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SURVEY OF TAPEWORMS FROM AURANGABAD REGION

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INTRODUCTION

Aurangabad district is one of the important district in Maharashtra State. It has been located mainly in Godavari Basin and some of its part towards North West of Basin. The total area of Aurangabad district is 10,100 Sq. Km. Tapeworm infections are major global health problem of animals and human being. Tapeworms were collected from different parts of Aurangabad district for the present investigations. The results will be the key for identifying the tapeworms from different vertebrates.

ABSTRACTS

The present study deals with the survey of tapeworms from Aurangabad region (M. S.) India, during Jan, 2005–Dec, 2006. The tapeworms were collected from different vertebrates i.e. fishes, amphibians, reptiles, birds and mammals. The total 185 different species were recovered through out the investigation. The present study are helpful for the status of diversity of tapeworms from Aurangabad region.

Key Words : *Survey, Tapeworms, Aurangabad Region, Vertebrates, diversity.*

MATERIAL AND METHODS

Tapeworms were collected from different vertebrates from different parts of Aurangabad district during Jan, 2005 to Dec, 2006. The tapeworms were collected, preserved, processed to a permanent slide and identified under a compound microscope, drawing are made up with the aid of camera lucida and identified by Prof. B. V. Jadhav. Parasitic distribution and host specificity were studied and recorded.

RESULT AND DISCUSSION

The present investigation indicates that the 185 different species of tapeworms including 22 genera, those are : *Lytocestus* Cohn, 1908; *Lytocestoides* Baylis, 1928; *Bothrioccphalus* Rudolphi, 1898; *Proteocephalus* Weinland, 1958; *Polyoncobothrium* Diesing, 1834; *Circumoncobothrium* Shinde, 1968; *Senga* Dollfus, 1934; *Gangesia* Woodland, 1924; and *Silurotaenia* Nybelin, 1942 from freshwater fishes; *Ophiotaenia* La Rue,1911 from amphibians; *Protcocephalus* Weinland, 1858; *Oochoristica* Luhe, 1898; *Ophiovalipora* Hsti, 1935 and *Ophiotaenia* La Rue, 1911from reptiles; *Cotugnia* Diamare, 1893; *Raillietina* Fuhrmann, 1920, *Davainea* Blanchard et. Railliet, 1891; *Mogheia* Lopez Neyru, 1944 and *Valipora* Linton, 1927 from birds; *Stilesia* Railliet, 1893, *Moniezia* Blanchard, 1891; *Hymenolepis* Weinland, 1858, *Alizia* Shinde, 1967 and *Avitellina* Gough, 1911 from mammals from different parts of Aurangabad region.

The result shows that out of 185 species of tapeworms 92 different species are collected from fishes, Nine reptiles; 49 species from birds and 33 species are collected from mammals.

The occurrence of parasitic infections are host specific because the morphological, physiological and ecological factor affect the host specificity. The hosts with its parasites at the site of attachment act as a morphological factor (Llewellyn, 1956, Williams, 1970, Agrawal *et al.,* 2005). The habitat, immune response of the host and habitation requirement of worms acts as physiological factors (Macdonald, 1976, Tripathi, 2004). The ecological factors such as distribution and environment of the host, the diet and mode of feeding

(Kennedy, 1976 and Holmes, 1976) influence the parasite adaptation. These adaptations often play important role to limit a parasite to a particular host species, particular site.

Table-Survey of tapeworms from vertebrates from Aurangabad Region.

