

# Impact of Toxic Sediment on Stomach and Intestine of *Tilapia Mossambica*

Dr. Kalpana Verma Naraynkar

**Abstract:-** In this study we procured toxic sediment from Amlakhadi water channel in Bhuj where paper, dye and textile industries were dumping their toxic wastes. We took *Tilapia mossambica* to test the toxicity of the sediment in the lab to find the NOEC for their stomach and intestine.

## I. AIM OF THE EXPERIMENT

To find the NOEC for stomach and intestine of *Tilapia mossambica*.

## II. INTRODUCTION

Stomach and intestine are sensitive organ to toxic external environment in fishes. Intestinal villi act as absorption organ of nutrients and water in digestive tract.

## III. METHOD

The organs like stomach and intestine were taken out from the fishes *Tilapia mossambica* at three different concentrations on 0, 5<sup>th</sup>, 10<sup>th</sup>, 20<sup>th</sup> and 30<sup>th</sup> days, in triplicate, to observe gross anatomical changes. These tissues were fixed in 10% formalin for 48 hours. They were then dehydrated in 90% alcohol for an hour and three times in absolute alcohol for 45 minutes separately. The samples were then cleaned two times in xylene for 30 minutes and embedded in paraffin thrice each time for 45 minutes. The samples were then blocked, allowed to cool, cut on a rotary microtome at 7  $\mu$ m and mounted sections were dewaxed in xylene and dehydrated serially in alcohol and then stained sections were washed in tap water, dipped in 2% acid alcohol and washed in tap water, followed by Scotts for water substitute. The sections were dehydrated through 50%, 70%, 90% alcohol for 2 minutes each. Then stained in eosin for 4 minutes and dipped in absolute alcohol for one minute each. Finally, stained sections were cleaned in xylene for 5 minute each and mounted on a slide with DPX. Prepared section were examined and photographed under a light microscope.

## IV. RESULTS

Stomach and intestinal tissue show structural degeneration in highest concentration I.e, 0.8 gm/l. In medium concentration i.e. 0.5 gm/l serosa was thickened, while exhibited no abnormality in lowest concentration as well as in control in *Tilapia mossambica*.

Nutrient & Organic Load	
Organic carbon (%)	2.72
Organic matter (%)	4.7
Total Nitrogen (mg/100 gm)	245
Total Phosphorus (mg/100 gm)	49.5
Heavy Metal Concentration (in mg / 100 gm)	
Cadmium	6.0
Chromium	7.18
Copper	58.27
Lead	6.19
Iron	2763.5
Manganese	47.4
Zinc	109.75

Table 1:- Nutrient, Organic Load and Heavy Metal Concentrations in Composite Sediments from Amlakhadi Channel

### ➤ Histopathological Studies *Tilapia mossambica*

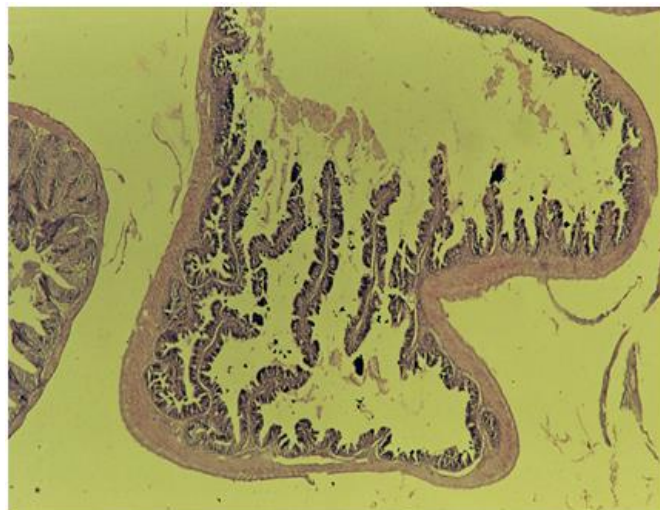


Fig 1:- 20 Day *Tilapia* 0.8 gm/l showing stomach showing marked loss of exhibiting marked loss of the mucosa

