

### Study of cestode infection in relation to the sex of the host fish, *Mastacembelus armatus*

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#### ABSTRACT

The present communication deals with the study of cestode infection in a popular freshwater fish, *Mastacembelus armatus* in relation to the male and female sex of the host. In this study the author calculated the maximum prevalence, mean intensity and relative density in the males of host fish.

Figure : 01

References : 05

Table : 01

KEY WORDS : Betawa, Cestode infection, *Mastacembelus armatus*, Mean intensity, Prevalence, Relative density, Sex of the host

#### Introduction

Cestodes are mainly endoparasites of different parts of alimentary canal of their hosts Viz. stomach, upper intestine, middle intestine and lower intestine. The adult or larval forms or both may be pathogenic to their hosts. With a view to know the nature of cestodes infection, regular studies for two successive years were undertaken to record the nature of parasitism in a fresh water fish, *Mastacembelus armatus* of Bundelkhand region of Uttar Pradesh, India.

#### Material and Method

Two hundred and forty fishes were examined to study the nature of cestode infection in the male and female host fish. The study was carried out for two successive years. In the course of examination 134 male and 106 female fishes were dissected. In each month

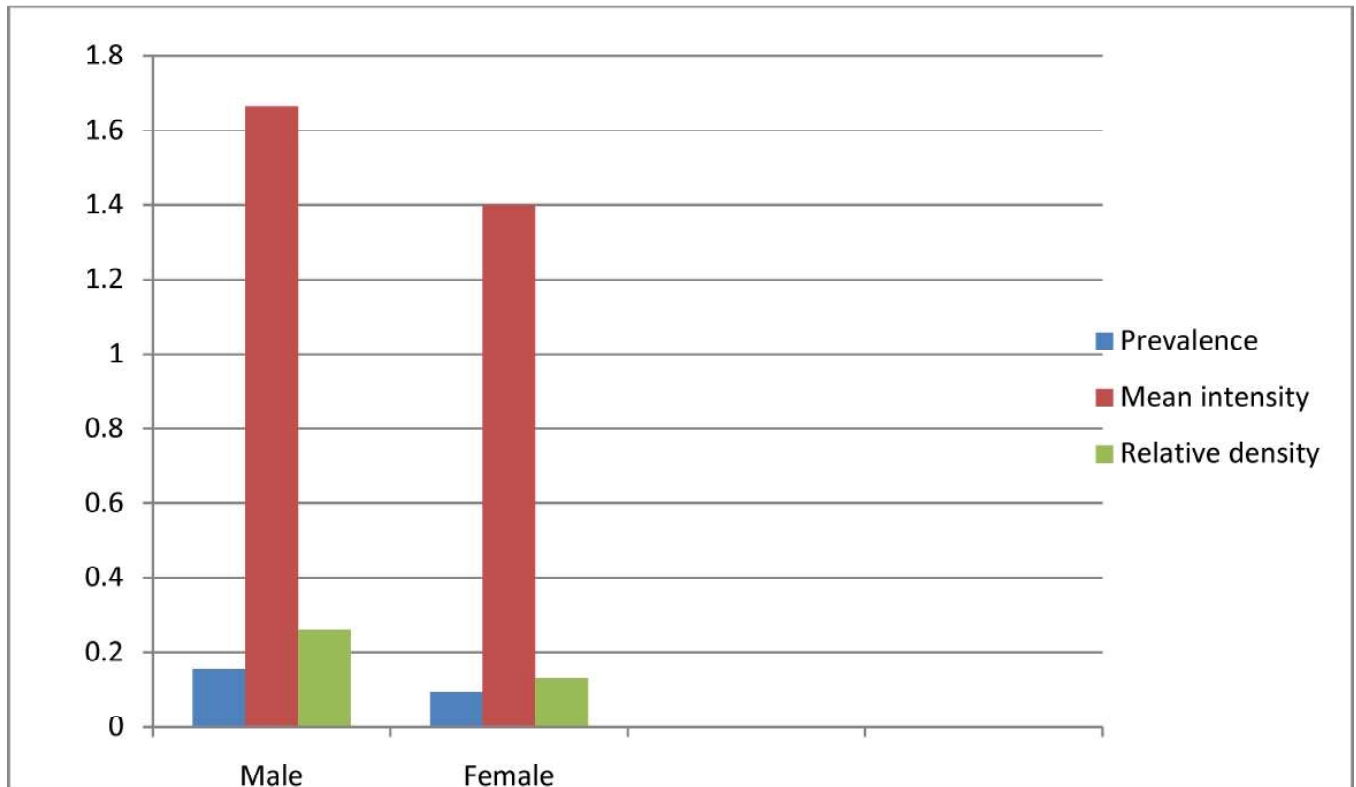
ten fishes were sacrificed and the prevalence, mean intensity and relative density of cestode infection have been worked out, in relation to sex of the selected host.

