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## **Study the Therapeutic Effect of Camal Milk on Liver Toxicity Experimentally Developed in White Mice *Mus musculus***

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### **Abstract**

This examination aimed to investigate the effect of Carbon tetrachloride CCl<sub>4</sub> and Camel Milk on histological changes of liver. It was used only (16) mouse . to examine the effect of Carbon tetrachloride CCl<sub>4</sub> and Camel Milk on changes. The mouse were randomly divided into equal groups as follows. First group was It was narrated orally with 0.1 ml, normal saline. This group was considered as control group .The second group was It was narrated orally with( 0.1 ml) Carbon tetrachloride CCl<sub>4</sub> of body weight for . The third group and fourth group It was orally given (0.5 , 1) ml dosage respectively of Camel milk\_for (3 weeks), After treatment with Carbon tetrachloride CCl<sub>4</sub> For five days. There was clear effect for Carbon tetrachloride CCl<sub>4</sub> on liver, it was caused infiltrative cells presented by lymphocytes and phagocyte, liver cells defect; like edema, necrosis and haemolysis in liver cells, it was found catalytic effect in treated group with Carbon tetrachloride CCl<sub>4</sub> and Camel milk\_liver, It showed up in normal appearance and like the control group. It showed catalytic effect in treated groups with Carbon tetrachloride CCl<sub>4</sub> and Camel milk\_, and little negative in the liver .

**Keywords:** Carbon tetrachloride; Camel Milk; histological changes; liver cells.

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## **1. Introduction**

The camel produces animal protein in large quantities and at lower production costs than all other types of animals. In addition, its physiological nervous system is better able to benefit from poor food. The milk glands in the camels can draw nutrients from the blood and convert them into the milk components. The principle part of the camel is its ability to adapt to extremely difficult conditions where no other animal can survive and with the same productive capacity. The camel is distinguished by the wide diversity of the diet, which is characterized by its ability to exploit saline and desert plants in deserts, And converting them into nutritious protein that is useful for human consumption [1].

Reference [2] noted that camels are characterized by high resistance to disease and drought and are easy to graze and are efficient in converting feed and water to meat and milk. Camels and cows do not compete for the same plants in pasture Where camels do not feed on plants where animals live.

Camel milk is one of the most important sources of food in different regions of the world and the widespread spread of camels is the most important reason why milk is a staple food for the population [3] . According to the World Food Organization (FAO , there are about 17 million heads of camels in the world, divided into 12.2 million heads in Africa and 4.8 million in Asia. One camel during the 18 months breastfeeding period (1800-2700 kg) [4] .

Camel milk differs from other ruminants' milk because it contains a low level of cholesterol and a low level of sugar while it is rich in minerals (sodium, potassium, copper, iron, magnesium, zinc). Concerning camel milk, it is rich in vitamin C, E, A, B2. Camel milk is characterized by a low protein level in addition to high concentrations of insulin (5).

As for medical therapeutic uses in modern times it has been scientifically proven that camel milk can be used in the treatment of the following diseases:

### **1. Diabetes:**

Reference [6] reported that camel milk contains a special protein that is similar to the action of insulin hormone and at a concentration of (40) units per liter of milk. Since this milk has the ability to have a slow reaction under the influence of stomach acids or the resonant enzyme Protein-containing milk is easily accessible in an effective way to the intestines, so that can be absorbed to function as insulin.

### **2. Bacterial and viral communicable diseases:**

It has been discovered that camel milk contains antibiotics and viruses so it is known scientifically that the ability of this milk to break the bacilli tuberculosis and germs Malta, salmonella and other germs, and the reason that the immune molecules Immunoglobulin Molecule Camel milk is smaller than in humans so you can penetrate the dense protein layer around Virus and parasite with ease [7] .

3. Use of camel milk in the treatment of the following conditions:

Anemia, asthma, gastric and duodenal ulcers, ascites, jaundice, hemorrhoids, spleen problems, flu, valley fever, liver disease, tuberculosis and a stress reliever, arrhythmias and improved liver function and some cancers [8].

Chemical substances used for injury

Carbon tetrachloride (CCl<sub>4</sub>) University of Samarra - Faculty of Applied Sciences / Department of Chemistry.

camel milk

It was obtained from the region of Karma, from camels at the age of (5-10) years on 20/10/2016, and the camel's food was dependent on weeds that grow in the pastures, in addition to dates and water, were cut on milk by manual milking method and milk was transferred in Refrigerator refrigerated to the laboratory and then kept in the refrigerator under temperature (2-5) m until use.