Sr. No.	**Name of Parasites**	**Name of Hosts Class : PISCES**
1.	*Lytocestus indicus* Moghe, 1925	*Clarias batrachus*
2.	*L. longicollis* Ramadevi, 1973	*Clarias batrachus*
3.	*L. fossilis* Singh, 1975	*Clarias batrachus*
4.	*L. marathwadensis* Shinde *et al.,* 1988	*Clarias batrachus*
5.	*L. alii* Jadhav *et al.,* 1991	*Heteropneastus fossilis*
6.	*L. clarisae* Jadhav *et al.,* 1991	*Clarias batrachus*
7.	*L. naldurgensis* Kadam *et al.,* 1999	*Clarias batrachus*
8.	*L. teranensis* Kolpuke *et al.,* 1999	*Clarias batrachus*
9.	*L. govindae* Patil *et al.,* 2002	*Clarias batrachus*
10.	*L. batrachusae* Pawar *et al.,* 2002	*Clarias batrachus*
11.	*L. shindei* Khadap *et al.,* 2004	*Hetoropneastus fossilis*
12.	*L. nagapurensis* Shinde *et al.,* 2004	*Hetoropneastus fossilis*
13.	*L. clariae* Tandon *et al.,* 2005	*Clarias batrachus*
14.	*L. atenuatus* Tandon *et al.,* 2005	*Clarias batrachus*
15.	*L. assamensis* Tandon *et al.,* 2005	*Clarias batrachus*
16.	*L. heteropneusti* Tandon *et al.,* 2005	*Hetoropneasuts fossilis*
17.	*Lytocestoides* tanganyikae Baylis, 1928	*Hetoropneasuts fossilis*
18.	*L. aurangabadensis* Shinde, 1968	*Hetoropneustus fossilis*
19.	*L. aurangabadensis* minor Shinde, 1968	*Hetoropneustus fossilis*
20.	*L. aurangabadensis* minuta Shinde, 1968	*Clarias batrachus*
21.	*L. paithanensis* Shinde & Deshmukh, 1975	*Clarias batrachus*
22.	*L. naldurgensis* Shinde *et al.,* 1987	*Clarias batrachus*
23.	*L. mackiewiezi* Shinde *et al.,* 1987	*Clarias batrachus*
24.	*L. clarisae* Hiware, 1919	*Clarias batrachus*
25.	*L. mrigali* Hiware, 2000	*Clarias batrachus*
26.	*L. mrigali* Hiware, 2003	*Clarias batrachus*
27.	*Bothriocephalus ganpati* Rao, 1954	*Wallago attu*
28.	*B. indicus* Ganpati et Rao, 1954	*Wallago attu*
29.	*Proteocephalus vitellaris* Verma, 1928	*Wallago attu*
30.	*Polyoncobothrium indicum* Nama, 1979	*Wallago attu*
31.	*Polyoncobothrium allahbadi* Gairola, 1989	*M. armatus*
32.	*P. srivastavai* Pande *et al.,* 2006	*M. armatus*
33.	*P. thapari* Pande *et al.,* 2006	*M. armatus*
34.	*Circumoncobothrium ophiocephali* Shinde, 1968	*M. armatus*
35.	*C. bagariusi* Chincholikar *et al.,* 1976	*M. armatus*
36.	*C. gachuoi* Jadhav *et al.,* 1976	*M. armatus*
37.	*C. punltatusae* Jadhav *et al.,* 1976	*M. armatus*
38.	*C. raoii* Jadhav *et al.,* 1976	*M. armatus*
39.	*C. aurangabadensis* Jadhav *et al.,* 1976	*M. armatus*
40.	*C. shindei* Chincholikar *et al.,* 1976	*M. armatus*

