

The Larval Trematode Infecting Fresh Water Snails in the Girana Dam and Surrounding Water Resources at Nandgaon Tehsil of Nashik District, (M.S.) India

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Article Info	Abstract
Article History <i>Received</i> : 08-03-2011 <i>Revised</i> : 26-04-2011 <i>Accepted</i> : 27-04-2011	The present research focuses on the different larval trematodes infecting intermediate host i.e. snails in the Girana dam and surrounding water resources in Nandgaon tehsil of Nashik district. Author collected snails from ponds, streams and river etc. of the selected site where livestock like, cows, Buffalos, Goats and sheep's visit continuously for drinking water. These snails were dissected in laboratory to study host parasite system. The common larvae found responsible for the infection of Snails are <i>Cercarie</i> , <i>Metacercarie</i> , <i>Redia</i> etc. The different species of infected snails like <i>Melania scabra</i> , <i>Lymnia truncatula</i> , <i>Viviparous bengalensis</i> , <i>Gyrulus anisus</i> , <i>Limnia auricularia</i> and <i>Limnia accuminata</i> were studied.
*Corresponding Author <i>Tel</i> : +91-9689819551 <i>Fax</i> : +91 9421528106 <i>Email:</i> chandorelaxaman@rediffmail.com ©ScholarJournals, SSR	Key Words: Trematode, Infection, Host, Cercariae, Digenean, Endoparasite

Introduction

Fresh water bodies perform several functions like provision of habitat, nutrient cycling, sediment control, ground water recharge and discharge. Besides this, fresh water bodies have value for society in terms of providing sites for recreation, education, fisheries, research, and appreciation of our natural heritage. The manmade processes like Fragmentation, water quality degradation, introduction of invasive and animals, unregulated public access, and other forms of environmental perturbation have adversely impacted freshwater bodies. All the above conditions provide favorable environment for the growth of digenean trematode like cercariae which completes their lifecycle in different hosts.

Digenean trematodes are a particularly promising type of indicator parasite. Digeneans reproduce sexually, as cross-fertilizing hermaphrodites, in vertebrate definitive hosts. Adult worms produce eggs, usually voided in the definitive hosts' feces. A ciliated miracidium stage infects first intermediate host, snails. This stage undergoes repeated asexual reproduction inside the snail host. Cercariae are released by infected snails that swim for several hours till a second intermediate host is found. Upon contact with an appropriate second intermediate host, cercariae shed their tails and encyst as metacercariae. Metacercariae remain encysted in second intermediate hosts and are transmitted when a definitive host eats an infected second intermediate host. The second intermediate host required (e.g., fish, mollusc, crustacean) varies by species of trematode Keas and Blank spoor (1997). Other authors have also speculated that the prevalence of digeneans declines with habitat degradation (Robson and Williams 1970, Pohley 1976). Cort et al. (1960) were the first to make such a comparison. They found that larval digenean diversity and species richness had declined in a Michigan lake

over 20 years. They also noted increased human disturbance and reduced final host bird populations over that time. Keas and Blank spoor (1997).

Parasites can change the behavior, life history, and morphology of their host. Many trematodes parasitize freshwater pulmonate snails, resulting in a reduction or the elimination of reproduction in those individuals. However, parasite effects on freshwater snail behavior are unclear.

Several parasitologists from the various parts of the world make an attempt to study Trematode that infects the snails. Some of them are Yamaguti (1971, 1975) Dechruksa et al (2007), J.Richard Harding (1978), Todd and Kevin (2004), Suluck Ukong *et. al.* (2007) and Bayer (1954). In the present paper author made an attempt to study the percentage of infection by different trematodes in different snail species in the months of January to May.

The Girana dam is situated at Nandgaon in Nashik district of Maharashtra which was built by British government. It is the big resource of water for irrigation and to supply water for 36 villages as drinking water. In the surrounding area of the dam many other water resources are found like ponds, lakes, streams and river. People residing in the area domesticate different cattle's like sheep's, goats, cows and buffalos. For the purpose of drinking water and swimming cattle's always visit to the dam and surrounding water resources in which different species of snails are found. Snails found in these resources are found infected by cercariae.

Material and Method

In Nashik district a maximum number of water resources are found. Girana dam is one of the big water resource in the Nandgaon tehsil which is surrounded by many other water

resources. Visits were given in the months of January to May in the year of 2009. Author visited the Girana dam and other water resources, especially where domestic animals such as buffalos, cows, Bullocks, sheep's and goats are used to visit continuously for drinking water. Reason behind this is that the trematode larvae are numerous found in snails of these areas in the search of secondary host. Different snail species are present in the study areas which are found affected by trematodes like cecariae. Author selected such localities and collected snails. The collected snails are brought in the laboratory and with the help of compound and dissecting

microscopes the infection was studied. In the present paper the percentage of infected snails is studied.

