium in size, rounded shaped in appearance, compact, with irregular margin, situated internal to longitudinal excretory canal, placed in anterior half of the segment and measures 0.740 (0.696 to 0.785) in length and 0.035 in breadth. The vagina is a thin tube, posterior to the cirrus pouch, runs transversely, crosses the longitudinal excretory canals, runs and open into the ootype and measures 0.901 (0.821 to 0.982) in length and 0.017 in breadth. The ootype is small in size, rounded in shape and measures 0.017 in diameter. The genital pores are small in size, oval in shape, bilateral in position, situated just anterior margin to the middle of the segment and measures 0.062 (0.053 to 0.071) in length and 0.026 (0.017 to 0.035) in breadth. The vitelline gland is small, oval in shape, post ovarian, placed middle of the segment and measures 0.115 (0.107 to 0.125) in length and 0.035 in breadth. The longitudinal excretory canals are medium, runs lateral to the segment and measure 0.740 (0.696 to 0.785) in length and 0.035 in breadth. The gravid segments were not available.

After going through the literature, the worm under discussion comes closer to following species, in having number of testes 130 to 135. *C. digonopora*^{6,2}, *C. rimondoi*⁸, *C. Mehdi*⁵, But differs from them in many characters, which are The present cestode, is having scolex large in size, quadrangular in shape, highly muscular; rostellum small, oval, having 150-160 hooks in number; four suckers are present large in size, cup shaped; mature segment large, broader than long; testes are 130 to 135 in number, medium in size, oval in shape; genital pores are small in size, bilateral in position, oval in shape; ovary on each side is medium in size, rounded shaped in appearance, compact, with irregular margin; cirrus pouch on each side is large in size, cylindrical in shape.

1. The present form, differs from *C. digonopora*^{6,2} in the length of the scolex (1.033 as against 1.5); in the length of the rostellum (0.130 as against 0.15); in the number of testes (130-135 as against 100-150) and the length of the cirrus pouch (0.205 as against 0.300).
2. The present cestode, differs from *C. rimondoi*⁸, the numbers of testes in the present worm are 130-135, where as in *C. rimondoi* 100-136 in number. The host of the present worm *Gallus gallus domesticus*, whereas same of *C. rimondoi* is *Columbia livia*.

3. The present tapeworm, under discussion differs from *C. mehdi*,⁵ in the length of scolex (1.033 as against 1.516); in the length of rostellum (0.130 as against 0.182) in the number of testes (130-135 as against 140-150).

The above noted characters are enough, to erect a new species for these worms and hence, the name *Cotugnia shrirampurensis* Sp. Nov. is proposed, after the locality.

CONCLUSION

As observed from the results obtained, present investigation consist of Sample collection, Laboratory examination, Camera Lucida. After going through literature, conclude that given identified cestode parasites found in in *Gallus gallus domesticus*. Which is differ from the known species of the genus *Cotugnia* in distinct and differentiating characters like shape and size of the scolex, number of hook, testes, Proglottids and Shape and Size Ovary etc. Some additional characters are given in comparative chart at the end. These distinct characters are more than enough to erected a new species from this genus and hence the name *Cotugnia shrirampurensis*

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ACKNOWLEDGEMENTS

We extend our gratitude to the Zoology Department of ACS College Satral and PVP College Pravaranagar for granting permissions and for their support during research fieldwork.

COMPETING INTERESTS

Authors have declared that no competing interests exist

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