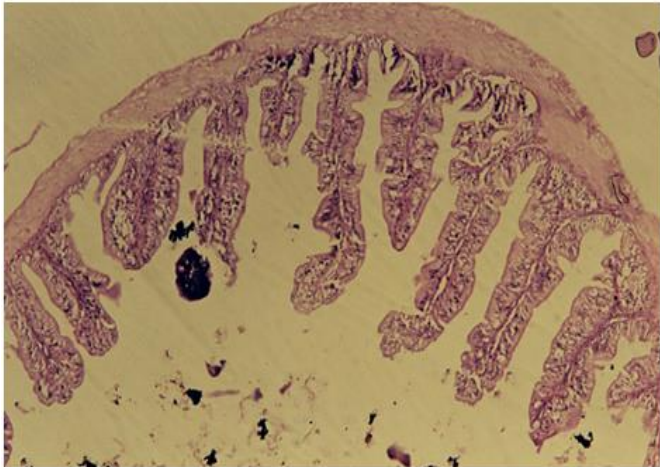


Fig 2:- 30 Day Tilapia 0.8 gm/l. Intestine showing distension and partial degenerative changes

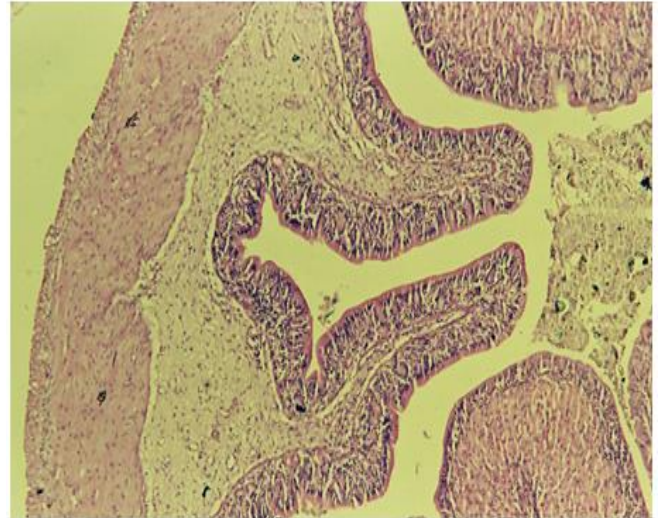


Fig 5:- 30 Day Tilapia control. Normal intestine

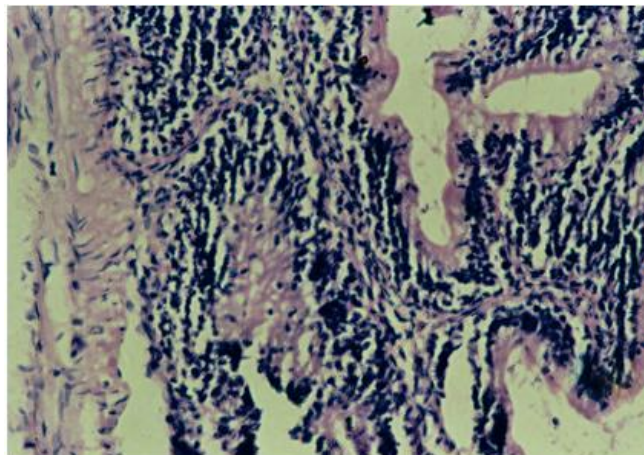


Fig 3:- 30 Day Tilapia 0.5 gm/l. Note infiltrating polymorphonuclear cells in the gastric mucosa

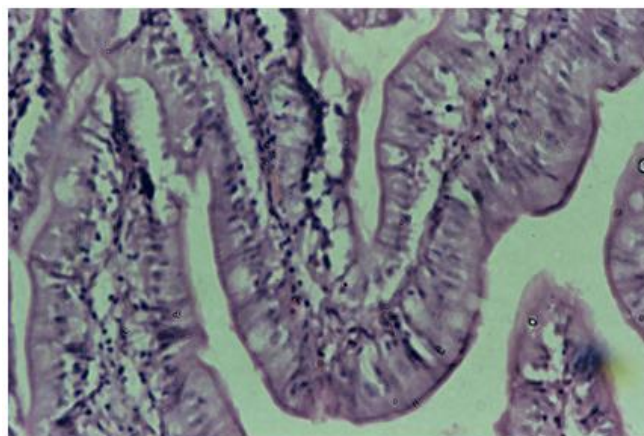


Fig 4:- 30 Day Tilapia 0.3 gm/l showing normal looking intestine

## V. DISCUSSION & CONCLUSION

Histopathological changes in the stomach and intestine of Tilapia in highest concentration of sediment were severe as evident from the degenerative change in the structure of stomach and intestinal tissues. There was moderate changes like thickening of serosa in the medium concentration of sediment while there was no abnormality detected in lowest concentration.

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