Laboratory animals Laboratory Animals:

In this study 16 mice from Swiss white mice were used, ranging from 25 to 28 g. Obtained from Pharmacology Department / General Pharmaceutical Company for General Industries. The animals were in good health and were placed in laboratory cages dedicated to raising plastic rabbits with metal lattices and sprinkled with sawdust with cages in addition to that sterilizing two times a week.

Throughout the experiment, the animals are placed in uniform laboratory conditions i.e. ventilation and temperature terms. The special diet of rabbit was provided continuously during the experiment in specific containers in order not contaminated with sawdust.

Group design:

The animals were randomly divided into four groups in plastic cages. Each cage contained four mice, and treated as follows:

Group A the First Group

Control group: consists of 4 mice injected with normal saline solution, 0.1 mg / kg.

Group II The Second Group

The infected group was composed of 4 mice injected with toxic carbon tetrachloride at 0.1 mg / kg for 5 days. The dose was determined according to the ratio of weight per ml / kg [9].

Group C The Third Group

Therapeutic group A: This group consists of 4 mice. The group was vaccinated for 30 days by injecting it with camel milk at a concentration of 0, 5 mg / kg.

□ Group Four The Fourth Group

Therapeutic group B: This group consists of 4 mice. This group was also irrigated for 30 days by using camel milk with a concentration of 1 mg / kg.

Preparation of tissue sections

The tissue was studied using [12] methods. The samples were examined to determine the effect of the doses on the rabbit's brain .

After dissecting the animals and placing them in the Formalin 10% solution, the samples to be studied were converted to ethyl alcohol at 70% concentration. The following steps were taken :

a- Dehydration

b- Clearing

c- Infiltraton

d- Embedding

e- Sectioning

f- Staining

g- Mounting

## **2. Results**

Results of microscopic examination of liver tissue

The first group

The histological sections of the liver were studied with light microscopy. It was noted that the normal liver tissue is composed of a number of lobules. Each section contains a central vein surrounded by cords from the hexagonal or polygonal cells. The section is divided into two cell types, namely the endothelial cells and the Kupffer cells . At the edge of each section is the presence of the portal area, which consists of branches of the vertebrae and veins Hepatic bile duct between the Lobule and as explained in the form [1].

Second group

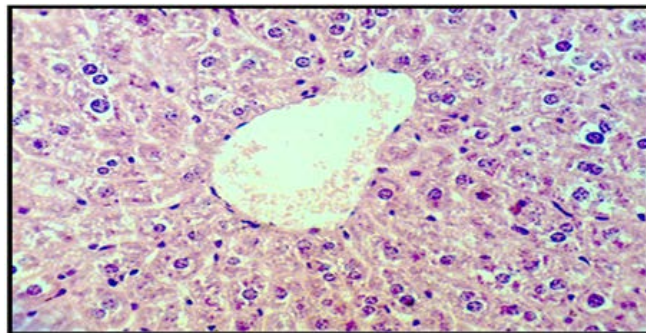
The results of the current microscopy examination showed that the CCl<sub>4</sub> group underwent stages of degeneration of the liver cells. Some of liver cells nuclei were characterized by these characteristics: apoptosis, cell membrane thickness, hemorrhage, lipid aggregation, germs enlargement , inflammatory cell infiltration, Hemosiderin and necrosis of cells.

#### Third group

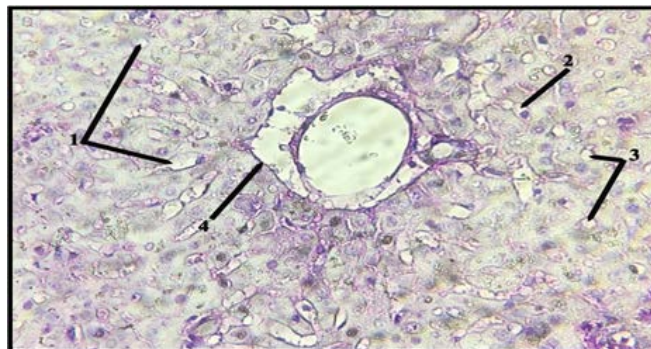
The results of this examination showed that camel milk was really effective in inhibiting the negative effect in liver cells that appeared to be less severe than in the CCl<sub>4</sub> group. The results of this examination showed that most of the liver cells were similar to those in the control group. Although some liver cells seemed normal, other hepatocellular cells were characterized by the presence of necrosis and lipid droplets resulting from the effect of carbon tetrachloride (CCl<sub>4</sub>) ) And the liver cells contained cells with a natural nucleus, while a few cells appeared to contain necrosis [5,6].

