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# LARVAL MORPHOLOGICAL EVIDENCE TO HOST SNAILS M. TUBERCALATA AND M. SCABRA

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**ABSTRACT**:

*The relation between a digenetic trematode and its snail has resulted from the investigations in to the lifecycle of liver trematode. In this research study area number of scientist are interested to investigation of various types of snail's host infected from digenetic trematodes which mostly free in water medium and enter through mouth or tentacles of host body. Gastropod in the evolution of the sub class melaena thyroideus is shows evolution from the parasitic mode of life cycle according to host body habit and morphology. The work of parasitology of this research initiated early in 20th century to undertake or investigate larval trematode infection in the freshwater snails.*

**KEYWORDS**: *digenetic trematode , parasitic mode , freshwater snails.*

## INTRODUCTION

The trematodes are required 2 to 3 hosts a few species are known in which single snail hosts May serves. The egg laying generation lives in vertebrate and their eggs must reach water or dump soil where the miracidium already in the soil after some period the eggs which are liberated trematodes in the water and approach to words the intermediate host's snail. The terrestrial snail or bivalve. Entry in passive the egg is eaten by the trematodes which produces small eggs e.g. Heterophridae, opisthorchidae, brychylamidae and playorchidae.

It is also well-known fact that both terrestrial and aquatic snails are avoiding waters of faces and they gather ground the dung of vertebrate at the coast of the water bodies. The most active stage of trematode larva miracidium actively infected to the snail with tentacles, foot, mantle, respiratory tract has been observed.

The entry or infection of digenic trematode is very fast through the smooth organs they get entry in to the cells of host body which is lost the host cells. The larva affect secretion of mucoprotein constituting the intercellular cements by the secretion discharged from the penetration glands. This secretion found by Levin etal (1948) in Circadian in penetrate gland. Some the digenic trematode passes through the epithelial cell into the digestive tract and kidney in to the host body.

In the field of parasitology in particular digenean parasite trematode infection in to the body of intermediate host starts from swallowing trematodes, eggs or penetration of miracidial larval forms. After the entry of trematodes in the body of intermediate host snail M. tuberculata and M. scabra the parasites start their incubation period at particular organs of the body of host that period is known as prepotency period of the digenic trematode i.e. miracidium.

In the infection of intermediate host snail M. tuberculata and Melania scabra there are two types of the infection period such as prepetency period and post potency period. In this period prepotency period snails become inactive because of the glycoprotein and mucoproteins of the cells are shows lysis there are accumulation of digenetic trematode suck the food by its habitual mode of feeding. The hazard involved in making connections with suitable mollusca are truly enormous.

The miracidium suitable stable in the body of host snail which produces no of eggs and sporocyst with the feeding the tissue of snail body. There are successful miracidium produces and they are able to move from another host body they remove through excreta of snail as well as gas produces by Gastropods.

Almost all known digeneans have early stages which are parasitic (gastropods, scaphopods or melanoides) and the results if internal parasites of vertebrates. The parasites show asexual as well as life cycle in aquatic condition with the representative vertebrate host and invertebrate intermediate host. Asexual reproduction of digenetic larval trematode by multiplication of cyst and sexual reproduction depends on the host responsibility with the percentage of infection on the organization. The digenetic trematode parasitic shows complicated life cycle first two intermediate host are molluscan and third permanent host is the vertebrate cattle's or grazing animals are found by the trematode larva mostly redia and miracidium. The multiplication of or asexual population of miracidium from them sporocyst in the first two intermediate host cloudy they are produces and liberated from the body of first intermediate host and freely swimming in the water bodies for search of another host body.

After short period of acclimatization, the snails were observed for some time. The infection of parasite trematodes shows external effects on the body of snails Melania tuberculata and M. scabra. The proportion of total body weight of heavily infected snails. As result texture of shell of host snails are changed externally showing the infection of the parasite whole color changes in dark greenish color from red color.

