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## SUMMARY AND CONCLUSION

This study was conducted to throw the light on the effects of *Clarias lazera* exposure to the herbicide thiobencarb in concentrations of (1.0 & 2.0 ppm) on liver and kidney functions furthermore, studying the effect of thiobencarb at both concentrations on total proteins, albumin, globulins, glucose, cholesterol, triglycerides and cholinesterase enzyme activities. As well as its effect on some serum electrolytes (calcium, sodium and potassium). The histopathological changes were also recorded. The results are summarized as follows:

### **\* Biochemical effects:**

#### **1- Liver function tests:**

The exposure of catfish (*Clarias lazera*) to both concentrations of thiobencarb resulted in a significant increase in serum levels of AST, ALT and ALP along the course of the experiment (14 days). Whereas the activities of these enzymes were decreased during the recovery period (7 days).

#### **2- Serum total proteins, albumin & globulins:**

Serum total proteins, albumin and globulins showed a marked increase during the entire period of exposure, then returned to their normal limits during recovery period.

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### **3- Serum glucose:**

The exposure of catfish to thiobencarb in both concentration resulted in non significant increase during the entire period of the experiment, as well as during recovery period.

### **4- Serum cholesterol and triglycerides**

Serum cholesterol and triglycerides were significantly increased along the entire period of exposure whereas decreasing occurred during recovery period.

### **5- Kidney function tests:**

Thiobencarb at both concentrations displayed a significant elevation of serum levels of urea and creatinine during the entire period of exposure. These levels were decreased during the recovery period.

### **6- Serum electrolyte levels:**

The exposure of catfish to (1.0 & 2.0 ppm) of thiobencarb resulted in a significant increase in serum calcium along the entire period of exposure while there was a significant decrease during the recovery period.

The serum sodium and potassium were significantly increased in response to exposure to thiobencarb (1.0 & 2.0 ppm ) during the entire period of exposure while there was a significant decrease during the recovery period.

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**7- Serum cholinesterase enzyme:**

The serum cholinesterase enzyme activity was significantly decreased during the entire period of exposure to both concentrations of thiobencarb (1.0 & 2.0 ppm) followed by significant increase during the recovery period.

**8- Histopathological changes:**

The histopathological changes revealed degenerative changes in the liver, kidney, spleen, gills, heart and skin in response to thiobencarb at both concentrations (1.0 & 2.0 ppm).

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## CONCLUSION

From this study, it is concluded that the exposure of catfish to both concentrations of thiobencarb resulted in deleterious effects on liver and kidney functions. Furthermore, thiobencarb leads to disturbances in serum total proteins, albumin, globulins and electrolytes levels. Additional disturbances in glucose, cholesterol, triglycerides and cholinestrace enzymes level takes place. Our histopathological findings demonstrated that exposure to both concentrations of thiobencarb reflected various degenerative changes in heart, liver, kidney, spleen, gills and skin.

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