RESEARCH PAPER | Zoology | Volume : 4 | Issue : 7 | July 2014 | ISSN - 2249-555X

Studies on Avian Cestode Genus Cotugnia Diamare, 1893 (Cestoda: Davaineidae, Fuhrmann 1907) From Gallus Gallus Domesticus

KEYWORDS: Cestoda, Cotugnia osmanabadensis Sp.Nov., Davaineidae, Gallus gallus domesticus.

D.M.PATHAN	D. B. BHURE	SACHIN MULE
Department of Zoology, Shrikrishna Mahavidyalya, GUNJOTI Dist. Osmanabad M.S.India.	Research and Post Graduate Department of Zoology, Yeshwant Mahavidyalaya, NANDED 431 602 (M. S.)	Department of Zoology, Shrikrishna Mahavidyalya, GUNJOTI Dist. Osmanabad M.S.India.

ABSTRACT *The present investigation deals with a new species of the genus Cotugnia, Diamare 1893 from the intestine of Gallus gallus domesticus, from Osmanabad (M.S.) of India. The new species Cotugnia osmanabadensis Sp.Nov. comes closer to all known species of the genus Cotugnia in general topography of organ but differs due to having scolex globular, four rounded suckers, rosetellum large and oval, rectangular with hooks, mature segments broader than long, testes 110-120 in numbers, oval to rounded and Post-ovarian, cirrus pouch large oval and elongated, cirrus short, thin and slightly curbed, vas deferens tubular, curved directed anteriorly, genital pores large oval and marginal vagina posterior to cirus pouch and ovary compact, oval in shape.*

INTRODUCTION

Birds are important components of ecosystem. They are important from the ecological and economical point of view. Man uses many birds as delicious and nutritious food. Similarly birds also produce some important products like meat, eggs and beautiful feathers. Parasites are extremely abundant and diverse in nature, representing a substantial portion of global biodiversity. The infections of cestode parasites are found in birds. There are no estimates of population suffering from cestode infection but infections are very common in people who are eating poorly cooked or uncooked meat, unhygienic habitats and poor sanitation. Infection leads to anemia. They infected man and also invade domestic birds and wildlife.

Genus Cotugnia was erected by Diamare, 1893 with type species C.digonopora (Pasqule, 1890) collected from domestic fowl. So far following 39 species of the avian cestode Genus Cotugina are reported.

1. C. digonopora (Pasquale, 1890), Diamare, 1893.
2. C.polyacantha, Fuhrmann, 1909.
3. C. cuneatea tenuis, Meggitt, 1924.
4. C. joyeuxi, Baer, 1925.
5. C. parva, Baer, 1925.
6. C. fleari, Meggitt, 1927.
7. C. bahli, Johri, 1934.
8. C. intermedia, Johri, 1934.
9. C. noctua, Johri, 1934.
10. C. taiwanensis, Yamaguti, 1935.
11. C. rimandoi, Tubangui et Masilungan, 1937.
12. C. magna, Burt, 1940.
13. C. aurangabadensis, Shinde, 1969.
14. C. columbae, Shinde, 1969.
15. C. srivastavi, Malviya and Datta, 1970.
16. C. magdoubii, Magzoubi and Kasim, 1980.
17. C. satpulensis, Malhotra and Capoor, 1983.
18. C. yamagutii, Shinde, 1985.
19. C. vishakhapatnamensis, Kolluri, 1988.
20. C. rajivji, Jadhav et. al., 1994.
21. C. kamatiensis, Kharade and Shinde, 1995.
22. C. chengmaii, C. Wongsawad and Jadhav 1998.
23. C. manishae, Shinde, 1999.
24. C. ganguae, Shinde, 1999.
25. C. mehdii, Mahajan et.al., 1999.
26. C. alii, Shinde et.al., 2002.
27. C. sillodensis, Jadhav et.al., 2003.
28. C. singhi, Pawar et.al., 2004.
29. C. lohaensis, Jadhav et.al., 2004.
30. C.shankari, Tat and Jadhav 2005.
31. C. liviae, Patil et.al., 2005.
32. C.streptopelii, G.P. Jadhav et. al., 2009.
33. C. hafezzi Nanware et. al., 2010
34. C. indiana Kasar et. al., 2010
35. C.indiana minor Garad et. al., 2010
36. C. tetragona Nanware et. al., 2011
37. C.orientalis Nanware et. al., 2011
38. Cotugnia domestica Shinde et.al.,2012
39. C. diamaraei Nanware and Bhure,2013

RESEARCH METHODS

Forty Seven cestodes were collected from the intestine of Gallus gallus domesticus at Osmanabd M.S.India during the period of March. 2009 to March, 2011. Four parasites are taken for Morphological studies. These are preserved in 4% formalin and passed in alcoholic grades, stained with Haematoxylene and mount in D.P.X.. Camera lucida drawings were prepared by research microscope. All the measurements are recorded in millimeter. The collected parasites were prepared for identification by usual standard methods (Gerald D. Schmidt, 1934; Yamaguti, S., 1959; Khalil, Jones and Bray,1994 and Hiware, Jadhav and Mohekar, 2003).

