

Summary

This study was carried out to investigate the effect of crude aflatoxins either by intraperitoneal or oral route on cultured freshwater fish "*Oreochromis niloticus*".

The obtained results could be summarized as follows :-

- LD₅₀ dose for *Oreochromis niloticus* was 0.5 mg/kg of body weight / 10-days.
- The clinical and post-mortem findings in *Oreochromis niloticus* exposed to intraperitoneal injection with crude aflatoxins revealed lethargy, skin darkening and anemia. The total leucocytic count significantly decreased especially in fish inoculated with highest doses of crude aflatoxins. The liver of aflatoxicated fish was grayish to yellowish brown in colour with hemorrhagic patches of various sizes. Also, gall bladder was distended and spleen was pale and shrank.
- The histological findings included vacuolar degeneration and necrosis of hepatocytes and the haemopoietic tissues of spleen and kidney. Depletion of haemopoietic elements and activation of melanomacrophage centres were also seen in spleen and kidney.
- Different aflatoxin residues were detected in fish flesh. Their

values were directly proportional to the aflatoxin inoculated dose.

- *Oreochromis niloticus* fed crude aflatoxin contaminated diets with levels equal to half of LD₅₀ (0.25 mg/kg. b.w.); the LD₅₀ (0.5 mg/kg.b.w.) and twice the LD₅₀ (1 mg/kg.b.w.) for 10-days did not show any mortalities or clinical manifestations, only milder post-mortum changes and histological lesions than those of intraperitoneal aflatoxication were seen. Also, the hematological picture was almost normal.

- Aflatoxin residues also, were detected in fish flesh fed diets contaminated with 0.5 or 1 mg/kg. b.w.

- The phagocytic activity of kidney macrophages derived from orally aflatoxicated *oreochromis niloticus* were significantly decreased than that of non-toxicated controls.

- The chronic orally aflatoxicated *Oreochromis niloticus* showed significant decrease in body weight with 60% mortalities at the end of 22-weeks experimental period. Clinical signs and post-mortum changes were similiar to the intraperitoneal aflatoxicated fish, in addition to the appearance of small grayish to yellowish nodules on the liver of fish fed crude aflatoxin (50 ug/kg feed) contaminated diet for 16-weeks and more. Similarly, packed cell volume, hemoglobin concentration and erythrocyte count were significantly decreased than those of

control fish. Also, total leucocyte count and lymphocyte percent were significantly decreased, while neutrophil percent was significantly increased.

- The histological lesions showed the forementioned changes in addition to pre-carcinogenic changes in liver of fish starting at the 16th-week experimental period.
- The aflatoxin residues were detected in fish flesh firstly at the end of the 16th week of feeding experiment, after which it continued to rise with the progress in feeding period.
- The phagocytic activity of macrophages collected from chronic aflatoxicated fish was significantly reduced.