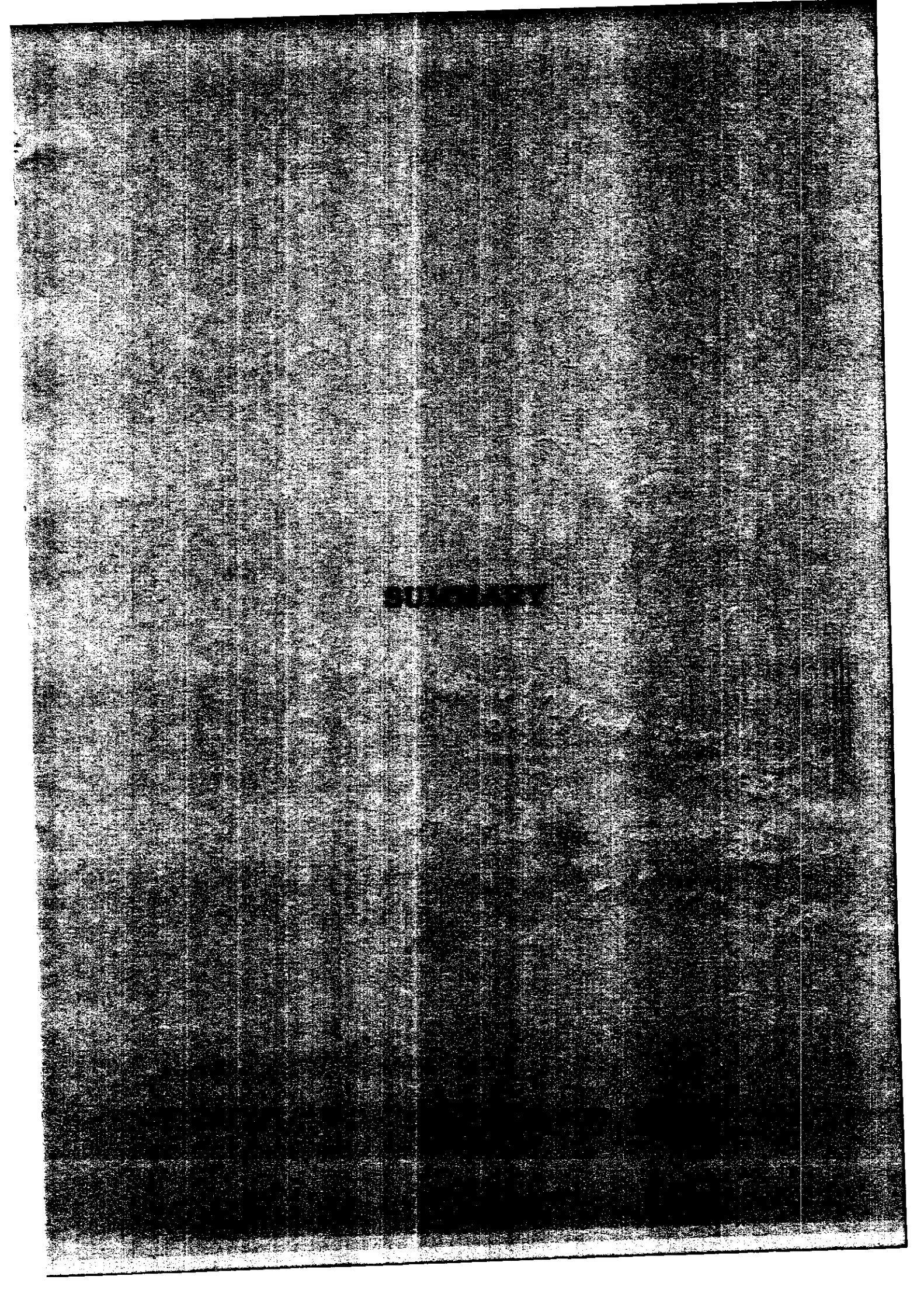

SUMMARY

The effect of herbicide " oxadiazon " as a one sort of pollution on the most available and adaptable fishes (*Clarias lazera* and *Cyprinus carpio*) were the subject of this investigation. The fishes were sorted into three groups, the first group served as control, the second and the third groups were subjected to the concentration of 2 ppm and 4 ppm oxadiazon respectively.