#### Group IV

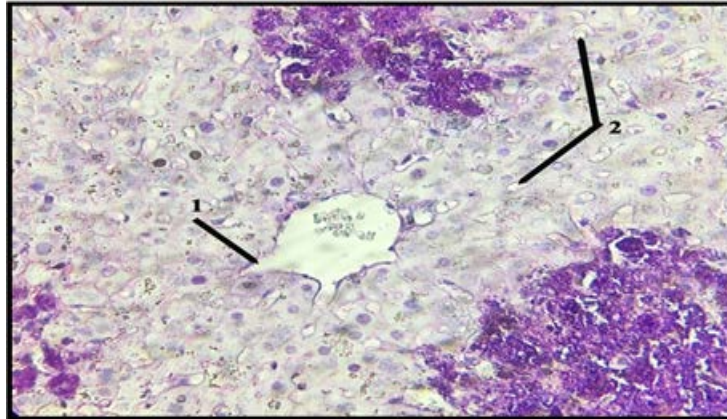
That the mice in the third group, exposed to camel milk, showed a normal appearance similar to that in the first group, but it was observed that some minor changes such as water ascites and blood congestion with a small negative effect, most of the cells of the liver were characterized by normal appearance and observed the physical appearance of liver cells that characterized With a round nucleus and a naturally occurring cytoplasm that look similar to what is described in the control group. Pictures [7,8].



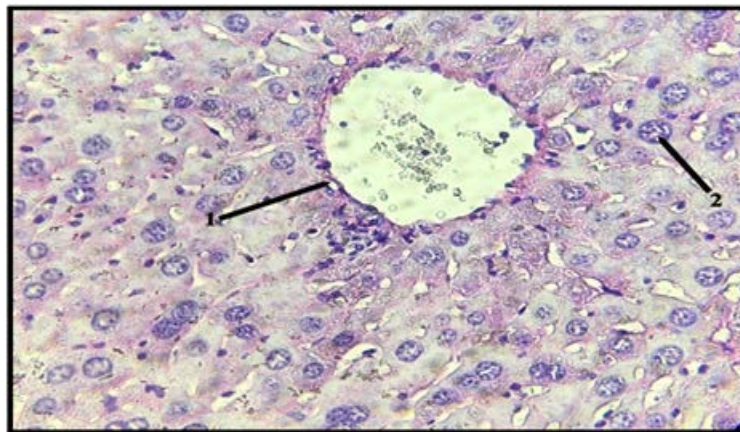
**Figure 1:** The liver of the Chontrol group , H & E (400 X).



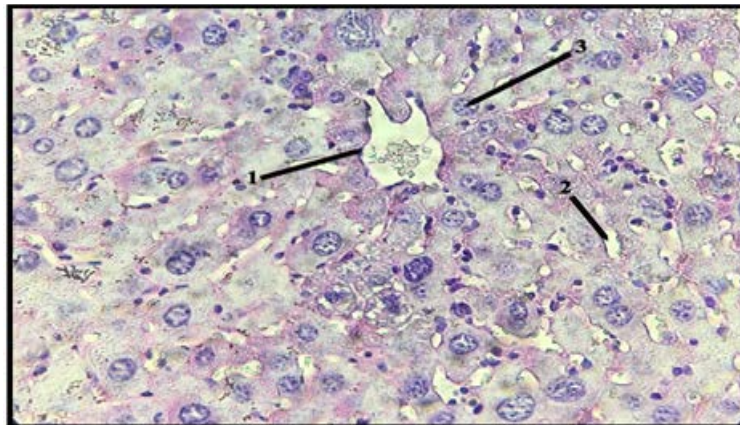
**Figure 2:** The liver of the treated group CCl<sub>4</sub> shows: 1 - Cell degeneration D. 2. NC cytoplasm necrosis. 3 - Exploration V. 4. The central vein wall. , H & E (400 X).



**Figure 3:** Liver group treated with CCl<sub>4</sub> shows: 1 - rupture of the central vein Dw. V - The section shows the damage of all liver cells H & E (400 X).

