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

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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. havebeen 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 declinedsharply with the development of anti-helminthic, antibiotic andchemotherapeutic treatment of parasitic diseases. The study of theinteractions of potential hosts and potential parasites remains one ofmost interesting and important aspects of the natural sciences. It isindeed doubtful whether investigations of host-parasiteinterrelationships are less pertinent today from the perspective ofhuman health.

The term 'host-parasite relationship' correctly designates anintimate interaction, or stage of interaction, between two or moredistinct organisms, in which the one benefits while causing damage tothe 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 onlyimportant but quite interesting too. What about the host-parasite andparasite-parasite relationship as also the relationship between thedefinitive and intermediate hosts of the parasites.

In fishes, the mechanism of parasites establishment varied fromspecies to species and it also depend on the stage of parasite, hosttissue and environmental conditions. The physiological conditions in agut of particular host (fishes) with regard to pH or other physiologicalcharacters may provide favourable or unfavourable site for metabolismof particular species. The nature of diet of the host have profoundeffect the growth of the helminth parasites, may be lacking in nutritionalfactor, essential for the development of parasites.

Helminths live in a hazardous environment where the parasiticmovement towards gut and passage of food make the possession ofan efficient form of attachment is a prerequisite for survival. Taxonomicstudies reveals that the hold fast organ is beautifully developed andadapted which are help them to attach the mucosa of specific hostswhere as there are other species which are having weakly developedscolex. They do not prove to reside in any particular host intestine buthave a wide host spectrum; there is increasing evidence in the genusEchinococcus at least that such strain occur in different hosts.

Parasites when make contact with a host at cellular level, thehost reacts bringing into cellular and serological reaction, which is aninflammatory reaction. It is thought that the host is able to distinguishbetween self and non-self material, it is not clear as to how theserecognition is carried out at molecular level. Recognition must occur onor near the surface of the susceptible cells and probably it may requirecontact between the material and the recognizing cells. Sprent, 1963has given an excellent account about it the onset of inflammation ischaracterised by local dilation of the capillaries (vasodilatation). Thehost-parasites relationships in case of helminth parasites result intolarge 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 rapidaccumulation of information on the molecular bases of biologicalphenomena. The knowledge has been gained in the past 50 years onthe chemical and physical processes which underlie and explain thestructure and function of cells, tissues and organisms remainstruncated, without a partial development of understanding of theinteraction of these biological compartments with each other. Theinterrelationships of potential hosts and parasites today after in manyinstances the technically most feasible and conceptually mostattractive possibilities and no approach to the study of the phylogeny ofspecies or the ontogeny of individuals can ignore host-parasite biology.It goes without saying that the field remains as pertinent today as itwas in the past to the student of the cultural and economic history ofhuman 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 hostmust cause diseases and the same time produce a low degreeimmunity so that the host become susceptible to the same infectionover and over again. The researchers not yet area of host-parasiterelationships 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 fisheswere found to be infected and some normal. Both hosts intestine were dissected and fixed in Bouin's fluid to studyhistopathological changes. The fixative inhibits the post mortemchanges of the tissues. Then tissues were washed, dehydrated through alcoholic grades, cleared in xylene and embedded in paraffinwax (58-62^{0}C).
The blocks were cut at 7μ and slides were stained in EosinHaematoxylin double staining method. Best section slide wereselected and observed under the microscope for histopathological study.

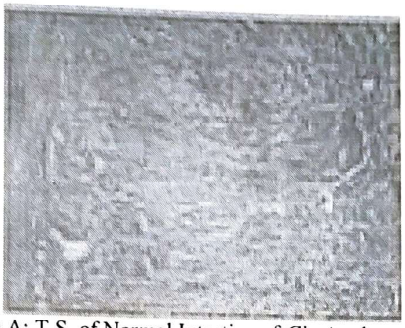

Plate A: T.S. of Normal Intestine of *Clarias batrachus*

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

RESULTS AND DISCUSSIONS:

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

CONCLUSION:

From above discussion it can be concluded that helminthparasites like *Lytocestus* sp., are finds the nutritive material from the intestine of hosts *Clarias batrachus* which isessential for their nourishment and growth.

REFERENCES:

1] Bailey, W.S. (1951). Host tissue reactions to initial superimposedinfection 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, *Lytocesus clariasae* Jadhav and Gahvane, 1991Journal 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 inAsia 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). Haematologicalchanges in domestic fowl experimentally infected with the cestodeRaillietina 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 cestodeAmoebotaenia indiana (Cohn, 1900) from Gallus domesticus atAurangabad, 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 toCaryophyllaeids 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.