

ASSESSMENT OF CHROMOSOMAL ABNORMALITIES IN KIDNEY TISSUE OF DIFFERENT FISHES FROM CHAUR OF KHARAGPUR HAWELI (MUNGER)

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Article Received on 09/11/2023

Article Revised on 30/11/2023

Article Accepted on 21/12/2023

ABSTRACT

Water pollution is one of the major global issue of entire world. One of primary cause of aquatic pollution is the contamination of water bodies by toxic chemicals or biochemical waters. Chours are water resources present near river or agricultural land in which agricultural effluents containing biochemical wastes are drained and collects. In present study chromosomal abessation test was done in which 300 plates were observed in 3 groups of Fishes (*Anbas testudineus*) of chaur of Haweli Kharagpur. Both structural & gross type of abnormalities were found including Breaks, Gaps, ring, Fragmentation. In first group total abnormalities were 24 (8% + 1.56%) in 2nd group total abnormalities were 32 (10.6 ± 1.77) and in 3rd group abnormalities were 22 (7.3 ± 1.5). The result of Haweli Kharagpur, could not cause genotoxic effect.

KEYWORDS: Water Pollution, Chours, Genotoxicity, Chromosomal abnormalities.

INTRODUCTION

Fish conservation now a day is a pressing issue like some other flora and fauna and is far from fully known reasons of the habitat loss which may result in biodiversity losses before the full species diversity is known. It may be caused by damming of rivers, deforestation, water pollution, mining, poor agricultural practice or inadequate management practice, which is a decrease in availability of living resources, a serious social and economic issue especially for developing nations, India is one of them.

The rivers, ponds etc. are the ecosystems, which are affected by environmental pollution at most. The release of domestic, industrial, and agricultural origin pollutants into water sources without adequate filtering and their accumulation lead to water pollution, and many organisms living in streams face with the risk of extinction. Such events obviously indicate the necessity of researching the pollution level of streams (Taş, 2006).

At present time the pollution is affecting the ecosystem badly specially water pollution resulting from agricultural waste runoff water into the small ponds is causing toxicity in the aquatic life. The present work is designed to investigate the level of genotoxicity in the fishes of chours of Haweli Kharagpur, Munger through the chromosomal aberration assay in three air breathing fishes.

MATERIAL AND METHODS

Chromosomal aberration test it has done by the method of (Nagpure et. al., 2007). Healthy fish (60- 100g) were used and injected 0.03% Colchicine intramuscularly @ 1 ml per 100g of body weight and kept fish alive for 1.5- 2 hrs.

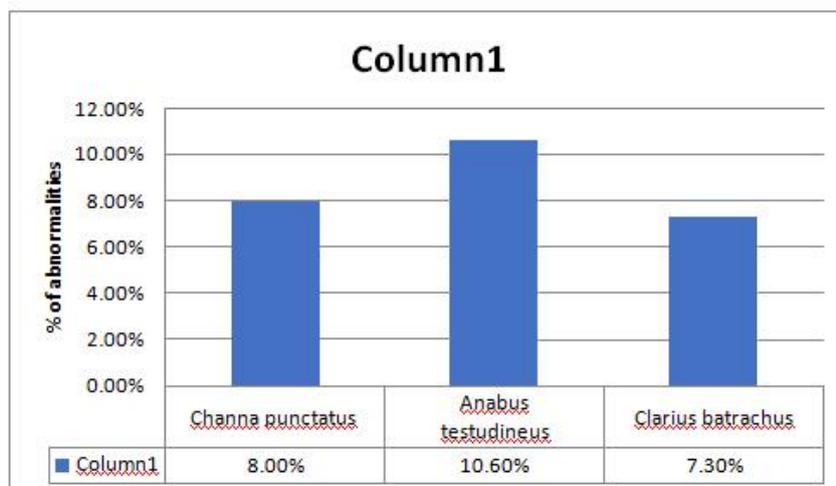
Statistical Analysis

Student's "t" test was applied for statistical analysis of data.

Table 1: Incidence of chromosomal abnormalities in kidney tissue of different fishes from chaur of Kharagpur Haweli (Munger).

S.No	Groups	No. of metaphase analyzed	Types of abnormalities								Total no. of abnormalities
			Structural type				Gross type				
			Ctb	Ctg	Ring	mf	hypo	pol	stic	clum	No. % ±S.E.
1	<i>Channa punetatus</i>	300	3	5	---	2	6	3	3	2	24 8 ± 1.56
2	<i>Anabus testudineus</i>	300	5	5	2	3	8	5	4	---	32 10.6 ± 1.77
4	<i>Calrius batrachus</i>	300	4	3	2	1	5	1	4	2	22 7.3 ± 1.5

Ctb- chromatid break, Ctg- chromatid gap, Mf- minute fragment, hypo-hypoploidy, pol- polyploidy, stic- stickiness, Clum- clumping.



Graph represents the total percentage of chromosomal abnormalities in different groups of fishes.

RESULT AND DISCUSSION

All collected fishes from chaur were divided into three groups and all groups contains different types of fishes. In all groups of fishes having different number of chromosomes, in first group, Channa punetatus, second group, Anabas testudineus and third groups were Clarius batrachus and their chromosome numbers were 32, 46 and 50 respectively.

In all groups total 300 plates were observed. Both structural and gross types of abnormalities were found in all the groups of fishes. The breaks, gaps, rings and fragmentations are common in structural abnormalities and hypoploidy, polyploidy, stickiness and clumping were common gross types abnormalities.

In the first group of fishes, total abnormalities were found 24 (8% + 1.56) when consider separately, number of structural abnormalities and gross types of abnormalities were found 10 and 14 respectively.

In the second group, total chromosomal abnormalities were found 32 (10.6% + 1.77) in which structural abnormalities were 15 and number of gross types of abnormalities were 17.

The third group of fishes contains total abnormalities were 22 (7.3 + 1.5) among these number of structural abnormalities were 10 and number of gross types of abnormalities were 12.

When compared genotoxicity among all groups of fishes, The second groups Anabas testudineus shows maximum genotoxic effect than other three groups (Table-1).

The numbers of abnormalities in all groups were found more or less as control level. This result shows that fishes of chaur from Kharagpur Haweli, Munger could not show genotoxic.

CONCLUSION

The present work shows that the water of chours are fit for aquatic bodies and couldn't induce genotoxicity but government should draw attention towards renovation of these small scale ponds of villages.

REFERENCES

1. Taş, B., 2006. Derbent Baraj Gölü (Samsun) Su Kalitesinin İncelenmesi. Ekoloji, 15(61): 6-15.
2. Nagpure, N.S., kumar, R, Kushwaha, B., Singh, P.J. and Srivastava, S.K.(2007): Genotoxicity assessment in fishes – A practical approach. National Bureau of fish genetic resource. Lucknow India, Pp63.