

HISTOPATHOLOGICAL STUDY OF *CLARIAS BATRACHUS* (LINNAEUS, 1758) INFECTED WITH TAPEWORM FROM BARAMATI TEHSIL, PUNE DISTRICT (M.S.) INDIA.

Vitthal B. Nale¹, Sandip P. Chordiya²

Assistant Professor^{1,2}

Post Graduate Department of Zoology, Tuljaram Chaturchand College of Arts, Science and Commerce

Baramati, Pune, Maharashtra^{1,2}.

ABSTRACT:

The freshwater fish *Clarias batrachus* (Linnaeus, 1758) collected from Baramati Tehsil, Pune District (M.S.) India. During the period of June 2017 and after dissection their intestinal passage was examined for tapeworm parasites. The tapeworm, *Lytocestus* Cohn, (1908) was recovered from intestine of *Clarias batrachus*. The histopathological studies were carried out and an observation clearly shows that the parasites, *Lytocestus* sp. was embedded in the fibroblast cell, plasma cell and are attached to the intestinal villi. The histopathological studies of tapeworm *Lytocestus* sp. have been studied to find the pathological changes and extent of damage of the intestinal layers of *Clarias batrachus*.

Index Terms: Histopathology, *Lytocestus* sp., *Clarias batrachus*, Intestinal villi, Baramati.

INTRODUCTION:

Interest in the study of host-parasite relationships has declined sharply with the development of anti-helminthic, antibiotic and chemotherapeutic treatment of parasitic diseases. The study of the interactions of potential hosts and potential parasites remains one of most interesting and important aspects of the natural sciences. It is indeed doubtful whether investigations of host-parasite interrelationships are less pertinent today from the perspective of human health.

The term 'host-parasite relationship' correctly designates an intimate interaction, or stage of interaction, between two or more distinct organisms, in which the one benefits while causing damage to the others. The study of parasites and parasitism is without an end. One could go on and on like this as the various aspects are not only important but quite interesting too. What about the host-parasite and parasite-parasite relationship as also the relationship between the definitive and intermediate hosts of the parasites.

In fishes, the mechanism of parasites establishment varied from species to species and it also depends on the stage of parasite, host tissue and environmental conditions. The physiological conditions in a gut of particular host (fishes) with regard to pH or other physiological characters may provide favourable or unfavourable site for metabolism of particular species. The nature of diet of the host has profound effect on the growth of the helminth parasites, may be lacking in nutritional factor, essential for the development of parasites.

Helminths live in a hazardous environment where the parasitic movement towards gut and passage of food make the possession of an efficient form of attachment is a prerequisite for survival. Taxonomic studies reveal that the hold fast organ is beautifully developed and adapted which helps them to attach the mucosa of specific hosts where as there are other species which are having weakly developed scolex. They do not prove to reside in any particular host intestine but have a wide host spectrum; there is increasing evidence in the genus *Echinococcus* at least that such strain occurs in different hosts.

Parasites when make contact with a host at cellular level, the host reacts bringing into cellular and serological reaction, which is an inflammatory reaction. It is thought that the host is able to distinguish between self and non-self material, it is not clear as to how this recognition is carried out at molecular level. Recognition must occur on or near the surface of the susceptible cells and probably it may require contact between the material and the recognizing cells. Sprent, 1963 has given an excellent account about it the onset of inflammation is characterised by local dilation of the capillaries (vasodilatation). The host-parasite relationships in case of helminth parasites result in large scale damage at the site of attachment.

As a subject of fundamental scientific interest, the area of host-parasite relationships has to be even more important with the rapid accumulation of information on the molecular bases of biological phenomena. The knowledge has been gained in the past 50 years on the chemical and physical processes which underlie and explain the structure and function of cells, tissues and organisms remain truncated, without a partial development of understanding of the interaction of these biological compartments with each other. The interrelationships of potential hosts and parasites today after in many instances the technically most feasible and conceptually most attractive possibilities and no approach to the study of the phylogeny of species or the ontogeny of individuals can ignore host-parasite biology. It goes without saying that the field remains as pertinent today as it was in the past to the student of the cultural and economic history of human communities.

The host parasite relationship has studied by Nadakal et al., 1974 in *Raillietina*, *Amoebotaenia indiana* by Mitra and Shinde, 1980; *Hymenolepis nana* by Bailey, 1951; Niyogi and Agrawal, 1989 studied the intestinal pathology of fresh water fishes.

A successful parasite usually does not cause death to the host must cause diseases and the same time produce a low degree of immunity so that the host becomes susceptible to the same infection over and over again. The researchers not yet aware of host-parasite relationships will become more aware of the special approaches, difficulties and challenges which characterize this field.