RESEARCH FINDING AND ANALYSIS

(Description Based on Seven alike specimens) (Cotugnia Diamarei Sp.Nov. Figure- 1)

Scolex is globular in shape measures 0.3349 (0.3300-0.3398) in length and 0.3058 (0.2184-0.3980) in width. The scolex bears four suckers almost of equal size, rounded, muscular and measures 0.1067 (0.0970-0.1165) in length and 0.1092 (0.0970-0.1262) in width. Rostellum large, oval, rectangular with hooks and measures 0.0849 (0.0728-00970) in length and 0.1771 (0.1699-0.1844) in width. The hooks are 60 to 80 in numbers in one row in rosetellum, measures 0.0164 (0.0155-0.0173) in length and 0.0043 (0.0017-0.0069) in width. The scolex followed by short neck, which is measured 0.1553 (0.1456-0.1650) in length and 0.0776 (0.0582-0.0970) in width.

The mature segments almost three times broader than long and measures 0.7402 (0.5048-0.8009) in length and 2.6092 (2.5485-2.6699) in width and each segment with double set of reproductive organs. The testes are 110-120 in numbers, oval to rounded in shape placed at the posterior side of the segments

Volume : 4 | Issue : 7 | July 2014 | ISSN - 2249-555X

entirely post-ovarian and measures 0.03883 (0.3398-0.04268) in length and 0.03002 (0.0292-0.03398) in width. Cirrus pouch is large, oval, elongated and measures 0.1747 (0.1699-0.1796) in length and 0.0849 (0.0728-0.0970) in width. Cirrus short, thin, slightly curved within the cirrus pouch and measures 0.1626 (0.1601-0.1650) in length and 0.0121 (0.0097-0.0145) in width and forms vas deferens which is tubular, curved, directed anteriorly and measures 0.3276 (0.3253-0.3300) in length and 0.0097 (0.0048-0.0145) in width. Cirrus and vagina is opening from the common genital pores. Which is large, oval in shape, marginal and measures 0.0194 (0.0145-0.0242) in length and 0.06067 (0.0582-0.0631) in width. Vagina is a thin tube, opens from the genital pores, posterior to cirrus pouch and measures 0.5485 (0.5436-0.5533) in length and 0.0169 (0.0145-0.0194) in width and forms receptaculum seminis. Which is thin, short tubular and reaches to ootype and measures 0.0339 (0.0291-0.0388) in length and 0.0169 (0.0097-0.0242) in width. The ootype is medium, rounded present to posterior side of the ovary and measures 0.01941 in diameter. The ovary is compact, rounded placed at the middle of the segments and measures 0.0825 (0.0776-0.0873) length and 0.154 (1.1456-0.1553) in width. The vitelline glands are rounded, Post-ovarian and measures 0.0266 in diameter. Longitudinal excretory canal present on either sides of the segments and measures 0.7063 (0.6990-0.7038) in length and 0.0266 (0.0242-0.0291) in width.

DISCUSSION

The genus Cotugnia was established by Diamare (1893), with its type species C.diagnopora (Pasquale,1890), subsequently following thirty seven species are known so far viz.. C.digonopora (Pasquale, 1890) Diamare, 1893; C.polyacantha Fuhrmann, 1909; C.cuneatea tenuis Meggitt, 1924; C.joyeuxi Baer, 1925; C.parva Baer, 1925; C.fleari Meggitt, 1927; C.bahli Johri, 1934; C.intermedia Johri, 1934; C. noctua Johri, 1934; C.taiwanesis, Yamaguti, 1935; C.rimandoi Tubangui et. Masilungam, 1937; C.magna Burt, 1940; C.aurangabadensis Shinde, 1969; C.columbae, Shinde 1969; C.srivastavi Malviya and Datta, 1970; C.magdoubii Magzoubi and Kasim, 1980; C.satpulensis Malhotra and Capoor, 1983; C. yamagutii Shinde, 1985; C. vishakhapatnamensis Kolluri, 1988; C.rajivji Jadhav et.al., 1994; C. kamatensis Kharade and Shinde, 1995; C.chengmaii C. Wongsawad and Jadhav, 1988; C.manishae Shinde, 1999; C. ganguae Shinde, 1999, C.mehdii Mahajan et.al., 1999, C.alii Shinde et.al., 2002; C. sillodensis Jadhav et.al., 2004; C.singhi Pawar et.al., 2004; C. lohaensis Jadhav et.al., 2004; C.shankari Tat and Jadhav 2005; C. liviae Patil et.al., 2005; C.streptopelii G.P. Jadhav et.al 2009. C. hafezzi Nanware et. al., 2010 ; C. indiana Kasar et. al., 2010 ; C.indiana minor Garad et.al, 2010, C. tetragona Nanware et. al., 2011, C.orientalis Nanware et. al., 2011. Later on Cotugnia domestica is added by Shinde et.al.,2012. Recently Nanware and Bhure, 2013 added C.diamarei from Gallaus domesticus.