Table-*(Contd.)*

Sr. No.	**Name of Parasites**	**Name of Hosts Class : PISCES**
41.	*C. khami* Shinde, 1977	*M. armatus*
42.	*C. alii* Shinde *et al.,* 1994	*M. armatus*
43.	*C. yamaguti* Jadhav *et al.,* 1990	*M. armatus*
44.	*C. armatusae* Shinde *et al.,* 1999	*M. armatus*
45.	*C. baimaii* Wongsawad, 1998	*M. armatus*
46.	*C. vadgaoensis* Patil, 1998	*M. armatus*
47.	*C. mastacembelusae* Shinde *et al.,* 2002	*M. armatus*
48.	*C. armatusae* minor Pawar, 2002	*M. armatus*
49.	*C. manjari* Tat & Jadhav, 2004	*M. armatus*
50.	*C. vitellariensis* Supugade *et al.,* 2005	*M. armatus*
51.	*Senga pahangensis* Furtado *et al.,* 1971	*M. armatus*
52.	*S. visakhapatnamensis* Ramadevi, 1973	*M. armatus*
53.	*S. khami* Deshmukh *et al.,* 1980	*M. armatus*
54.	*S. aurangabadensis* Jadhav *et al.,* 1980	*M. armatus*
55.	*S. godavari* Shinde *et al.,* 1980	*M. armatus*
56.	*s. paithnensis* Kadam *et al.,*1981	*M. armatus*
57.	*s. raoii* Majid and Shinde, 1984	*M. armatus*
58.	*S. jagnnathae* Majid and Shinde, 1984	*M. armatus*
59.	*S. lucknowensis* Johri, 1956	*M. armatus*
60.	*S. maharashtrii* Jadhav *et al.,* 1991	*M. armatus*
61.	*S. gachuae* Jadhav *et al.,* 1991	*M. armatus*
62.	*S. chauhani* Monzorhashain, 1992	*M. armatus*
63.	*S. mohekari* Tat *et al.,* 1997	*M. armatus*
64.	*S. armatusae* Hiware, 1999	*M. armatus*
65.	*S. baughi* Pande *et al.,* 2006	*M. armatus*
66.	*S. tapii* Patil *et al.,* 2003	*M. armatus*
67.	*S. ayodhensis* Pandey *et al.,* 2006	*M. armatus*
68.	*Gangesia pseudotropii* Verma, 1913	*Wallago attu*
69.	*G. bengalensis* Southwell, 1913	*Wallago attu*
70.	*G. macrones* Woodland, 1924	*Wallago attu*
71.	*G. lucknowia* Singh, 1948	*Wallago attu*
72.	*G. Sanhensis* Molhotra & Capoor, 1982	*Wallago attu*
73.	*G. haryanae* Gupta *et al.,* 1982	*Wallago attu*
74.	*G. indica* Gupta *et al.,* 1982	*Wallago attu*
75.	*G.godavari* Kadam *et al.,* 1983	*Mystus seenghala*
76.	*G. paithanensis* Kadam *et al.,* 1983	*Wallago attu*
77.	*G. fotedari* Dhar *et al.,* 1984	*Mystus seenghala*
78.	*G. maharashtrii* Jadhav *et al.,* 1995	*Mystus seenghala*
79.	*G. dharurensis* Jadhav *et al.,* 1997	*Mystus seenghala*
80.	*G. seenghali* Hiware, 1999	*Mystus seenghala*
81.	*G. clariusae* Jadhav *et al.,* 2001	*Wallago attu*
82.	*G. rohitae* Pawar *et al.,* 2004	*Wallago attu*

Table-*(Contd.)*

Sr. No.	Name of Parasites	Name of Hosts Class : PISCES
83.	*G. mastacembali* Wankhede, 2004	*Wallago attu*
84.	*Silurotaenia siluri,* Nybelin, 1942	*Mystus seenghala*
85.	*S. macroni,* Shinde *et al.,* 1984	*Mystus seenghala*
86.	*S. barbusi,* Shinde *et al.,* 1984	*Rita rita*
87.	*S. seenghala* Shinde *et al.,* 1984	*Rita rita*
88.	*S. ticto* Shinde *et al.,* 1984	*Barus ticto*
89.	*S. nybelini* Shinde *et al.,* 1975	*Mystus seenghala*
90.	*S. behairvnathi* Deshmukh *et al.,* 1987	*Mystus seenghala*
91.	*S. shastri* Gavhane *et al.,* 1991	*Mystus seenghala*
92.	*S, godavari* Wankhede & Jadhav, 2002	*Mystus seenghala*
		Class : AMPHIBIAN
	Ophiotaenia La Rue, 1911	
93.	*O. bufonis* Szidat et Soria, 1954	*Rang tigrina*
94.	*O. ranae* Yamaguti, 1938	*Rang togrina*
		Class : REPTILE
	Proteocephalus Woodland, 1858	
95.	*P. beddrdi* Woodland, 1925	*Varanus bengalensis*
96.	*P. woodland* Moghe, 1928	*Varanus bengalensis*
	Ophiotaenia Lahe, 1911	*Varanus bengalensis*
97.	*O. indica* Johri, 1955	*Varanus bengalensis*
98.	*O. hajae* Beddard, 1913	*Varanus bengalensis*
	Oochoristica Luhe, 1898	*Varanus bengalensis*
99.	*O. crassiceps* Baylis, 1920	*Varanus bengalensis*
100.	*O. fibrata* Meggitt, 1927	*Varanus bengalensis*
101.	*O. agame* Baylis. 1919	*Varanus bengalensis*
102.	*O. micracantha* Yamaguti, 1954	*Varanus bengalensis*
103.	*O. lintoni* olsen, 1957	*Varanus bengalensis*
		Class : AVES
	Cotugnia Diamare, 1893	*Gallus gallus domesticus*
104.	*C. columbae* Shinde, 1969	*Gallus gallus domesticus*
105.	*C. aurangabadensis* Shinde, 1969	*Gallus gallus domesticus*
106.	*C. shrivastavi* Malviya & Dutt, 1970	*Gallus gallus domesticus*
107.	*C magdoubii* Megzonbi & Kasim, 1980	*Gallus gallus domesticus*
108.	*C. satputensis* Malhotra & Capoor, 1983	*Gallus gallus domesticus*
109.	*C Yamaguti* Shinde *et al.,* 1985	*Columbalivia*
110.	*C. kamatiensis* Charade & Shinde, 1995	*Columbalivia*
111.	*C. chaingmaii* Wongswad & Jadhav, 1999	*Columbalivia*
112.	*C. manisnae* Shinde *et al.,* 1999	*Gallus gallus domesticus*
113.	*C ganguae* Shinde *et al.,* 1999	*Gallus gallus domesticus*
114.	*C. mehdii* Mahajan *et al.,* 1999	*Gallus gallus domesticus*
115.	*C. alii* Shinde *et al.,* 2002	*Columba livia*

