

THE PREVALENCE AND INTENSITY OF INFECTION WITH DIDYMOZOID PARASITE IN *PRIACANTHUS HAMRUR*, WALT AIR COAST, INDIA

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Neometadidymozoon polymorphus (Digenea : Didymozoidae) parasite from the gills of *Priacanthus hamrur*. Parasites were analysed monthwise, seasonwise and percentage of infection in relation to sex of the fish. Host fish were collected for a period of 12 months that is from July, 1992 to June, 1993. Females were more infected than males. Highest rate of infection occurred in summer to rainy and winter.

INTRODUCTION

Studies on digenetic trematodes of marine fish from various regions of the world have received a great deal of attention since the turn of century. Maximum literature is available on the morphological studies. Digeneans are endoparasites of which may be mentioned that didymozoids which live sometimes single but mostly encysted in pairs and may be hermaphroditic or gonochoristic, represent the highest degree of adaptation to their special habitat culminating in protected parasitism.

The intensity of infection and seasonal variations of helminth parasites to the host particularly fish the following literature is available : Hanumantha Rao & Ramana Rao (1970), Waterjor (1973), Chubb (1977), Hanek & Fernanbo (1978a, 1978d), Jilek (1978), Muzzall & Bullock (1978), Williams (1978a, 1978b), Pickring & Christie (1980), Amin (1981), Siddiqui & Nizami (1982), Bugaev (1982), Kiskaroly & Tafro (1983a,b, & 1986), Kuntz & Font (1984), Rand & Burt (1985), Buchanan (1986), Seng (1988), Firdaus (1988), Muralidhar (1989), Forbs *et al.* (1989), Abou-Zakhan *et al.* (1990), Zhokhov (1990), Rao *et al.* (1991), Albert (1991), Saad & Combes (1992) and Wang (1992).

The present work is an attempt to analyse the variations of intensity and seasonal variations of *Neometadidymozoon polymorphus* in *Priacanthus hamrur*.

MATERIALS AND METHODS

The collection of the material is from fish *P. hamrur*, at Gangavaram and Visakhapatnam offshore. Most of the samples of these investigations were obtained from daily fishing trawlers. It was not possible to observe fishes in live condition for parasites. Most of the parasites were alive even 3 to 4 hrs after death of the host. As soon as fish were collected they were examined immediately. Parasitic helminths particularly didymozoid parasites were collected and data is recorded carefully showing incidence of infection.

OBSERVATIONS

Monthwise analysis : Maximum number 27 of male fish occur in the month of October, 1992 and examined of these the number of parasites were 53. Whereas in January minimum number occurred and these fish harboured 46 parasites in the month of January, 1993. The maximum number of parasites in 25 fishes in the month of April, 1993. The parasite number is 222.

The maximum number of female fish examined in the month of April, 1993 the fish number is 54. Parasites number is 651. Minimum number of fish examined in the month of February, 1993. The number is 18 fishes and the parasite number is 93.

Maximum total fish of both dissected in the month of April, 1993. 79 yielded a total number of 873 parasites. The minimum of 36 fish were examined in February, 1993. Total number of parasites were 163.

Seasonwise analysis : In summer *i. e.* March, 1993 to June, 1993 the maximum number of infection occurred. The maximum number of female fishes examined in summer was 149, the parasite number was 1336, the ratio 8.9, minimum number of female fish examined in winter *i. e.* 100. The parasite number was 480. The maximum number of male fish examined in winter *i. e.* 78. Parasites number was 243. The ratio 3.1. In summer the ratio parasites to female was found to be greater than the ratio of male fish. Through the seasonal analysis highest rate of infection occurred in summer compared to rainy and winter seasons.

Ratio analysis : In monthwise ratio of parasites to fish highest ratio was in the month of April, 1993 and was 1:11. Least in August 1992 *i. e.* 1:2.

The seasonwise ratio of parasites to fish was highest in summer that was 7.77 whereas the rainy and winter were nearly more or less equal that was 4.07 and 4.06, respectively.

