ABSTRACT OF THE Ph. D. THESIS

"BIO-SYSTEMATIC STUDIES OF SOME CESTODE PARASITES OF BIRDS AND FISHES FROM WEST COAST OF MAHARASHTRA"

Parasites play a very important role in the lives of their hosts. Nevertheless, relative to the enormous diversity in the multitude of Trematodes, Cestodes, Roundworms, Acanthocephalan and other parasites that lives in or on a variety of aquatic and terrestrial organisms.

The birds and Fishes are the important components of ecosystem. These animals are highly important from economical point of view, because the human being used as delicious and nutritious food from birds and fishes. Similarly, they also produce several important products like feathers, eggs, Leather, Cord Liver Oil, covers of decorative articles from skin of fishes, which are used by man for various purposes. They are not only providing immense and valuable products to the man, but also enhance the beauty of nature.

Fishes and birds are important item of human food as well as the source of income of the segment of the population. At present our total annual fish production is about 5.7 million tones but the estimated potential based on the present levels of productivity is about 8.5 million tones irrespective of the advances and achievements, intensive fish forming remains a high risk investment, mainly due to the disease problem. A simplistic assumption would be then that if fish health is taken care of fish production will improve. Hence, the control of disease and increment of fish and birds production could contribute greatly the rural development, the real India where about 70% of population still lives. Equally important is the fact that human population will get healthy fishes and birds to eat and will be less prone to diseases which could otherwise be possible because of eating a parasitized fishes and birds.

The most serious helminth infections are acquired in poor tropical and sub-tropical areas, but some also occur in the developed world. Other, less serious, infections are worldwide distribution. Exposure to infection is influenced by climate, hygiene, food preferences and contact with vectors.

Helminthes are transmitted to humans in many different ways. The simplest is by accidental ingestion of infective eggs, or larvae. Other worms have larvae that actively penetrate the skin. In several cases, infection requires on intermediate vector transmits infective stages when it bites the host to take a blood meal. In other cases, the larvae are content in the tissue of the intermediate host and are taken in when a human eats the host. The level of infection in humans therefore depends on standard of hygiene, on the climate, on the ways in which food is prepared and on the degree of exposure to insect vectors.

In biology, cestoda is the class of parasitic tapeworms called cestodes, that live in the gastrointestinal tract of vertebrates. In a tapeworm infection adult worms absorb predigested food from the host, so the worms have no digestive tract or mouth, large tapeworms are consists of reproductive organs with a small scolex for attachment. Symptoms vary widely depending on the species causing the infection. Symptoms may include coughing, cramping abdominal pain, bloating, gas and diarrhea. In more serious infection, weight loss skin itching, fever, vomiting or bloodystools may occur. Some parasites also cause low red blood cell count (anemia) high densities of adult parasites feeding on host tissues, causing tissue damage or abstruction of the gut, or lymphatic drainage, depletion of nutrients or other metabolites required by the host.

In parasitology study of cestode parasites and their relationship to the host requires a multidimensional approach in order to understand the nature of parasitism and pathological effects on the hosts. Such studies include phyllogenetic relationship, Morphological aspects and Biochemical aspects of cestode parasites.

Morphologically the cestode parasites are multicellular, bilaterally symmetrical parasites of great importance to human health, therefore there is a great need to study cestodes whose prevalence is high in fishes and birds.

The fishes and birds are economically beneficial to human population, but the cestodes present in them cause considerable damage.

Keeping in mind the economical and food value of fishes and birds, the author has undertaken the work of systematic and Morphology of cestode parasites of fishes and birds.

The thesis consist of five parts:

1} SECTION A: TAXONOMY

2} SECTION B: BIO-CHEMISTRY

3} SECTION C: HISTOPATHOLOGY

4} SECTION D: SEASONAL VARIATION

5} SECTION E: BIBLIOGRAPHY

SECTION A
TAXONOMY

This part deals with taxonomy of cestode parasites of fishes and birds from West Coast of Maharashtra from the orders Viz. Tetraphyllidea, Lecanicephalidea, Trypanorhyncha, Davaineidea and Dilepididea.

The species of the cestodes described in the work are belonging to six families Viz. Onchobothridae, Lecanicephalidae, Tetragonocephalidae, Tentaculariidae, Davaineidae and Dilepididae.

The genera which are reported in this part are as follows:

01} *Uncibilocularis osmanabadensis* n.sp.

02} *Calycobothrium maharashtrii* n.sp.

03} *Cephalobothrium shindei* n.sp.

04} *Tylocephalum damodharae* n.sp.

05} *Tetragonocephalum murudensis* n.sp.

06} *Nybelinia elongata*, Shah et. al. 1979.

07} *Davainea gambhirae* n.sp.

08} *Cotugnia domesticusae* n.sp.

09} *Raillietina friedbergeri*, Linstow 1877.

10} *Valipora mainoddinae* n.sp.

KEYS TO THE GENERA:

The revised keys to the genera *Uncibilocularis* Southwell, 1925, *Calycobothrium* Southwell, 1991, *Cephalobothrium* Shipley et. Hornell, 1906, Tylocephalum Linton, 1890 *Tetragonocephalum* Shipley et. Hornell, 1905, Davainea Blanchard, 1891, *Cotugnia* Diamare, 1893, Valipora Linton, 1927, are also provided along with the comparative account.

SECTION B

BIO-CHEMISTRY

This part of the thesis consist of biochemical aspects. The parameters worked out in Glycogen, Proteins and Lipid contents were estimated quantitatively in the following tapeworms.

A} ANALYSIS OF GLYCOGEN IN CESTODES.

1} *Uncibilocularis osmanabadensis* n.sp.

2} *Cephalobothrium shindei* n.sp.

3} *Cotugnia domesticusae* n.sp.

B} PROTEIN CONTENT IN CESTODES:

1} *Tetragonocephalum murudensis* n.sp.

2} *Nybelinia elongata*, Shah et. al. 1979.

3} *Davainea gambhirae* n.sp.

C} LIPID ESTIMATION IN CESTODES:

1} *Cephalobothrium shindei* n.sp.

2} *Tylocephalum damodharae* n.sp.

3} *Valipora mainoddinae* n.sp.

SECTION C
HISTOPATHOLOGY

This part of the Thesis consist of histopathological studies of the cestodes. To know the changes in the intestinal region of the host and relationship between the host and following cestode parasites:

1} *Calycobothrium maharashtrii* n.sp.

2} *Tylocephalum damodharae* n.sp.

3} *Cotugnia domesticusae* n.sp.

SECTION D
SEASONAL VARIATION

The following genera were observed for seasonal variation from December 2003 to November 2005 for the period of two years.

01} *Uncibilocularis osmanabadensis* n.sp.

02} *Calycobothrium maharashtrii* n.sp.

03} *Cephalobothrium shindei* n.sp.

04} *Tylocephalum damodharae* n.sp.

05} *Tetragonocephalum murudensis* n.sp.

06} *Nybelinia elongata*, Shah et. al. 1979.

07} *Davainea gambhirae* n.sp.

08} *Cotugnia domesticusae* n.sp.

09} *Raillietina friedbergeri*, Linstow 1877.

10} *Valipora mainoddinae* n.sp.

SECTION E
BIBLIOGRAPHY

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