The present parasite under discussion is having scolex globular, four rounded suckers, rosetellum large and oval, rectangular with hooks, mature segments broader than long, testes 110-120 in numbers, oval to rounded and Post-ovarian, cirrus pouch large oval and elongated, cirrus short, thin and slightly curbed, vas deferens tubular, curved directed anteriorly, genital pores large oval and marginal vagina posterior to cirus pouch and ovary compact, oval in shape.

1) The present form comes closer to all reported above mentioned species in general topography of organs, but differs from C.digonopora Pasquale 1890, Diamare, 1893 in the size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 1.5), size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 1.5, Rostellar hooks (53-55Vs numerous), Number of testes (62 in number Vs 100-150) and size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm Vs 0.300).
2) It differs from C.polyacontha Fuhrmann, 1909, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.45), size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.22), Number of rostellar hooks (53-55 Vs 420), Number of testes 62 Vs 100), size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm Vs 0.180) and reported from intestine of Gallus gallus domesticus Vs Columba livia.
3) The present specimen differs from C.cuneata tenuis Meggitt, 1924 due to shape and size of scolex (Oval, 0.59 -0.72 x 0.68-1.04 mm Vs rounded, 0.26), Rostellum (0.21-0.25 x 0.39-0.46 mm Vs rostellum rounded, 0.12) and reported from Gallus gallus domesticus Vs Columba livia
4) The Cotugnia osmanabadensis Sp.Nov. differs from C.joyeuxi Baer, 1925; by having Size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.67); size of rostellum (0.21-0.25 x 0.39-0.46 mm Vs 0.19); Number of rosellar hooks (53-55 in number Vs 250); Number of testes (62 Vs 30-50); size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.075) .
5) It differs from C. parva Baer, 1925, due to size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs. 0.49-0.68x 0.69-0.85 mm). Size of rostellum 0.21-0.25 x 0.39-0.46 mm where as 0.15); Rostellar hooks (53-55 where as 378-396), Testes (62in number where as 32-41 in numbers), size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.196-0.106) and reported from Gallus gallus domesticus Vs Columba livia.
6) The present form differs from C.fleari Meggitt, 1927, in having size of Scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.45-0.58), Testes (62 Vs 28-44), size of cirrus pouch 0.283-0.289 x 0.03-0.09mm Vs 0.29-0.31 mm and reported from Gallus gallus domesticus Vs Columba livia
7) The Cotugnia osmanabadensis Sp.Nov. differs from C.bhali Johri, 1934 due to Size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.50, Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.34, number of rostellar hooks 53-55 Vs 332; Testes 62 Vs 69-74 in number; size of cirrus pouch 0.283-0.289 x 0.03-0.09 mm Vs 0.215-0.223.
8) It differs from C.intermedia Johri, 1934 in having Size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.44-0.525 mm), Number of testes (62 Vs 69-74); size of cirrus pouch (0.283-0.289 x 0.03-0.09mm Vs 0.215-0.225).
9) The present form differs from C.noctua Johri, 1934 by having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.51, size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.225, Number of testes 62 Vs 170-182, size of cirrus pouch 0.283-0.289 x 0.03-0.09mm Vs 0.176-0.200.
10) The present form differs from C.taiwanensis Yamaguti, 1935 due to size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.54-0.74 mm, The size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.44, Number of rostellar hooks (53-55 Vs 200), Number of testes (62 Vs 12-13) and reported from Gallus gallus domesticus Vs Columba livia
11) It differs from C.rimandoi Tubangui et Masilungam, 1937 in Number of rostellar hooks (53-55 against 300), Number of testes (62 against 100-136) and described from Gallus gallus domesticus Vs Columba livia.
12) The new form differs from C.magna Burt, 1940, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm against 0.58-0.62); Size of rostellum (0.21-0.25 x 0.39-0.46 mm against 0.285-0.315), Number of rostellar hooks (53-55 against 480-500); Number of testes (62 against 150); size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm against 0.238-0.270) and reported from Gallus gallus domesticus Vs Columba livia.
13) The present Tapeworms differs from C.aurangabaensis Shinde 1969, in having shape and size of scolex (Oval, 0.59 -0.72 x 0.68-1.04 mm Vs Broad, 0.483 mm) Rostellum large, oval, placed in centre of scolex, 0.21-0.25 x 0.39-0.46 mm against flat, 0.300 mm, Number of rostellar hooks (53-55 against 500), testes oval to rounded, 62 against small rounded, 80-90; Cirrus pouch elongated, 0.283-0.289 x 0.03-0.09 against slender, 1.30 x 1.040 mm in length and breadth, Ovary bilobed against compact and reported from Gallus gallus domesticus Vs Columba livia.
14) The Cotugnia osmanabadensis Sp.Nov. differs from C.columbae Shinde, 1969, due to shape and size of scolex (Oval, 0.59 -0.72 x 0.68-1.04 mm Vs wide, 0.54-0.74 mm), size of rostellum (0.21-0.25 x 0.39-0.46 mm Vs 0.447), Number of rostellar hooks (53-55 Vs 1200), Number of testes (62 Vs 12-14), shape and size of cirrus pouch (elongated, 0.283-0.289 x 0.03-0.09 Vs narrow,