The host fishes were obtained from different parts of river Betawa, District Jhansi (U.P.) India by the help of local fish catchers. Live fishes were anesthetized with the help of chloroform. The host fishes were dissected quickly to find out their sex by locating testes for males and ovaries for females. The alimentary canals of hosts were removed and cut open in the normal saline water in petridishes. The cestodes, were collected and counted separately in each infection. Formulae of prevalence, mean intensity and relative density<sup>3</sup>

**Prevalence** : Number of individuals of the host fish infected with cestode divided by number of hosts examined.

**TABLE-1 : Average annual variations in the prevalence, mean intensity and relative density of cestode infection in relation to the sex of the host**

| Sex    | No. of hosts |          | Number of cestodes obtained | Prevalence | Mean intensity | Relative density |
|--------|--------------|----------|-----------------------------|------------|----------------|------------------|
|        | Examined     | Infected |                             |            |                |                  |
| Male   | 134          | 21       | 35                          | 0.156      | 1.666          | 0.261            |
| Female | 106          | 10       | 14                          | 0.094      | 1.4            | 0.132            |



**Fig. 1 : Average annual variations in the prevalence, mean intensity and relative density of cestode infection in relation to the sex of the host**

$$\text{Prevalence} = \frac{\text{Number of hosts infected}}{\text{Number of hosts examined}}$$

**Mean Intensity :** Total number of cestode parasites in a sample of host fish divided by number of infected individuals of host in the sample.

$$\text{Mean intensity} = \frac{\text{Total Number of parasites obtained}}{\text{Total number of hosts infected}}$$

**Relative Density :** Total number of individuals of cestode parasites in a sample of host fish divided by total number of individuals of the host.

$$\text{Relative density} = \frac{\text{Total number of parasites obtained}}{\text{Total number of hosts examined}}$$

**Observations**

Average annual variations in the prevalence, mean intensity and relative density of cestode infection in the male and female host fishes in relation to the sex of the host are given in Table-01 and Fig- 01.

1. The prevalence of cestode infection in the host was 0.156 in males and 0.094 in females.
2. The mean intensity of cestode infection in the host

was 1.666 in males while 1.4 in females.

3. The relative density of cestode infection in the host was 0.261 in males whereas 0.132 in females.

**Discussion and Conclusion**

In the present observations male fishes showed higher annual prevalence, mean intensity and relative density of cestodes infection than the female fishes (Table 01, Fig. 01).

An Indian parasitologist<sup>5</sup> reported that male *Hemidactylus flaviviridis* showed higher annual prevalence and relative density of cestodes infection than the female hosts. An immunologist<sup>2</sup> reported that the prevalence and intensity of infections caused by protozoa, nematodes, trematodes, cestodes and arthropods is higher in males than females. According to him immunological differences exist between the sexes that may underline increased parasitism in males compared to females. He also reported that the female sex hormones estrogens increase the formation of interferons and other immunological factors which increase resistance in females, while male sex hormone testosterone reduces antibody production which decreased resistance in males.

Some researchers<sup>1</sup> reported that parasites show reciprocal relationship amongst sex steroids and the immune system in the host. In certain cases, hormones

can regulate the innate and adaptive immune response. Similarly some workers<sup>4</sup> also reported that Sex steroids are important for the growth and development of many species of parasites.

On the basis of above discussion, it can be concluded that due to changes in endocrine-immune interactions males *Mastacembelus armatus* (Lacepede) are more susceptible to cestodes infection than females.

## References

1. Aguilar-Díaz H , Nava-Castro KE , Cerbón-Cervantes MA , Meneses-Ruiz DM, Ponce-Regalado MD, Morales-Montor J. Endocrine Immune Interactions in the Host-Parasite Relationship: Steroid Hormones as Immune Regulators in Parasite Infections. *J. Steroids & Horm Sci.* 2015; **6**(3): 2-12 DOI: 10.4172/2157-7536.1000165.
2. Klein, SL. Hormonal and immunological mechanisms mediating sex differences in parasitic infection. *Parasit. Immunol.* 2004; **26** : 247-264.
3. Morgolis L, Esch GW, Holmes JC, Kuris AM, Schad A. The use of ecological terms in parasitology (Report of an ad Hoc committee of the American society of Parasitologists). *J. Parasitol.* 1982; **68** (1): 131-133.
4. Romano MC, Jiménez P, Miranda-Brito C, Valdez RA. Parasites and steroid hormones: corticosteroid and sex steroid synthesis, their role in the parasite physiology and development. *Front. Neurosci.* 2015; **9**: 224. DOI: 10.3389/fnins.2015.00224.
5. Srivastav, RN. 'Morphotaxonomy and ecological studies of the helminth parasites in certain Amniotes'. Ph.D. Thesis, Bundelkhand Univ., Jhansi (U.P.) India. 2003. pp. 76-120.