The Melania tuberculata snail mostly benthonic in habit sometime it occurs on the surface of the water on the vegetation normally. While taking the food material from the soft soil surface they open mouth and radular movement brought forward forming proboscis with long antenna like as burrows. These snails are also Herbivores feed on aquatic plants some of the Melania scabra are also terrestrial in nature feeds on herbs, shrubs out of aquatic conditions. There are number of experiments to study the number of cercareal release from snail where infection takes place area of water resources and study the area of host snail. Krull (1941) reported the snail host pseudosaccineacollumella exposed to single miracidium of faciola hepatica the number of cercaria emerged ranged from the 14 to 629 per snail cost. Rothschild (1939, 1942) has indicated that as many million might emerge from a single host snail. Elon and George (1954) made observation on the number of daughters sporocyst and cercariae produced in phys-agyria after exposure to single and multiple Ochestosomatides egg exposures. Anderson and May (1991) these factors related to the patient infection. (Margolis et .al 1982, Bush et.al 1997). Correlation of infection with snail's size and shape by the parasite trematode. The studied reviewed by Sorenson and Minchella (2001) size of the snails also positively correlated with intensity of infection. Scientist (Smith 1984, Sturrock 1973, Kuresa et.al 1982, Lo Kev 1983, Woolhouse 1989 and Neimann and Lewis 1990) large snails are older an average than small snails within given population. In higher infection the number of miracidium larval trematodes shows longer infection. The large size of snail provides more Space for growth of cercarae with greater energy.

The global investigation snails are infected various strains cercarae and trematodes according to their size shape and color texture of whorls of shells. By the way of intermediate host snail infected by the number of species of trematode parasite which is one of the schistosomasis found all over the

world people also infected from trematodes larva miracidium and radia larval form. In Japan counted that 200 million affected from these diseases and 20,000 people dead from schistosome in all over the world. (Olivaria et.al 2004) the trematode parasite includes in group of platy helminthes they deserve economically and socially important because they are also fascinating animals or domestic animals to provide challenges

There are many freshwater snails which found in surrounding freshwater resources and they are also shows infection in their study by changing habit and oral texture of the body of snails. As per some scientist's pond snail L. stagnils is a Holareitic freshwater snail and a common host for many trematodes parasites species. One or more species of cercariae sometimes less than ten may be found in the freshwater and terrestrial gastropod (ITO 1980). The paladomusphetrosus is one of the freshwater snails found in the freshwater at Southern Thailand. This species common in areas where paragon musweatermani one of lung fluke that live in carnivores. Duangduen (2003) reported four types of larval trematodes from the freshwater snail. P. petrosus, Ashrafi et.al (2004) studied 4830 snails from Quil and province, Iran from the point of the trematode larval stages of liver fluke in the snail Lymnae gedrosiana only seven species infected with larval trematode species. Few furcocercous cercaria from Manipur (Gambhir et.al 2008) Sami and Ghaleb (2011) investigated larval stages of digenetic trematode prosobranch gastropod.

According to various experiment and investigation of the studied snails' varieties and infected larval trematodes the freshwater snails can become intermediate host for trematode cercariae which may be transmitted to people and domestic animals.

The present research work on freshwater snail M. tuberculata and M. scabra is in habitants of varieties of aquatic and terrestrial habitats. Viz freshwater ponds, pools ditches and dams were pond to get exposed varieties of natural and artificial stress conditions. There are some physical factors as well as chemical the habitats of snails are contaminated there can be chances of trematode infection through rainwater runoff with excreta of animals and human activities. All the aspects consider for the insight was framed to cover various insignificant characteristics of infected intermediate host snails.

Permanent parasitic castration was observed by pees (1934) in patella vulgate infected with cercaria patellae. Reduction in the size of external genitalia of coniobasis laoueata was observed by Woodard (1934) parasitized by trematode larvae. Sex reversal in peringiaulvae was observed by Krall (1935) infected with the larvae of halipeous occidualis. Gigantism was also reported by Rothschild (1936, 1941, 1941a) in peringiaulvae and littorine peritoides. Rees (1936) supported the view expressed by Pelseneer (1906, 1928) as regards the reduction in size of penis in gastropod infected with larval trematodes. He worked on the same snail (littorine littorea) infected with rediae of cercaria himasthla secunda or by rediae of lophocerca group. He observed that the larval stages of trematodes actually partially destroyed the molluscan gonads and hence reduction in size of overis and also gonadal functions. In 1936, he further studied the effect of parasitism of the larval trematodes on the tissues of littorine littorea. Rothschild (1938) worked on the same snail (peringia ulvae) and reported the parasitic castration. Pratt and Barton (1941) studied the effects of four species of larval trematodes cercaria larvae Cort and brooks, plagiorchia muris mumullen, cercaria vogena Cort and bracket, and diplostomum flexicaudum Cort and bracket) on the hepatopancreatic tubules in stagnicola emarginata anagulata. They observed reduction in the number of tubules with parasites filling the central area. In the same year Cort et al. reported the complete destruction of digestive gland of physa parkeri infected with larval trematodes.