Volume : 4 | Issue : 7 | July 2014 | ISSN - 2249-555X

short, 0.3), Vitelline gland (compact, large Vs absent) and reported from Gallus gallus domesticus Vs Columba livia.

15) The present specimen differs from C.srivastavi Malviya and Dutta, 1970, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.726), size of rostellum (0.21-0.25 x 0.39-0.46 mm Vs 0.446), Number of testes (62 Vs 80-85) and reported from Gallus gallus domesticus Vs Columba livia.
16) It differs from C.magdoubii, Magzoubi and Kasim, 1980, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm) Vs (0.44-0.55); size of rostellum (0.21-0.25 x 0.39-0.46 mm Vs 0.25-0.44); size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.15-0.18) and reported from the intestine of Gallus gallus domesticus Vs Columba livia.
17) The present form differs from C.satpulensis Malhotra and Capoor, 1983, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.535), Size of rostellum (0.21-0.25 x 0.39-0.46 mm Vs 0.230), Number of rostellar hooks (53-55 Vs 337), Number of testes (62 Vs 43-52), size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm Vs 0.190-0.283 mm) and reported from Gallus gallus domesticus Vs Columba livia.
18) It differs from C.yamagutii Shinde et.al., 1985 in having shape and size of scolex Oval, (0.59 -0.72 x 0.68-1.04 mm Vs 0.51-0.60 mm); Rostellum large, oval, 0.21-0.25 x 0.39-0.46 mm Vs rounded, 0.26-0.27; Number of rostellar hooks (53-55 Vs 500), Number of testes (62 Vs 190-200), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm as against 0.005-0.132 x 0.044-0.0197 mm in length and breadth) and reported from Gallus gallus domesticus Vs Columba livia.
19) The present worm differs from C.vishakhapatnamensis Kolluri 1988, by having size of scolex Oval, 0.59 -0.72 x 0.68-1.04 mm Vs 28-35 x 0.336-1.056.
20) The present cestode differs from C.rajivji Jadhav et.al., 1994, in having shape and size of scolex (Oval, 0.59 -0.72 x 0.68-1.04 mm Vs oval, 0.62-1.006), size of rostellum (0.21-0.25 x 0.39-0.46 mm) Vs (0.37-0.44 mm), Number of rostellar hooks (53-55 Vs 350-400), Number of testes (62 Vs 60-65), size of cirrus pouch (0.283-0.289 x 0.03-0.09 mm Vs 0.280-0.282).
21) It differs from C.kamatensis Kharade and Shinde, 1995, by having shape and size of scolex Oval, (0.59 -0.72 x 0.68-1.04 mm Vs squarish, 0.84-1.00x 0.917-1.099), Shape and size of rostellum large, 0.21-0.25 x 0.39-0.46 mm Vs small, 0.018x 0.152 mm, Number of rostellar hooks (53-55 Vs 200-210); Number of testes (62 Vs 95-105); shape and size of cirrus pouch medium, elongated, 0.283-0.289 x 0.03-0.09 as against oval, cylindrical, 0.005-0.60 mm), Vagina posterior to cirrus pouch against anterior to cirrus pouch.
22) The present Tapeworm differs from C.chengmaii C.Wangsawad et.al, 1998, by having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.58x 0.738), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.194 x 0.249 mm, Number of testes (62 Vs 30-35), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.32 x 0.043).
23) The Cotugnia osmanbadensis Sp.Nov. differs from C.manishae Shinde et.al., 1999, in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.485, Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.22 x 0.227 mm, Number of hooks (53-55 Vs 110-120), Number of testes (62 Vs 85-90) Size of cirrus pouch (0.283-0.289 x 0.03-0.09) Vs (0.083-0.121 x 0.030-0.038), Vitelline gland compact, large Vs oval to triangular and collected from Gallus gallus domesticus Vs Columba livia.
24) The present worm differs from C.ganguae Shinde et.al, 1999, in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.529 x 0.636, Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.189 x 0.216 mm, Number of rostellar hooks (53-55 Vs 275-300), Number of testes (62 Vs 155-160), Size of cirrus pouch (0.283-0.289 x 0.03-0.09) mm Vs 0.260 mm in length and reported from Gallus gallus domesticus Vs Corvus splendens.
25) The present cestode differs from C.mehdii Mahajan et.al., 1999, due to size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.985 x 1.516), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.129 x 0.182 mm, Number of hooks (53-55 Vs 110), Number of testes (62 Vs 140-150); size of cirrus pouch 0.283-0.289 x 0.03-0.09 Vs 0.530.
