

Effects Of Detergents On Histology Of Ovary Of Female Fish *Poecilia Reticulata* Collected From Two Lakes Of Buldana City

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Abstract

Poecilia reticulata is found in all kinds of water. *Poecilia reticulata* act as a biological controller by of mosquitoes larvae present in water. In household sewage most of the detergent constituting number of carbonates, phosphates, sulphates and chlorides get dissolved and it adversely affects the physiological activities of aquatic animals for e.g. fishes, molluscs, insects etc. Detergents cause hypertrophy and hyperplasia of the cell types and also fish oestrous cycle become irregular. Due to detergents eggs formation of *Poecilia reticulata* get reduced. Present study was done from the fishes collected from the Sangam Talao and Sarkari Talao present in the heart of Buldana city.

KEYWORDS:-Detergents, Physiological activities, Oestrous cycle, *Poecilia reticulata*.

Introduction

The mosquito fish *Poecilia reticulata* (Guppy) is a member of family poecillidae. They are extremely prolific, breed throughout the summer and may have up to 3-5 broods annually.

Male and female *Poecilia reticulata* differentiated very easily. When mature female are larger and rounded than males. Females are dull grey and white ,while males are very colourful.Female appear plum when pregnant and often have a black spot(gravid spot) on their bellies.*Poecillia reticulata* is a useful fish as it is insectivorous fish and useful to mankind by keeping water algae, fungal free and ate larvae of mosquito. *Poecilia reticulata* is commonly called as (guppy). It is found in all kind of water. Offices of Z.P.,Nagarpalika and Gram panchayat use to supply guppy fishes in water tanks for controlling malaria..

It has been observed that the egg production varies not only among different species but also within the species depending upon its length, weight of gonads etc. influenced by environment (Singh 1991). Pesticide pollution above Maximum Acceptable Toxicant Concentration (MATC) induces adverse changes in reproductive organs of fishes (Kaur and Toor, 1977, Kapur et.al., 1978, Joshi and Rege, 1980, Mukhopadhaya and Dehadrai 1980, Saksena et.al. 1981, Gupta and Shrivastava 1980,Lakhani and Pande1995). In *poecilia reticulata* parthenogenesis development takes place in which the sperm simply induce the egg to develop but take no part in fertilization.

Materials and Methods

The experimental fishes were collected from the Sangam Talao and Sarkari Talao in Buldana city acclimated to the laboratory condition for a fortnight. The acclimation was done constantly aerated with oil free air to maintain constancy of oxygen; the fish were fed with live tubifex worms.

Three groups of fishes are maintained .One group of fishes is called as controlled because they are acclimatized in laboratory condition and after 15 days 04 of the female fish were sacrificed. They were dissected to remove ovaries. The female gonads were rinsed in saline to remove cell debris and blood and

fixed in a Bouin's fluid.

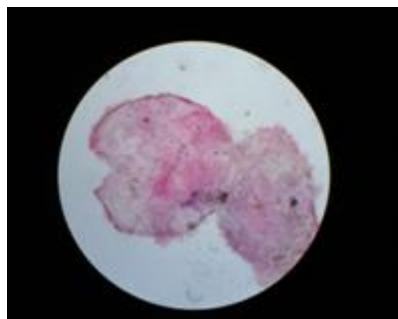
Second group of fishes is called experimental group(A) (Fishes brought from Sangam Talao) and third group is called as experimental group(B) (Fishes brought from Sarkari Talao).Both grouped fishes were sacrificed and ovaries were dissected out, washed with saline water and fixed in Bouin's fluid. The histological processes of micro technique were used according to method of Grindstones and Skaer (1972). 10M sections were taken with the help of rotary microtome. Double staining technique using haematoxyline and eosin were utilized. Chemical analysis of water control was done.