Lysate (1941) reported the phenomenon of gigantism in littorina neritoides. Pratt and Lindquist (1943) reported that in stagnicola emarginata angulate infected with cercaria larvae or diplostomum flexicaudum there was no destruction or decrease in the total amount of hepatopancreatic tissue. There was a reduction in the number of tubules in areas where parasites were numerous, however the reduced number did not represent a loss, and rather tubules were displaced posterior ward. Pigmentation of the shell of the infected snail and depletion of the hepatopancreatic glycogen were noted by Dawes (1946). Axmann (1947) observed that no stored glycogen was found either in daughter sporocysts or young germ balls. Depletion of the hepatopancreatic glycogen was reported by von brand

and filen (1947) in australorbis glabratus infected with schistosoma mansoni. In India the work was started on these lines by Lal and Premvati (1955). They reported destruction of digestive gland of melanoides tuberculatus when infected with larval monostome.

A secondary effect of the destruction of hepatopancreas was described by Willey and gross (1957). They observed that the destruction of hepatopancreatic cells resulted in the secretion of carotenoid pigment (present in the hepatopancreatic cells) which scattered throughout the foot of the snail's host, littorina littorea parasitized by cryptocotyla lingus. Cheng and James (1960) reported the active ingestion of the cells of hepatopancreas of freshwater bivalve, sphaerium striatum by the rediae of crepidostomum cornutum. Najarian (1960) noted that the egg laying capacity of bulinus truncates was significantly reduced with the infection of larvae of schistosoma haematobium. Abolins-krogis (1960, 1963) studied the changes in the hepatopancreas of helix pomatia histochemically and related his observation to the regeneration of the shell. Snyder and Cheng (1961) studied the effects of the larvae of glypthelmis pennaylvaniensis on glycogen deposition in the hepatopancreas of helisoma trivolvia and observed that in noninfected snails the hepatopancreatic cells were filled with glycogen but in infected mollusc glycogen was greatly reduced.

Cheng and Snyder (1962) received then literature pertaining to mollusc infected by larval trematodes. They correlated the depletion of glycogen from the hepatopancreas of helisoma trivolvis with the degree of infection of glypthelmis pennaylvaniensis. They found out that the sporocysts of g. pennsylvaniensis initially invaded the inter tubular and inter tubular spaces in the hepatopancreas of the host but occupied the cavities created by the breakdown of the cell membrane of the host digestive gland. As regards the depletion in the glycogen and digestion of the cell, they stated:

The host glycogen is postulated to be digested by an enzyme secreted by the parasite. The hydrolyzed stages are absorbed and resynthesized as glycogen in developing cercariae. No glycogen is stored in the wall or in the board chamber of daughter approach cysts but is found in developing and fully developed cercariae. Motility of fully developed cercariae is directly correlated with the body glycogen content. Direct utilization of digested host glycogen without resynthesis and storage is postulated for daughter approach cysts.

In the same study Cheng and Snyder (1962) upheld the hypothesis of Sinitain (1931) where in it is started, "gast ropoda possess larger digestive gland than actually they require and hence can lose a considerable part of that organ to trematode parasites". Cheng and Snyder (1962 a) discussed the lipid metabolism in helisoma tivolvia infected with larvae of G. pennsylvaniensis cells of noninfected H. trivolvia (Nile blue sulphate technique). An increased amount of neutral fats was found in the same snail infected with G. pennsylvaniensis. The parasites stimulated greater lipid synthesis in the host's cells. Fatty acids and vacuoles in addition to neutral fat were observed in the hepatopancreatic cells of heavily infected snails. Fatty acids were found in the body of developing cercariae adhering to the walls and in the broad chamber of daughter sprocysts. deposition of these fatty acids was concurrent with the deletion of fatty acid from throst's cells, suggesting the transport of these through sporocyst wall. Cheng (1962) noted reduction in the quantity of glycogen and lipid in helisoma trivolvis infected with echinoparyphium larvae.

## CONCLUSION:

Freshwater snails have shown a high level of importance in public health as well as in veterinary medicine. This study has contributed to obtaining new and more accurate information about trematode biology. These findings have served as an initial step in understanding the epidemiological situation and establishing trematode infection control programs in humans and animals. This study provided important information regarding how each cercarial type is developed within a particular trematode family or genus. Moreover, this study confirmed that ITS2 data of cercarial stages can be applied to investigate any possible phylogenetic relationships between different trematode species.

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