26) The present tapeworm differs from C.alii, Shinde et.al. 2002, in having size of scolex 0.59 -0.72 x 0.68-1.04 mm as against 0.450-0.436 x 0.639-0.657, Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.279x0.436-0.315 mm, Number of rostellar hooks (53-55 as against 100-110), Number of testes (62 as against 80-85), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 as against 0.241-0.191 x 0.029-0.024) and reported from Gallus gallus domesticus Vs Columba livia.
27) The Cotugnia osmanabadensis Sp.Nov. differs from C.sillodensis Jadhav et.al. 2003, in having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.851-1.192 x 1.192-1.395), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.170 x 0.281); Number of hooks (53-55 Vs 220-250), Size of cirrus pouch 0.283-0.289 x 0.03-0.09 Vs 0.067-0.092 x 0.035.
28) The present worm differs from C.singhi Pawar S.B. et.al., 2004, by having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.363 x 0.436-0.417), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.154 x 0.255-0.215 mm, Number of rostellar hooks (53-55 Vs 200-210), Number of testes (62 Vs 65-70), Size of cirrus pouch 0.283-0.289 x 0.03-0.09 Vs 0.229-0.159 x 0.033-0.024.
29) The present worm differs from C.lohaensis, Jadhav et.al., 2004 by having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.590-0.660 x 0.471-0.757), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.227 x 0.242 mm, Number of hooks (53-55 Vs190-210), Number of testes (62 Vs 28-30), Size of cirrus pouch (0.283-0.289 x 0.03-0.09) Vs (0.086-0.097 x 0.004-0.009) and reported from Gallus gallus domesticus Vs Columba livia.
30) The Cotugnia osmanbadensis Sp.Nov. differs from C.shankari Tat and Jadhav, 2005, by having size of scolex (0.59 -0.72 x 0.68-1.04 mm Vs 0.947-1.000 x 0.955-1.175), Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.049-0.092 x 0.182-0.213 mm, Number of hooks(53-55 Vs 105-205), Number of testes (62 Vs 27-40), Size of cirrus pouch 0.283-0.289 x 0.03-0.09 Vs 0.098-0.030 and reported from Gallus gallus domesticus Vs Columba livia.
31) The present cestode differes from C.liviae Patil et.al, 2005, in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 0.369 x 0.359-0.437 mm, Size of rostellum 0.21-0.25 x 0.39-0.46 mm Vs 0.175-0.0189 x 0.097-0.131 mm, Number of hooks (53-55 Vs 250-270), Number of testes 62 Vs 120-125(123) and size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.225 x 0.068) and reported from the intestine of Gallus gallus domesticus Vs Columba livia.
32) It differs from C. streptopelli G.P. Jadhav et. al., 2009, by having size of scolex (0.59 -0.72 x 0.68-1.04 mm as against 8.04-5.36 x 9.82-5.36), Number of testes (62 as against 27-30), Size of ovary (0.12 x 0.37 Vs 5.36-4.46 x 5.34-4.46).
33) The Cotugnia diamarei Sp.Nov. differes from the Cotugnia hafezzi Nanware et. al.,2010 in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs quadrangular 1.245 x 1.086, Number of Rostellar hooks (53-55 Vs 55-60), Number of testes (62 Vs 150-160), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.23 x 0.11).
34) The present form differes from Cotugnia indiana Kasar et. al., 2010 in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs squarish, 0.58 x 0.54, Number of Rostellar hooks (53-55 Vs 100-120), Number of testes (62 Vs 115-120), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.189 x 0.0.079) and reported from Gallus gallus domesticus Vs Columba livia.
35) The présent cestode differs from C.indiana minor Garad et. al., 2010 in having scolex 0.59 -0.72 x 0.68-1.04 mm Vs squarish, rostellar hooks (53-55 Vs 400-415) in numbers, testes(62 Vs 70-75) in numbers.
36) It differes from the Cotugnia tetragona Nanware et. al.,2011 in having size of scolex 0.59 -0.72 x 0.68-1.04

Volume : 4 | Issue : 7 | July 2014 | ISSN - 2249-555X

mm Vs tetragonal, large 0.927 x 0.773, Number of Rostellar hooks (53-55 Vs 120-130), Number of testes (62 Vs 60-70), Size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.185 x 0.090) and reported from Gallus gallus domesticus Vs Columba livia.

