SUMMARY

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Anticoagulant rodenticides are considered the most important pest group in resistance of rodents, cause reductions in numbers of rodents which caused damage to crops, animal, birds, fields and factories.

During the last period, some rodents resist the rodenticides due to the wrong use of these rodenticides and the use of them for a long time, so the present study try to evaluate the effect of a mixture between two rodenticides.

The aim of the present work is to evaluate the physiological and biochemical changes induced by anticoagulant rodenticides (chlorophacinone, brodifacoum and a mixture of them) in adult male albino rats.

The LD_{50} values of the two tested anticoagulants and mixture of them were estimated to detect the sublethal doses, which will be given to the tested animals (1/30 LD_{50}, 1/50 LD_{50} and (1/60+1/100) LD_{50} respectively).

Rats divided into 4 groups:

1- The first group: used as control group.

2- The second group: administrated 0.18 mg/kg b.w. of chlorophacinone (1/30 LD_{50}).

3- The third group: administrated 0.0054 mg/kg b.w. of brodifacoum (1/50 LD_{50}).

4- The fourth group: administrated a mixture of 0.095 + 0.0027mg/kg b.w. (1/60+1/100) of chlorophacinone and brodifacoum respectively.

The administration was given daily by gastric tube for one week. The blood samples for half animals of each group were taken at the end of treatment and the other half animals of each group were left for an- other week as a recovery period. At the end of recovery period, blood samples from animals of each group were collected.

The obtained results were as follow:

Blood Parameters:

Significant declines in Hb contents, RBCs counts and Hct value were observed in all treated groups. The WBCs count showed significant increase in treated animal groups compared to the control one.

Respiratory Functions of Blood:

Blood gases and acid-base status parameters indicated the onset of respiratory acidosis that represented by the increase of PCO_2. This respiratory acidosis may be partially compensated by metabolic alkolosis that indicated by the decrease in pH, HCO_3^-, TCO_2 and BE. The blood oxygen affinity decreased and (P_{50}) increased and the oxygen equilibrium curves of animal treated groups with chlorophacinone, brodifacoum and a mixture of chlorophacinone and brodifacoum were shifted to the right in relation to that of the control group.

Biochemical Responses:

Liver enzymes (ALT and AST):

The levels of ALT was significantly increased in all treated animal groups compared to the control one after one week of daily gastric administration and after one week of recovery. The levels of AST revealed a significant increase in animal groups treated with the brodifacoum and a mixture of chlorophacinone and brodifacoum after one week of gastric administration. After one week of recovery the levels of AST significantly decreased in animal group treated with chlorophacinone and significantly increased in animal groups treated with brodifacoum and a mixture of chlorophacinone and brodifacoum.

Plasma levels of total bilirubin:

Plasma level of total bilirubin was significantly increased in all treated animal groups after one week of daily gastric administration and after one week of recovery.

Vitamin K epoxide reductase in microsomes of liver:

Vitamin K epoxide reductase level was significantly decreased in animal groups treated with brodifacoum and a mixture of chlorophacinone and brodifacoum and non significantly decrease in animal groups treated with chlorophacinone compared to the control group after one week of daily gastric administration. While it was significantly decreased in all treated animal groups after one week of recovery.

Plasma levels of total protein:

The plasma level of total protein was significantly decreased in chlorophacinone treated group and significantly increased in the other two groups brodifacoum and a mixture treated groups after one week of daily gastric administration and after one week of recovery.

Plasma level of total lipids:

The plasma level of total lipid was significantly increased in treated animal groups compared to the control group after one week of daily gastric administration and non significant increase were observed in the plasma level of total lipid after one week of recovery.

Plasma level of blood glucose:

Plasma level of blood glucose was significantly decreased in animal groups treated with chlorophacinone and significantly increased in animal groups treated with brodifacoum and a mixture of chlorophacinone and

brodifacoum after one week of daily gastric administration and after one week of recovery compared to control group.

Antioxidant enzymes:

levels of total glutathione (GSH):

Plasma level of total glutathione was significantly increased in all treated animal groups compared to the control one after one week of daily gastric administration and after one week of recovery.

level of glutathion-S-transferase (GST):

Plasma levels of glutathion-S-transferase were significantly decreased in animal group treated with brodifacoum but significantly increased in animal treated with colorphacinone after one week of daily gastric administration and after one week of recovery. while the decrease was non significant change in animal group treated with mixture group compared to the control group.

level of catalase:

After one week of daily gastric administration the level was non significantly increased in animal group treated with a mixture of chlorophacinone and brodifacoum and significantly decreased in animal groups treated with chlorophacinone and brodifacoum compared to the control group. Plasma level of catalase was significantly decreased in all treated animal groups compared to the control group after one week of recovery.

Insulin like growth factor-1(IGF-1):

Plasma level of (IGF-1) was significantly decreased in all treated animal groups compared to the control group after one week of daily gastric administration and after one week of recovery.