**Summary**

Lead and cadmium are non essential metals with a wide distribution in the environment. Today, it widely accepted that even small quantities of lead and cadmium are harmful to human and other organisms. These metals are a highly toxic agent that particularly affects the central nervous system, blood and reproductive organs. The aim of our study was to assess the effects of lead acetate and cadmium chloride on the activity of monoamine oxidase in the different CNS regions and changes in blood and sexual glands and examined also the efficiency of barley in combating the toxicity of lead and cadmium.

- Effect of lead acetate: Subcutaneous injection of lead ( 30mg / kg/ b.w ) and decapitate animals after two , four , six and eight weeks after injection. Changes in the activity of monoamine oxidase enzyme in various central nervous system regions was determined, lead caused a significant decrease after four and six weeks in the thalamus and after six and eight weeks in the hypothalamus as well as the decline was significant after eight weeks in the cerebellum. In superior collicolus the activity of MAO was decline in all time of experiment. Compared to the other parts of CNS regions there was significant increase in the enzyme activity after two , four , six and eight weeks.

Lead also effect on blood component , a significant reduction of hemoglobin after six and eight weeks of injection as well as a significant reduction in RBCs count after eight weeks , MCV was significantly decrease after six weeks , while WBCs was significantly elevated after six and eight weeks of injection with lead acetate.

Results showed that the injection with lead acetate effect on reproductive organs, a significant decrease of the testosterone after four weeks was noticed. On the other hand disintegration of the germ layer of the seminal vesicles, atrophy of ledge cells and lack of sperms within the vesicles were also noticed. As noted in animals of isolation and introversion and lack of activity and movement, with the appearance of sores on the skin.

- Effect of cadmium chloride: Animals injected by ( 1mg / kg / b.w ) cadmium chloride and decapitate after two , four , six and eight weeks. The injection with cadmium was induced changes in the activity of monoamine oxidase ,a significant decrease in the cerebral cortex after two , four and six weeks was noticed, the decline was also significant in thalamus , superior colliculus and spinal cord after eight weeks and in hypothalamus was after six and eight weeks , while in the cerebellum was after six weeks , significant increase was in the other CNS regions .

Red blood cells number was significantly decrease after injection for two and four weeks while Hb and MCV was significantly decline after eight weeks , WBCs number was significantly elevated after eight weeks of injection.

Testosterone was also significantly decreased after four and six weeks of injection.

On the other hand disintegration of the germ layer of the seminal vesicles , atrophy of ledge cells and lack of sperm within the vesicles were noticed. As noted, the animals of isolation, introversion and lack of activity and movement.

-Effect of combined dose of lead and cadmium :Animals injected by ( 30 mg / kg / b.w ) of lead acetate and ( 1mg / kg / b.w ) of cadmium chloride , combined dose of lead and cadmium lead to change in the activity of MAO in different CNS regions. Significant decline in the enzyme activity was noticed in superior collicolus after all times of injection with the mixture , significant elevation was noticed in most CNS regions.

A significant reduction in the number of RBCs after eight weeks and after four weeks in MCV , while Hb did not recorded any changes at all times. Also injection with a mixture of lead and cadmium lead to change in the arrangement of germ layers of testis , lack of sperms and efficiency of ledge cells , which lead to decreasing of the production of the testosterone hormone.

-Lead – cadmium mixture and barley: We used in addition of the lead cadmium mixture, (5mg/kg b.w ) of aqueous solution of barley. Male of guinea pigs was given aqueous extract of barley for two weeks and injected with mixture of lead and cadmium accompanied by barley occurred a significant decline in the activity of MAO in cerebral cortex , caudate putamen , superior collicolus , cerebellum and spinal cord in most times of experiment when compared with used the mixture of lead and cadmium without the aqueous solution of barley. Improvement of movement and activity of animals was noticed. On the other hand , significant increase in RBCs number after eight weeks , and in Hb after six weeks.

Improvement of the testis tissue , normal seminal vesicles and elevation in the testosterone hormone were noticed.

From the present results , it can be concluded that lead and cadmium perturbed the membrane bound enzyme MAO in the different CNS regions which may lead to behavioral impairments, disturbance in blood picture and reproductive organs and the used of barley have the capability to alleviate many of harmful effects of lead and cadmium.