37) The present form differes from Cotugnia orientalis Nanware et. al.,2011 in having size of scolex 0.59 -0.72 x 0.68-1.04 mm Vs 1.266 (1.102-1.431) x 0.927 (0.901-0.954), Number of Rostellar hooks (53-55 Vs 110-120), Number of testes (62 Vs 45-50) and Size of cirrus pouch (0.283-0.289 x 0.03-0.09 Vs 0.168 x 0.128).
38) The C. osmanabadensis Sp.Nov. differs from C.domestica Shinde et.al.,2012 in having Scolex oval, Suckers four, oval to rounded, arranged in two groups, Rostellum oval, placed in anterior region of scolex and having rostellar ring, Rostellar hooks 18-20 in numbers, arranged in a single circle, Neck short, Mature progloltids 2 times broader than long, Testes 40-50 in numbers, oval to rounded, Cirrus pouch cylindrical, Cirrus short, coilded tube contained within cirrus pouch, Vas deferens thin tube, Vagina posterior to cirrus pouch, and Ovary compact, bean shaped.
39) It differs from Cotugnia diamarei Nanware and Bhure 2013 in having Scolex large, oval, Suckers four, oval to rounded, arranged in four corners, Rostellum oval, large, placed in anterior region of scolex and having rostellar ring, Rostellar hooks 53-55 in numbers, 'V' shaped, arranged in a single circle, Neck short, Mature progloltids three times broader than long, Testes 62 in numbers, oval to rounded, postovarian, Cirrus pouch cylindrical, Cirrus short, curved tube contained within cirrus pouch, Vas deferens thin, curved, Vagina posterior to cirrus pouch, and Ovary bilobed

CONCLUSION

From the above discussion it is clear that, the species under discussion is new to science and differs from known valid species of the genus Cotugnia in respect to taxonomic characteristics. On the basis of presence of above mentioned differences and variations the authors are convinced to place the present form in new species viz. Cotugnia osmanabadensis Sp.Nov. after the locality.

TAXONOMIC SUMMARY

Type species : Cotugnia osmanabadensis Sp.Nov.
Host : Gallus gallus domesticus, Linnaeus, 1758.
Habitat : Intestine
Locality : Osmanabad (M.S.), India.
Period of collection : March. 2009 to March, 2011.
Deposition : Research and PG Department of Zoology, Yeshwant Mahavidyalaya, Nanded.
Etymology : The species is named after the locality of host.

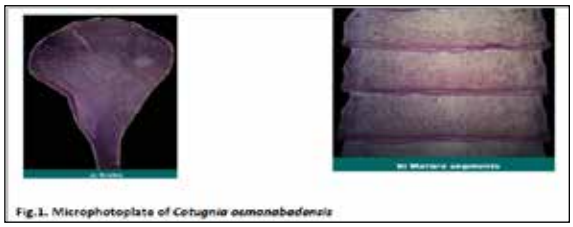
Fig.1. Microphotoplate of *Cotugnia osmanabadensis*