Results

In the present investigation author studied the percentage of infection found in different species of snail. It is observed that trematode larvae infect different snail species as an intermediate host and attack on the digestive and excretory system of snails. Also in some snail species larvae grows in the liver as an endoparasite. Table 1 shows the month wise percentage of the infection by trematode in different species of the snail.

Table 1. Percentage of infection by trematode in different Species (2009)

Sr.No	Name of Snail species	Month	No. of snails examined	No. of snails infected	% age of infection
1	<i>Melania scabra</i>	January	380	36	9.47
		February	425	40	9.41
		March	350	44	12.57
		April	360	53	14.72
		May	423	62	14.66
2	<i>Melania tuberculata</i>	January	325	41	12.6
		February	340	45	13.25
		March	370	49	13.24
		April	355	51	14.36
		May	365	54	14.79
3.	<i>Lymnia tracantula</i>	January	350	33	9.42
		February	300	10	10.00
		March	320	41	12.81
		April	310	42	13.54
		May	290	45	15.51
4.	<i>Viviparous Bengalysis</i>	January	370	41	11.08
		February	350	40	11.42
		March	360	47	13.05
		April	342	48	14.05
		May	345	50	14.49
5	<i>Gyrulus anisus</i>	January	525	50	9.52
		February	480	49	10.20
		March	470	50	10.63
		April	430	60	13.95
		May	425	65	15.29
6.	<i>Lymnia auricularia</i>	January	430	38	8.83
		February	450	48	10.66
		March	400	47	11.75
		April	415	52	12.53
		May	405	55	13.58
7.	<i>Lymnia accuminata</i>	January	435	46	10.57
		February	425	48	11.29
		March	390	45	11.53
		April	350	50	14.28
		May	360	61	16.94

Discussion

Different species of Snails collected from the study area found infected by different trematodes. The infected snails act as an intermediate host of the trematodes in which they complete their half of lifecycle. After the infection some morphological changes taken place in the snails. Probably some metabolic and physiological change may be possible. No doubt, due to infection the life span of snails may be reduced. The snails show so many symptoms after infections by trematode parasite. *Melania scabra* is comparatively smaller than the *Melania tuberculata* but after infection it becomes

larger in size. The whorl becomes thin and animal shows weak activation. The shell of snail shows specific character like black color spots due to higher infection. The percentage of infection in the snail *Melania scabra* is given in the table 1.

The *Melania tuberculata* is also infected by the larval trematode. The infected snail become larger in size as well as balloon shaped. The whorl shows black colored outgrowth from the infected part. The shell covered with no of air bubbles around it. The month wise percentage of infection in this type of snail is given the table 1.

The *Lymnia tracantula* is the host of several trematode larvae's. The infection is low in the month of January while

heavy infection found in month of May. The infection shows change of whorls & dotted spots on shell. The snails become very active in this period. The month wise percentage of infection is given in table 1.

The *viviparous bengalensis* is normal in shape but after infection it becomes larger in size. The infected snail shows blackish colored spots on the shell and greenish spot on its whorls. The infected snails are buried in mud and hide. Snails become inactive after heavy infection.

The *Gyrus anisus* infection shows many changes such as prolongation of whorl & musculature. The snail becomes blackish in color & shell shows white spots. Snail becomes inactive and sluggish. The feeding activity of snail increases due to reproduction. The host mostly found in the deep water. The high infection found mostly in month of April & May. The month wise infection is given in the table 1.

The *Lymnaea auricularia* is the very common species of snail easily available in water reservoirs. As per observation, it become inactive and sluggish after the infection. The infected part becomes blackish in colour and yellow spots on the shell. The heavy infection found in the month of May.

Lymnaea accuminata, infected snail shows so many changes after the infection. The snails' gathers at the coast of water resource and crowded leaving bubbles. The snails are become larger in size. The infected snails are increases coils of their whorls. The infected snails are mostly found at the coast of water resources with algal blooms and decaying matter of vegetations. The infected snails release trematode larvae in to water.

According to the data shown in table 1 it is clear that infection rate found increased with the rise in heat. In the month of January infection in all the snail species was very lowest amount but in February and March it increases comparatively. Ultimately in the month of April and May it shows the maximum rate of infection.

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