



Impact of Environmental Factors on Fresh Water Snails and Cercarial Infection in Padamsar Pond at Jodhpur (Rajasthan)

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ABSTRACT

A survey was undertaken in Padamsar Pond of Jodhpur district of Rajasthan. The analysis of study revealed that population of fresh water snails and cercarial infection was influenced by seasons. The investigation was carried out by May 2019 to March 2020. The present study has revealed that the following molluscan species were identified – *Lymnea accuminata*, *Indoplanorbis exustus*.

Keywords: Padamsar Pond, Molluscs, Population, *Lymnea accuminata*, *Indoplanorbis exustus*.

INTRODUCTION

Most of the gastropods and pelecypods (Bivalves) represent the fresh water habitat for molluscs. Molluscs are unsegmented coelomate animals found almost all fresh water habitats because of their feeding habits, majority of snails act as intermediate host harbouring sporocyst, radial and cercarial stages or as a secondary intermediate host for metacercariae of the same or different trematode species.

Some of the work done by Shariff et al. (2010), Athari et al. (2006), Bargus M.D. et al. (2009), Chai et al. (2002), Soliman (2008), De Kock et al. (2003). They provide us useful information on snails and their larval trematodes. The present study was designed as under to provide ectoparasitological information on the snails and their larval trematodes.

MATERIAL AND METHODS

To study the ecology of snails and their larval trematodes in association with environment and climatic factors, frequent surveys were conducted in proposed area. Water samples for these analysis were collected according to approved limnological methods (Welch 1952 and Alpha 1998). For every sampling date, water was collected between 8-10 AM only. The samples were brought to the laboratory in wide mouthed screw capped, airtight

and opaque polythene containers. The investigation was carried out from May 2019 to March 2020 for a period of 11 months. Sample collection in water bodies situated in shallow areas of each water body.

The snails were collected either handpicked or dragging a net through water and were transported to the laboratory. The snails were transferred to glass water bowls and well-aerated aquaria already provided with a rich water plants.

All snails were investigated for parasitic infection after identification of species, each 1 or 2 snails were placed in pet radish containing dechlorinated water and then they were placed against light for 3 to 5 hours. The snails were examined for the presence of cercariae by shedding and crushing method. If no cercariae shedding were observed, snails were pressed and crushed between two square pieces of 15*15 glasses, and studied in order to find cercariae sporocyst and rediae. The sporocyst and rediae were examined under dissection microscope, collected cercariae were observed carefully and mixed in 90% ethanol and 10% formaline and cleared in lactophenol and stained with azocarmine and neutral red. After measuring different parts of cercariae were identified by a systematic key reference (Frandsen & Christensen, 1984, Christian 2003).

Table : Study Of Cercarial Infection In Padamsar Pond.

Month	Snail Population (Per Sq. Ft.)	Snail Examined			Snail Infected			% Of Infection			Types Of Infection	
		L.a.	I.e.	Total	L.a.	I.e.	Total	L.a.	I.e.	Total	L.a.	I.e.
May	6	12	6	18	-	2	2	00.00	33.33	11.11	2 furco	2 amphi
June	4	9	4	13	5	-	5	55.55	00.00	38.46	-	3 mono
July	9	8	5	13	6	2	8	75.00	40.00	61.53	3 xiphidio	2 mono
August	12	15	5	20	-	1	1	00.00	20.00	5.00	-	-
September	10	7	10	27	-	2	2	00.00	20.00	7.40	1 amphi	1 gymno
October	4	10	6	16	2	-	2	20.00	00.00	12.50	2 mono	2 furco
November	7	12	9	21	4	1	5	33.33	11.11	23.80	-	-
December	4	14	7	21	3	-	3	21.42	00.00	14.28	-	-
January	7	9	4	13	5	1	6	55.55	25.00	46.15	2 xiphidio	3 amphi
February	6	17	5	22	8	-	8	47.05	00.00	36.36	2 mono	-
March	7	10	9	19	4	-	4	40.00	00.00	21.05	2 amphi	2 furco

TYPES OF CERCARIAE

Trematodes are a diverse group of endoparasite requiring molluscan and vertebrate as intermediate and definitive host in their life cycle. The following types of cercariae are found during study.

Xiphidio cercariae : the cercariae have a stylet at the anterior margin of the oral sucker. The cercariae swim rapidly, bending themselves for about 55 seconds then stretching out for 2-3 seconds.

Amphistome cercariae: it poses large ventral sucker situated at the posterior margin of body. The oral sucker is small, the body is large and tail is simple and globular.

Furcocercous cercariae : they have a forked tail cercariae with tails terminating as a bifurcation.

Monostome cercariae: ventral sucker is absent. They have one type excretory system. Tail is contractile and ductile.

Gymnocephalus cercariae: poor swimming, lacking piercing spine or stylet.

RESULT

Total 2 species of snails were found to be most prevalent in this area. These species are *Lymnea accuminata*, *Indoplanorbis exustus*. The study of cercarial infection in snails have done in Padamsar Pond. The snail population was highest in the month of August 2019 (12 per square ft) while infected snails population was highest in July 2019 (8) and February 2020 (8). % of infection was highest in July 2019 (61.53 %).

Types of infection found as follows:

In *Lymnea accuminata*, 2 Furcocercous, 5 Xiphidio cercous, 3 Amphistome and 4 Monostome were found.

In *Indoplanorbis exustus*, 4 Furcocercous, 5 Amphistome and 5 Monostome, 1 Gymnocephalus were found.

DISCUSSION

Various studies (Yadav, 2000, Gaur 2005) of cercarial infection shows that the percentage of infection of snails are comparatively much higher in Rainy season. During present investigation it was noticed that in Padamsar Pond the snail population was highest in the month of August 2019 (12 per square ft) and the % of infection was highest in July 2019 (61.53 %). Total cercariae found were 6 Furcocercous, 5 Xiphidio cercous, 8 Amphistome and 9 Monostome and 1 gymnocephalus.

The present study has revealed that % of infection was highest in July 2019 in Padamsar Pond. The reason was plenty of water was available because of rainy season and the pond is polluted more than the rest.

Declaration: We also declare that all ethical guidelines have been followed during this work and there is no conflict of interest among authors.

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