MATERIAL AND METHODS:

For the histopathological study, different types of freshwaterfishes were dissected to observe the rate of infection. Some fishes were found to be infected and some normal. Both hosts intestine were dissected and fixed in Bouin's fluid to study histopathological changes. The fixative inhibits the post mortem changes of the tissues. Then tissues were washed, dehydrated through alcoholic grades, cleared in xylene and embedded in paraffin wax (58-62°C). The blocks were cut at 7µ and slides were stained in EosinHaematoxylin double staining method. Best section slide were selected and observed under the microscope for histopathological study.

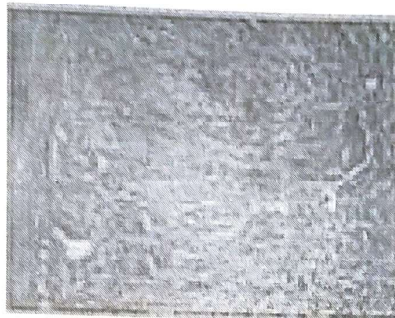


Plate A: T.S. of Normal Intestine of *Clarias batrachus*

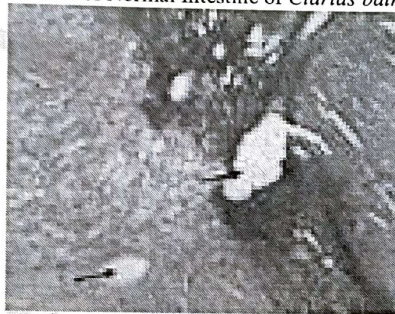


Plate B: T.S. of Infected Intestine of *Clarias batrachus*

RESULTS AND DISCUSSIONS:

Parasitism of cestodes with their respective hosts is shown in the histopathological studies. This study is carried out with micro-technique where the sections were cut at 7µ on a rotary microtome and stained with Haematoxyline & Eosin stain. Healthy intestine shown, healthy villi and all layers are clearly observed (Plate A), where as infected intestine has been observed that the worm attached to the mucosal layer of intestine and slowly invades to the deeper layers of the host tissue (Plate B).

CONCLUSION:

From above discussion it can be concluded that helminth parasites like *Lytocetus* sp., are found the nutritive material from the intestine of hosts *Clarias batrachus* which is essential for their nourishment and growth.

REFERENCES:

- 1] Bailey, W.S. (1951). Host tissue reactions to initial superimposed infection with *Hymenolepis nana* var *Fraterna*. J. Parasit., 37: 440-444.
- 2] C.J. Hiware et. al, (2008): Studies on Histopathology of *Clarias batrachus* (Linnaeus) Intestine Parasited by Cestode, *Lytocetus clariasae* Jadhav and Gahvane, 1991 Journal of Yala Rajabhat University.
- 3] Coleman, R. M. And DE. SA, L. M. (1962): Host response to implanted adult *Hymenolepis nana*. J. Parasit., 50 (Suppl.) :17.
- 4] Gopal Krishnana, V. (1968): Diseases and parasites of fishes in warm water ponds in Asia and the far East, fisheries. Report. FAO-UN 445: 319-343. (Proceedings of the Foto world symposium on warmwater pond fish culture).
- 5] K. Vijayakumaran Nair and A.M. Nadakal (1981). Haematological changes in domestic fowl experimentally infected with the cestode *Raillietina tetragona* (Molin, 1858) Veterinary Parasitology, Volume 8, Issue 1, February 1981, Pages 49-58.
- 6] Mitra, K. B.; Shinde, G. B. (1980). Histopathology of the cestode *Amoebotaenia indiana* (Cohn, 1900) from *Gallus domesticus* at Aurangabad, India. Current Science 1980 Vol. 49 No. 5 pp. 206-207.
- 7] Murlidhar, A. And Shinde, G.B. (1987): Histopathology of the cestode, *Acanthobothrium uncinatum* (Rudolphi, 1819) from *Rhynchobatus ajeddensis* at Kakinada, A.P. India. Indian J. of Parasitology 11(1): 85-86.
- 8] Niyogi, A. and Agrawal, S.M. (1989). Intestinal pathology due to Caryophyllaeids parasitizing *Clarias batrachus* (Linn.) at Raipur. Indian J. Helminth. 41: 112-119, 1989.
- 9] Yamaguti, S. (1956): Systema Helminthum Vol-II. The cestode of vertebrates. Interscience publ. New York and London, 1-860.



Principal
Tuljaram Chaturchand College
Baramati