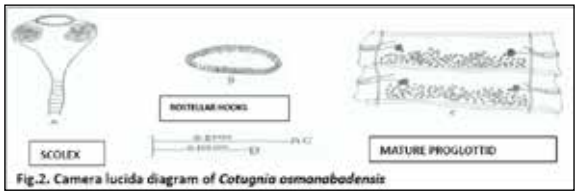

Fig.2. Camera lucida diagram of *Cotugnia osmanabadensis*

REFERENCE

Baer,J.C.1924. Contributional fauna Helminthologiansub africanae Note Preliminaire. Ann. Par. 2: 239-247. | Baer,J.C.1925. Quelegues cestode of seux nouveaux et pevv. Conus. Bull. Soc. Sci. Nat. Neuschatel, 49: 138-154. | Burt, D.R.R. 1940. New avian cestodes of family Davaineidae from Ceylon. Ceylon J.Sci. 22: 65-77. | C. Wongsawod And B.V.Jadhav, 1998. A new tapeworm from Gallus gallus domesticus from Thailand. Rivista di Parasitologia. Vol. XV (LIX-N-2, Agosto, 1998). | Diamare V. 1893. Note sur cestodi. Bull, Soc, Nature, Nepoli, 7: 9-13. | Chandrashekhar Rameshwar Kasar, Dhanraj Balbhim Bhure, Sanjay Shamrao Nanware and M.B. Sonune 2010. Taxonomic observation of Cotugnia indiana Sp. Nov. (cestoda: Davaineidae, Fuhrmann 1907) from Columba livia. The Asian Journal of Animal Science. Vol. 5(2) pp 193-198. | Garad, V. B. and Sanjay Shamrao Nanware, 2010. On a new cestodes Cotugnia indiana Sp.Nov. (Cestoda: Davaineidae) from Columbia livia. The Biosphere., Vol. 2(2): 202-206. | G.P. Jadhav, H.D. Makne, D.D.Pawar and S.B.Pawar 2009. A new species of genus Cotugnia Diamare, 1893 (Eucestoda: Davaineidae) from Streptopelia decacto Maharashtra, India. The Asian Journal of Animal science (December 2009 to May 2010) Vol. 4 Issue 2: 209-212 | Gerald D. Schmidt 1934. Handbook of Tapeworm Identification. CRC Press, Inc. Boca Raton, Florida. pp 1-675. | Hiware C.J., Jadhav B. V. and Mohekar, A. D. 2003. Applied Parasitology A practical manual Mangal Deep Publ. Jaipur.243 pp | Jadhav, B.V., Kadam, M.N., Bawane, V.S. and Nanware, S.S. 1994. A new cestodes Cotugnia rajivji sp. nov. from Columba livia at Hyderabad A.P. India. Abstract XIth National congress of parasitology, Mohanlal Sukhadia Uni. Udaipur (Feb) 22-24, 1994 Ab. No. PS – 1.8 pp. 6-7 | Jadhav, B.V., Khadap, R.M. and Thorat, B.S. 2004. A new species of the genus Cotugnia (Diamare, 1893) from Gallus domesticus at Sillod, Dist. Aurangabad (M.S.) India. Indian J. of Helminthology Vol. 21:PP. 71-75. | Jadhav, B.V. and Gore G.D. 2004. A new species of genus Cotugnia (Diamare, 1813) from pigeon, Columba livia at Loha, India. Nat. J. Life Sci. 1(1): 181-182. | Johri, L.N. 1934. Report on a collection of cestodes from Lucknow. Rect. Ind. Mus. 36: 135-177. | Khalil L.F, Jones A. and Bray R.A 1994. Keys to the cestodes parasites of vertebrates. CAB International Pub. U.K. pp.1-751. | Kharade, S.V. and Shinde, G.B. 1995. On a new species of Cotugnia Diamare, 1893 (Cestoda:Davaineidae) from Gallus domesticus. Rivista Di Parasitologia Vol. XII (LVI) N-3 PP. 345-347. | Kollura, R., Lakshmi, C.V. and Rao K.H. 1988. On genus Cotugnia includuding a new species from a domestic pegion. Riv. Di parasitologia, 3(2): 189-194 | Lopez-Neyra,C.R., 1950. Revision del genera Cotugnia Motivadier par et estudia deura especie Nueva Lolloda en La Lortola de granda Rev. Iber. Par.70: 57-96. | Magzoubi, M. Kasim, A.B. and Shawa, Y. 1980. Three new species (Cestode: Davaineidae) from the rock Pigeon Columba livia domestica with comments of infection. J.G. Coll. Of Sci. Univ. of Riyadh (1980):11, 119-127. | Mahajan, P.A. 1999. On a new species of the genus Cotugnia, Diamare, 1893 (Cestoda: Davaineidae) as C. mehdii ns.p. from Gallus domesticus at Aurangabad.Riv. Di. Parasitol 16, 142-147. | Malhotra, S.K. and Capoor, V.N. 1983. A new cestode Cotugnia satpuliensis sp.n. from Columba livia domestica and Columba livia intermedia from India. Acta Parasitologica Polonica 28 (28/52), 393-397. | Malviys, H.C. and Dutt, S.C. 1970. Morphology and Life history of Cotugnia srivasavi n.sp. (Cestoda: Davaineidae) from domestic pigeon. In Srivastava commemoration volume (Singh, K.S. and Tondon, B.K.