Observation

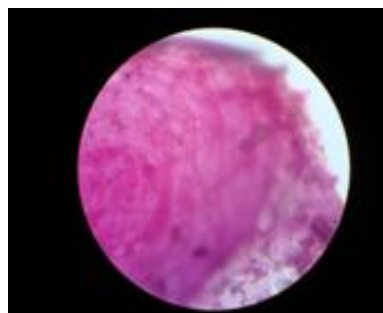
The gonads develop from coelomic epithelium .The ovaries are naked (Gymnoarian). Ova are discharge in to the coelomic cavity through the anteriorly placed oviduct funnel of mullrian duct. The ovaries are paired elongated sac like structures lying in the abdominal cavity ventral to the kidneys they are attached to the body wall by means of mesovarium. Posteriorly both the ovaries have short oviduct. The two oviduct fuse to form common urinogenital opening. Fertilization takes place while egg is within the follicle. The egg continues its development within ovarian cavity (ovarian gestation)

In the experimental female fishes a significant increase in levels of atretia was observed compaired to ovary of the controlled fish. The cause of atretia is possible due to effect of calcium, magnesium and chlorides present in water.

- 1) Effect of chemicals in to developing oocytes
- 2) Through general metabolism and growth
- 3) On hormone controlling oogenesis



1) Low magnification

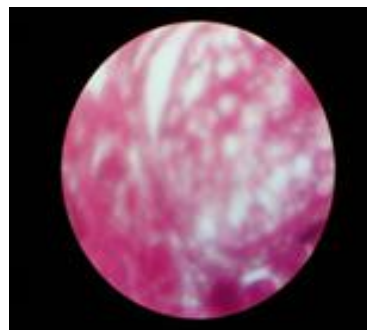


2) High magnification

Fig:- 1,2 -Showing ovary of controlled fish (*Poecillia Reticulata*).



3) Low magnification

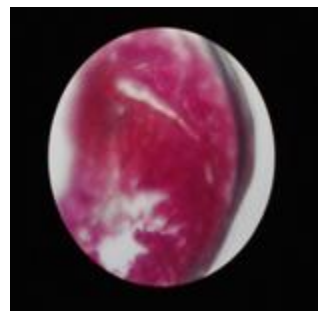


4) High magnification

Fig-;3,4-Showing atretic ovary of fishes collected from Sangam Talao.



5) Low magnification



6) High magnification

Fig-5 and 6 showing atretic ovary of fishes collected from Sarakari Talao.

Table 1 Chemical analysis of water sample.

Sr. no.	Water Sample	Chemicals		
		Ca+	Mg+	Cl ₋
1	Control	1.4 ppm	2.1 ppm	4.3 ppm
2	Sangam Talao	4.2 ppm	3.1 ppm	7.2 ppm
3	Sarkari Talao	5.0 ppm	4.5 ppm	9.2 ppm

Result and Discussion:-

Female fish *poecilia reticulata* which are controlled shows normal ovary after observation under microscope. It appears bilobed and lobulated, enlarged structure. But the fishes collected from the Sangam Talao, shows significant increase in levels of atretia, as compared to the ovary of the control fish.

Fishes collected from the Sarkari Talao which is highly polluted and shows high deposition of the detergent in the water. Due to the presence of more detergent, there is high accumulation calcium, sulphate in the water, and due to this the ovary of female *Poecilia reticulata*, collected from the Sarkari Talao shows highly atretic ovaries as compared to the ovary of fishes collected from Sangam Talao.

Female *Poecilia reticulata* discriminate against males which are infected by parasites such as bacteria *G. turnbulli*, on the basis of their reduced colour pattern and courtship activity (Houde & Torio, 1992; Houde, 1997; Lopez, 1998). Feeding response was significantly reduced in fish *Poecilia reticulata* with parasite burdens (Houde, 1997). The behavior of Female fish *Poecilia reticulata* also changed depending upon on infection status of bacteria (C. Van Oosterhout, J. Cable). Due to decomposition of detergent in water bodies there is increased in bacteria and fungus population.

Conclusion-:

The histological changes in the ovaries caused by detergent are severe on long term exposure than short term. This may cause deformities in the next generation.

As *Poecilia reticulata* is reared for biological control of mosquitoes, care should be taken to see that detergents containing high calcium, magnesium and sulphates do not exceed in the water-bodies where they are reared.

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