Table-*(Contd.)*

Sr. No.	**Name of Parasites**	**Name of Hosts Class : PISCES**
116.	*C. singni* Pawar *et al.,* 2004	*Columba livia*
117.	*C. sillodensis* Jadhav *et al.,* 2004	*Columba livia*
118.	*C. lohanensis* Jadhav *et al.,* 2004	*Columba livia*
	Raillietina Fuhrmann, 1920	*Columba livia*
119.	*R. (R) pintneri* Klaptocz, 1906	*Columba livia*
120.	*R. (R) micro* Scolecina Fuhrmann, 1908	*Gallus gallus domesticus*
121.	*R. (R) century* Rigncy, 1943	*Gallus gallus domesticus*
122.	*R. (R) friedbergeri* Linstow, 1977	*Gallus gallus domesticus*
	Davainea, Blanchard et Railliet, 1891	*Gallus gallus domesticus*
123.	*D. indica* Shinde, 1969	*Gallus gallus domesticus*
124.	*D. ambajogoulensis* Shinde & Ghare, 1977	*Gallus gallus domesticus*
125.	*D. domesticus,* Shinde & Mitra, 1981	*Gallus gallus domesticus*
126.	*D. chauhani,* Chauhan, 1982	*Gallus gallus domesticus*
127.	*D. jalnaensis* Subi Ashfaq & Shinde, 1988	*Gallus gallus domesticus*
128.	*D. balasahebae,* Bargal, 1992	*Gallus gallus domesticus*
129.	*D. retharei,* Bhaware *et al.,* 1992	*Gallus gallus domesticus*
130.	*D. aurangabadensis,* Hiware *et al.,* 1993	*Gallus gallus domesticus*
131.	*D. thapari,* Hiware *et al.,* 1993	*Gallus gallus domesticus*
132.	*D. osmanabadensis,* Mahajan *et al.,* 1999	*Gallus gallus domesticus*
133.	*D. muktabae,* Lakhe *et al.,* 2004	*Gallus gallus domesticus*
	Mogheia, Lopaz Neyru, 1944	*Columba livia*
134.	*M. megaparuterina*, Capoor & Shrivastava, 1966	*Columba livia*
135.	*M. bayamegajaruterina,* Capoor & Shrivastava, 1966	*Columba livia*
136.	*M. asturi,* Gaikwad and Shinde, 1981	*Columba livia*
137.	M. copsychi, Gupta & Sinha, 1984	*Columba livia*
138.	*M. oriole,* Gupta & Sinha, 1984	*Columba livia*
139.	*M. guptai,* Gupta & Parmar, 1985	*Gallus gallus domesticus*
140.	*M. govindae,* Shinde & *et al.,* 1986	*Gallus gallus domesticus*
141.	*M. parbhaniensis* Shinde & *et al.,* 1990	*Gallus gallus domesticus*
142.	*M. caudatuse,* Sonune *et al.,* 1990	*Gallus gallus domesticus*
143.	*M. turdoides,* Sonume *et al.,* 1990	*Gallus gallus domesticus*
144.	*M. domesticus,* Jadhav *et al.,* 1990	*Gallus gallus domesticus*
145.	*M. hydrabadensis*, Jadhav *et al.,* 1994	*Gallus gallus domesticus*
146.	*M. passeri,* Kadam *et al.,* 1999	*Gallus gallus domesticus*
	Valipora Linton, 1927	
147.	*V. sultanpurensis,* Capoor & Srivastava, 1974	*Gallus gallus domesticus*
148.	*V. amethiensis,* Capoor & Shrivastaa, 1987	*Gallus gallus domesticus*
149.	*V. marathwadensis,* Sonune, 1990	*Columaba livia*
150.	*V. maharastrii,* Sonune, 1990	*Columaba livia*
151.	*V. yamaguti,* Jadhav & Hiware, 1994	*Columaba livia*