(Eds). Indian veterinary Research Institute, Izatnagar, pp. 103-108 | Meggitt, F.J., 1924.Tapeworms of Rangoon pigeon. Parasit. 16, 303-312. | Meggitt, F.J., 1927. A list of cestode collected in Rangun during the year 1923-1926. J. Burma Res. Sci. 16, 200-210. | Meggitt, F.J., 1927. Report on a colletion of the cestode mainly from Egypt. Fakily- Anoplocephalidae, Davaineidae. Parasit.19, 334-327. | Movsesyan, S.O. 1969. Revision of the genus Cotugnia Diamare 1893, (Cestode: Davaineidae) trudy Vses Int. Gel. Mint. 15: 195-217. In Russian, English Summar YPD 215. | Pasquale, 1890. (Cestoda: Davaineidae) Part V nervous system. Parasiten 21: 101-112. | Patil A.S., Lakhe, A.D., Pawar, S.B., and Shinde, G.B., 2005. A new cestode Cotugnia liviae n.sp. (Eucestoda: Davaineidiae) Diamare, 1893 from Columba livia at Ambajogai, Maharashtra. Uttar Pradesh J.Zool. 25 (2): 221-223. | Pawar, S.B., Shinde, G.B. and Garad V.B. 2004. A new cestode Cotugnia singhii n.sp. (Eucestoda: Davaineidae) from Columba livia at Aurangabad, M.S. India. Uttar Pradesh J. Zool. Vol. 24 (2) 104-106. | S.M.Shinde, S.S.Nanware and D.B.Bhure, 2012 Morpho-Taxonomy of avian tapeworm Cotugnia domestica Sp.Nov. (Cestoda:Davaineidae) from Gallus gallus domesticus. Journal of Environment and Sociobiology. Vol. 9(2) 141-150 | Sanjay Shamrao Nanware, Ramesh Mohanrao Dhondge and Dhanraj Balbhim Bhure 2010. Cotugnia hafeezi Sp. Nov. (Cestoda: Davaineidae, Fuhrmann 1907) from Gallus gallus domesticus. The Ecosphere Vol. 1, No.1, 2010 pp.118-124 | S.S. Nanware, R.M.Dhondge and D.B. Bhure 2011. Biosystematic studies on Cotugnia tetragona Sp.Nov. (Cestoda: Davaineidae) from Columba livia. Recent Research in Science and Technology. Vol. 3(9) pp. 8-12. | Sanjay Shamrao Nanware, Ramesh Mohanrao Dhondge and Dhanraj Balbhim Bhure 2011. Biosystematic studies on Cotugnia orientalis sp. Nov. (cestoda: Davaineidae, Fuhrmann 1907) from Gallus gallus domesticus. The Bioscan An International Quarterly Journal of Life Science. Vol. 6(1) : 71-75. | S.S. Nanware and D.B. Bhure 2013. Studies on avian cestode genus Cotugnia Diamare, 1893 (Cestoda: Davaineidae Fuhrmann, 1907) from Gallus gallus domesticus. Asian Journal of Bio Science. Vol.8(1) pp 120-128 | Shinde G.B. 1969. A known and two new species of the genus Cotugnia, Diamare, 1893, from the Columbiformes birds in Maharashtra, India. Riv. Di. Parasit. Vol.30 (1): 39-44 (Italian Summary 43-44). | Shinde, G.B., Jadhav, B.V. and Kadam, S.S. 1985. Some avian cestodes from Maharashtra region. Riv. Di Prasit, Vol. II (XLVI) April 1985, PP. 141-152. | Shinde, G.B., Mahajan, P.A. and Begum, I.J. 1999. One new species of the genus Cotugnia Diamare 1893 (Cestoda: Davaineidae) as C. manishae n.sp. from Columba livia at Amravati M.S. India. Rivista Di Parasitol. 35, 182-187. | Shinde, G.B., Kolpuke, M.N. and Begum, I.J. 1999. Cotugnia ganguae n.sp. (Cestoda: Davaineidae) from Corvus splendens Uttar Pradesh J. Zool. 19 (2): 127-129. | Shinde, G.B., Pawar, S.B. and Garad, V.B. 2002. A new cestode Cotugnia allii n.sp. (Eucestoda: Davainediae) from Columba livia at Yermala M.S. India. Uttar Pradesh J. of Zool. 22 (1), 105-107. | Spassky, A.A. 1984.The taxonomic composition of genus Cotugnia (Cestoda: Davaineidea) Izvestiga Akademii Naukmoldvskoi SSR Biolegicheshikh I. Nauk (1984) No. 6: 46-53 | Tat, M.B. and Jadhav, B.V. 2005. New species of the genus Cotugnia (Diamare, 1893) from Columba livia. National Journal of Life Sciences, 2 (Sup.) 251-254. | Tubangay, M.A. and Masilungan, V.A. 1967. Tapeworm parasites of Phillippine birds. Phillippine J. Sci. 62: 409-438. | Wardle, R.A. Mcleod, J.A. and Radinovsky, A., 1974. Advances in the Zoology of Tapeworms, 1950-1970. Publ. In U.K. and India by the Oxford University press. London and Delhi, 1-274. | Yamaguti, S. 1959. Systema Helminthum. The Cestodes of Vertebrates. Interscience Publishers, INC. New York, 2; 860. |