The fishes were subjected to the herbicide for two successive weeks and the samples were taken after 3, 7 and 14 day, then they were transported to water free from any toxicant and the samples were taken after 3 and 7 day. The response of the fishes to the oxadiazon in the present work were studied by examining the leucocyte enzyme cytochemistry, hormones, and biochemical parameters. The obtained results are summarized as follows :

Signs of intoxication of ***Clarias lazera*** and ***Cyprinus carpio*** were symptomised by excitability, rapid swimming activity, followed by disorientation and marked reduction of feeding activity. These symptoms became pronounced post - exposure to the following doses. The fishes exhibited reported muscular spasms especially after 7 day of treatment where the skin of the treated fish became pale in colour and covered with mucous secretion.

In case of fishes which had been transported to fresh water, most of the above symptoms which were noted after the treatment period, disappeared and the fishes started to behave normally.

When the fishes were subjected to oxadiazon for long period, some granulocytes were hyper or hypotrophied with cytoplasmic vacuoles and inclusions at the periphary of the cell with densely staining nuclei, some cells were hypergranulated or degranulated, and cells of various stages of degeneration and pyknosis were observed.

(1) The effect on the leucocyte enzyme cytochemistry

The leucocyte of fishes were stained for periodic acid schiff (PAS), peroxidase, sudan black - B, non - specific esterase alkaline phosphatase and acid phosphatase. Four cell types were identified viz; lymphocytes, thrombocytes, monocytes and granulocytes (neutrophil, eosinophil and basophil).

All leucocytes were positive PAS reaction. After oxadiazon exposure, the reaction increased according to the duration of exposure. The reaction post 4 ppm treatment was higher than that of 2 ppm oxadiazon.

The reaction of peroxidase in normal fishes was strong in granulocytic series and negative in lymphocyte, thrombocyte and monocyte, the reaction became stronger and the cells were hypertrophied after 14 day of exposure to oxadiazon.

The sudan black - B staining was observed only in the neutrophil, the reaction increased in its intensity with the long duration of treatment and some cells were hypertrophied while others had disturbed contour after transportation of fish to fresh water.

In both the contorl and treated fish a very weak reaction was observed for alkaline phosphatase in neutrophils and for non - specific esterase in lymphocyte, thrombocyte, monocyte and granulocyte.

Acid phosphatase reaction detected as weak reaction in lymphocyte and monocyte, moderate to strong in neutrophil and eosinophil. The activity decrease post exposure to oxadiazon and the granulocyte appear had moderate reaction.

(ii) The effect on plasma hormones

(i) Prolactin

The plasma hormone level showed high significant increase in the fish group exposed to 2 ppm oxadiazon and further increase post 4 ppm treatment. When the fishes were transported to fresh water, the hormone level decreased significantly but the value still higher than normal.

(2) Insulin

There was a significant decrease in the plasma insulin level during exposure to oxadiazon. The recovery in hormone level appeared after transportation of fishes to fresh water.

(3) Glucagon

There was a significant increase in the plasma glucagon level which become highly significant with high concentration of oxadiazon, and restored the normal level after 7 day in fresh water.

(4) Cortisol

Significant increase of cortisol level in plasma was observed after treatment of fishes with both 2 and 4 ppm oxadiazon. Post fresh water transportation, the levels were returned to that of the control values.

(5) Adrenocorticotrophic hormone (ACTH)

The significant increase of plasma ACTH hormone level was correlated to the concentration of oxadiazon. The highest value of this hormone was observed after 7 day of 4 ppm exposure, while there was no significant change after the fishes were transported to fresh water.

(iii) The effect on the biochemical parameters

(1) Sodium

The plasma sodium level was highly significant after oxadiazon exposure, and the increase was directly correlated with the time and concentration of oxadiazon, plasma sodium level returned to about the control value after transportation of fishes to fresh water.

(2) Potassium

The increase of potassium level in plasma of the oxadiazon exposed fishes was not significant. After transportation there was a gradual decrease in potassium level.

(3) Glucose

Hyperglycemia observed in the fishes subjected to oxadiazon and reach the maximum level after 7 days, then decreased gradually with time, and restored the normal level when the fishes transported to fresh water.

(4) Lactate

The plasma lactate level increased significantly post oxadiazon exposure, but the level decreased after that till it reached the normal value.