Table-*(Contd.)*

Sr. No.	Name of Parasites	Name of Hosts
152.	*V. shindei,* Jadhav & Kalyane, 1994	*Columaba livia*
		Class : MAMMALS
	Stilesia, Railliet 1893	
153.	*S. leiperi*, Kadam *et al.,* 1980	*Capra hircus*
154.	*S. cabarlleroi*, Kalyankar *et al.,* 1981	*Capra hircus*
155.	*S. southwelli,* Shinde, 1982	*Capra hircus*
156.	*S. aurangabadensis*, Jadhav *et al.,* 1982	*Capra hircus*
157.	*S. garhwalensis,* Malhotra & Copoor, 1983	*Capra hircus*
158.	*S. kotwatensis,* Malhotra & Copoor, 1983	*Ovis bharal*
159.	*S. marathwadensis,* Shinde *et al.,* 1985	*Ovis bharal*
160.	*S. jadhavi,* Nanware & Jadhav, 1999	*Caprahircus L.*
161.	*S. yawalensis,* Kalse *et al.,* 1999	*Capra hircus*
162.	*S. dhondgae,* Deshmukh *et al.,* 2001	*Capra hircus*
163.	*S. pandeyi,* Nanware & Jadhav, 2004	*Capra hircus L.*
164.	*S. indapuransis,* Khadap & Jadhav, 2004	*Capra hircus*
165.	*S. daultabadensis,* Shelke & Shinde, 2004	*Capra hircus*
166.	*S. shindei,* Padwal & Jadhav, 2006	*Capra hircus*
	Moniezia, Blanchard, 1891	
167.	*M. aurangadensis,* Shinde *et al.,* 1955	*Capra hircus*
168.	*M. bharake,* Shinde *et al.,* 1985	*Ovis bharal*
169.	*M. kalawati,* Nanware *et al.,* 1999	*Ovis bharal*
170.	*M. murhari,* Kalse *et al.,* 1989	*Ovis bharal*
171.	*M. jadhave,* Hiware, 1999	*Capra Hircus*
172	*M. warunnagarensis,* Patil *et al.,* 2000	*Capra Hircus*
173.	*M. shindei,* Deshmukh *et al.,* 2001	*Capra Hircus*
174.	*M. hircusae,* Tat & Jadhav, 2004	*Capra Hircus*
	Hymonolepis, Weinland, 1858	
175.	*H. palmanum*, Johri, 1956	*Rattus rattus*
176.	*H. diminuta,* Rud, 1819	*Rattus rattus*
177.	*H. vogeae,* Singh, 1956	*Rattus rattus*
178.	*H. tirdi,* Thoma, 1957	*Rattus rattus*
	Alizia, Shinde, 1967	
179.	*A. indica,* Shinde, 1967	*Capra hircus*
180.	*A. indica,* minor, 1967	*Capra hircus*
181.	*A. aurangabadensis,* Shinde *et al.,* 1979	*Capra hircus*
	Avitellina, Gough, 1911	
182.	*A. bigemina,* Arin, 1939	*Ovis bharal*
183.	*A. tatio,* Bhalerao, 1936	*Ovis bharal*
184.	*A. lahorae,* Wood, 1927	*Capra hircus*
185.	*A. woodlandi,* Bhalerao, 1936	*Capra hircus*

The present data are also useful to know the diversity and distribution pattern of tapeworms from different vertebrates from different parts of Aurangabad district.

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