

ORIGINAL ARTICLE

Influence of Temperature Effect on Nematodes Infection in Fresh Water Fish (*Labio Rohita*)

Heera Lal¹ and Harish Kumar²

¹Deptt. Of Zoology, J.V. College, Baraut, Baghpat.

Email : hlbharti73@gmail.com

²Deptt. Of Zoology, J.V. College, Baraut, Baghpat.

Email : drhk73@gmail.com

ABSTRACT

The aim of the present study is based on the effect of abiotic factor (temp.) on the nematode infection in a fresh water fish. Labio-rohita in district Baghpat during the annual cycle 2012-13. The temperature play a significant role in the infection of nematodes. In distt. Baghpat Labeo-rohita is a common eadable fish which having the nematode infection. During investigation nematode- infection correlated to temperature, it was varies in every month in the year of 2012-13, In the winter season mean when temperature was low, the infection of nematodes in the fishes increase, while the temperature increase, the infection ratio of nematodes was decrease.

Key Words: Temperature, Fresh water, Fish, Nematode Infection.

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INTRODUCTION

The infection level of nematodes parasite not only depend on internal factor of the host but also on the external abiotic factors such as temperature. The temperatures play an important role in the dispersion of the infected stage of nematode parasite. The poikilothermous host which are easily influenced by the variation of climatic factors. The seasonal fluctuation play a significant role in the nematodes infection [7] studied the helmenth grouping in bankvole population. The effect of temperature upon the establishment & survival of the cestodes parasites was reported [6,8] reported the influence of temperature and rainfall on the helminth infection in amphibian host. The occurrence of helminth parasite in relation to size of fish (4) and the physical characteristics of *Thingvallavantn icland* [1]. The effects of experimental *Schisocephalus solidus* infection of growth, morphology of sexual development of female three spined sticklebacks *Gastrosteus, aculeatus* [2]. The Physico- Chemical determinants of helminthes component community structure in white fish (*Coregonus - clupeaformes*) in 2005 [3] and the effect of the length of the fish on occurrence of helminth parasite in Uttar Pradesh in 2007 [9]. A special and temporal structure of the trematode component community in *Valvata-macrosoma* in 2008 [5]. The present study based on the effect of temperature on the nematodes infection in fresh water fish

MATERIAL AND METHODS

The host fresh water fish *Labio rohita* collected from various places in district Baghpat, UP. In India from July to June 2012-13 the host dissected immediately after they were brought to laboratory. The nematode parasites were recovered from different parts of the body such as gills, intestine and air bladder etc. After the collection, the parasites were processed fixed and identified. Different nematodes were identified, stored and counted. The month wise infection calculated for the one year seasonal cycle 2012-13. Monthly mean temperatures were taken into account and their impact on the incidence of infection was studied. Also study the prevalence percentage with intensity of infection and abundance of infection in the population of the host.

1. PREVALENCE PERCENTAGE

Prevalence percentage is monthly calculated by counting the infected fish and divided by the fish examined and multiply by 100.

$$\text{Prevalence \%} = \frac{\text{No. of infected fish}}{\text{Total no. of fish examined}} \times 100$$

2. MEAN INTENSITY

Mean intensity find out by the collected parasites and divided by infected fish.

$$\text{Mean Intensity (unit)} = \frac{\text{No. of collected parasite}}{\text{No. of infected fish}}$$

3. ABUNDANCE

Abundance is calculated by he counted the parasites and divided by the number of fish examined.

$$\text{Abundance (unit)} = \frac{\text{No. of parasites}}{\text{No. of fish examined}}$$

RESULT AND DISCUSSION

The present study revealed that the correlation between the temperature and the incidence of infection show that there was an inverse relationship. The incidence of infection was high (74.2%) during the period of low temperature. (18.15°C) and incidence of infection was low (60.42%) during the period of high temperature (36.62°C). This phenomenon was generalized when correlation between total incidence of infection of nematode parasite and influence of temperature was taken in an account.

Table: Influence the temperature on the total nematodes parasite infection in Labio-rohita during the annual cycle 2012-13.

S.NO.	MONTH	% OF INFLUENCE OF INFECTION IN <i>Labio rohita</i>	MEAN OF TEMP. (°C)
1	JUL .12	64.32	27.80
2	AUG.12	65.01	26.20
3	SEPT. 12	64.08	24.30
4	OCT. 12	66.00	24.00
5	NOV. 12	67.25	22.40
6	DEC. 12	68.00	20.19
7	JAN. 13	74.32	18.15
8	FEB. 13	67.74	20.00
9	MAR. 13	66.45	21.20
10	APR. 13	65.55	26.00
11	MAY 13	63.00	32.50
12	JUNE 13	60.42	36.60

Apart from the above generalization there were some marginal deviations when the individual incidence of infection of nematodes in the host was taken into account. The influence of temperature seems to be operating differently on the different taxonomical, biological and topical groups of nematodes due to different patterns of life cycle. The influence of temperature was variance in bionematodes and geonematodes. The worker find out that the temperature play a significant role in the infection levels of the nematodes parasites in fresh water fish Labio-rohita. The analysis of the data showed that there was no uniform and consistent effect of the temperature on the incidence of infection levels. In Labio-rohita, it was observed that the incidence level was high (74.32%) when the temperature low(18.15°C) and the incidence was low(60.42%) when the temperature was high (36.60°C). Worker found that the incidence of infection level is indirectly proportional to temperature.

REFERENCES

1. Adalsteinsson, H.P.M, jonasson, and S. Rist (1992) Physical characteristics of Thingvaldavantn Iceland Oikos 64 (121-35).
2. Barber, I, and P.A. Svensson (2003). Effects of experimental schistocephalus solidus infection of growth, morphology of sexual development of female three spined sticklebacks *Gastrosteus, aculeatus*. Parasitology 126:359-367.

3. Goater, CP., R.E. Weldium and G.J. Scrimgeour (2005). Physico- Chemical determinants of helmenth the component community structure in white fish (Coregonus - clupeaformes) from adjacent lakes in Northen Alberta, Canada.
4. Jha A.N. Sinha P. (1990). The occurrence of helminth parasite in relation of size of fish. Bio J. 2(11) 311-316.
5. Karvonen, (2008). special and temporal structure of the trematode component community in Valvata-macrostoma..
6. Kennedy, C.R. (1971). The effect of temperature upon the establishment and survival of the cestodes Caryophyllaeus laticeps in leuciscus indus parasitology 63:59-66.
7. Kisiel WSKA, K, (1970). ecological organization of intestinal helmenth groupings in clethriomomys glareolus (schreb) (Rodentia), I. Structure and seasonal dynamics of helmenth groupings in a host population in the Bialowieza. National park, Acta Parasitologica Plonica 18(13) :121-147.
8. Rajeshwar Rao, V & Ramakrishna G.V (1983). influence of temperature and rainfall on the helminth infection in amphibian host. Comp. Physio. Ecol. 8;185-187.
9. Somorendra M. Jha A.N; Kumar P.(2007). Effect of the length of the fish on occurrence of helminth parasite in Uttar Pradesh J Z00. 27 (1)87-91.