Percentage analysis : If we consider the sex of fish high percentage of infection was found in female than the male fish. It is evident that 80.5% female fish were infected while the infection rate was 61.6% in case of male fish. Total per cent of infection was found very high in the month of April, 1993 *i. e.* 96% and very low in the month of August, 1993 *i. e.* 43.4%. Infection in male fish was highest in the month of May, 1993 *i. e.* 88.9% and lowest in the month of August, 1993 *i. e.* 40%. In case of female the highest rate of infection was found to be in the month of April, 1993 *i. e.* 100% lowest rate of infection in the month of August, 1992 *i. e.* 46%. Total infection rate of both female and male was 72.2%.

DISCUSSION

The present study gives a clear picture of intensity and seasonal variations of didymozoids in *P. hamrur*. Monthwise and seasonwise intensity of infection difference are analysed. These variations in the parasite fauna can be related to difference in physiological characters of the environment through factors which play an important role.

Siddiqui & Nizami (1982) studied *Clinostomum complanatum* in relation to sex of the host. They concluded that 63% males and 61% of females were infected in highest peak of infection. The average burden/fish was 21 in males and 42 in females. In *C. complanatum*, 47.5% of 59 males and 5.5% of 662 females were infected in the observations of Kalantam *et al.* (1987). Firdaus (1988) examined *Channa punctatus*. 50% females and 30% males were found to be infected. The average fish (male and female) / worm burden was 1:2.

Timmons *et al.* (1992) noted prevalence of *Acetodextra aminuri* host in *Ictalurus punctatus*. The ovaries of mature females were infected. Khan *et al.* (1992) made investigations on *Plagioporus gonii* in relation to sex of host during the period of 1985 February to 1987 January. During February to August, 1985 there was no significant difference between sexes. But during February, 1986 to August, 1986 females were significantly more infected than male. The present study support above views *i. e.* females were more infected than males.

But Hanek & Fernando (1978a, 1978c) examined the role of season, habitat, hostage and sex on gill parasite of *Lepomis gibbosus*. They concluded that ectoparasites with direct life cycles in two limnologically different trophic habitats, clearly indicate that of *L. gibbosus* is not a factor of determining parasite load.

The studies on seasonal variations of fish parasites with respect to the fluctuation of the entire parasite fauna of any host species are still meagre. The majority of these investigations have been carried out in seasonal cycles. Seasonal environmental changes of water (*e.g.* temperature, pH, conductivity) affect occurrence of parasites of aquatic hosts (Dogiel *et al.*, 1970).

Seasonal variations of the didymozoid prevalence and intensity of infection were at a peak (96% and 11.1 parasites/fish) in the month of April, 1993 prevalence of infection was low in the month of August, 1992 (43.4% and 2.1% parasites/fish). Through seasonal analysis it is clear that summer has highest rate of infection compared to rainy and winter seasons. Rainy and winter are more or less equal. The present observations support Rawson & Rogress (1973) on *Gyrodactylus macrochiri* reveal that highest peak of infection occur in April and May with low infection in December. Satputi & Agarwal (1974) opinion that *Lytocestus* infection in *Clarias batrachus* with highest peak of intensity in summer *i. e.* June, July and with lowest in September and November. Infection of

Isoparorchis hypselobagri in *Mystus* sp., *M. seenghala* is highest in June, in case of *Mystus aor* highest rate of infection occurred in December and January. There is a sharp rise and again a fall until December (Srivastava & Mukherjee, 1976).

Hanek & Fernando (1978a, 1978b, 1978c, 1978d) stated that highest rate of infection occurs in summer. Similar results were reported by Izyumova & Mashtakov (1978). Hanzelova & Zitnan (1982), Reimchen (1982), Siddiqui & Nizami (1982), Kuntz & Font (1984), Rand & Burt (1985), Kamiso & Olson (1986), Kalantan *et al.* (1987), Firdaus (1988), Abou-Zakhan *et al.* (1990), Timmons *et al.* (1992), Cone & Roth (1993). All the above observations show that summer season has high infection compared with winter and rainy.

ACKNOWLEDGEMENTS

We are grateful to Profs. K. Hanumantha Rao and K. Shyamasundari for their help.

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