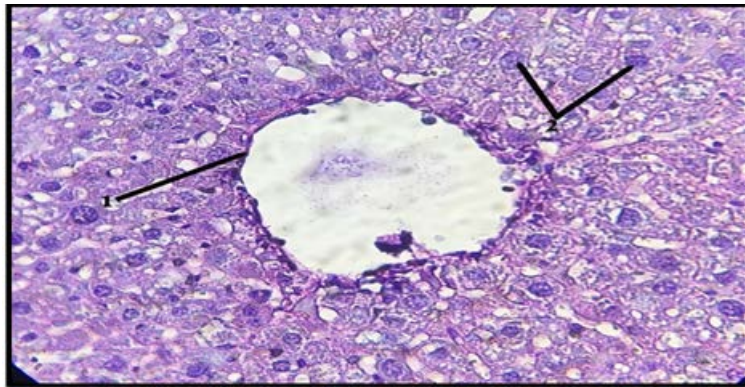


**Figure 4:** Liver of the group treated with camel milk shows: 1 - Task wall central vein CV. 2. Nuclear necrosis Ne. The section shows hemorrhagic haemorrhage in the general section of He, H & E (400 X).

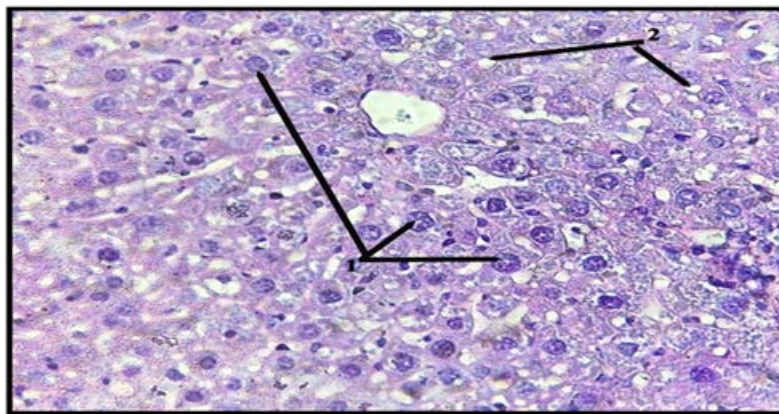


**Figure 5:** liver of the group treated with camel milk shows: 1 - Tesk wall central vein CV. 2. The expansion of

the ghettos SS Ne. 3 - programmed death of cells App, H & E (400 X).



**Figure 6:** Liver group treated with camel milk shows: 1 - lymphocyte infiltration IL. 2. Inflammation of hepatic cells. , H & E (400 X).



**Figure 7:** Liver group treated with camel milk shows: 1 - lymphocyte infiltration IL. 2. VN, H & E (400 X).

### 3. Discussion

Reasons for histopathological changes in liver and infected animals

The CCL4 group of animals

The results of the optical microscopy examination of the current study showed that the CCl<sub>4</sub>-injected group showed the different stages of degeneration undergone by the liver cells. These changes may be attributed to the fact that tetrachloride

Carbon (CCl<sub>4</sub>) inhibits the secretion of the amylase system, which is one of the systems that metabolizes carbohydrates [11] or carbon tetrachloride (CCl<sub>4</sub>) may affect the nuclear material of the cells, leading to liver cell degeneration. Some nuclei of this cell Characterized by passing stages programmed death has confirmed the negative impact results by observing the presence of necrosis and ascites , And blood hemorrhage. Increased thickness of cell membranes was also observed. This may be due to the effect of carbon tetrachloride (CCl<sub>4</sub>) on

proteins or lipids forming the cellular membrane and thus increasing the thickness of the cell membrane. Most the cells of the liver have been spotted with fat droplets, possibly due to hepatitis [12]. The treatment of mice with CCl<sub>4</sub> compound reduced the content of the glycogens in the liver and increased oxidation of the hydrogen diffraction of the cells of Kupffer's that possibly perform an important role in the breakdown of the cells of the liver [13]. It was also noted that some inflammatory cells such as monocyte were found among the liver cells found Contact with blood vessels that are an indicator of infection Inflammation, As indicated by the negative effect of carbon tetrachloride [14]. A change in the nuclei of the liver cells characterized by cytotoxicity traits was observed, confirming the effect of CCl<sub>4</sub>, and the increase in liver enzymes was due to tissue changes Appeared in the liver of treated animals, which was the emergence of decomposition in the liver cells, expansion of the antibodies Inflammation of the inflammatory cells in the portal area, the appearance of the hemosiderin and the decay of cells. And the presence of inflammatory cells to increase the proliferation of cytoskeletal cells that lead to increase collagen in the liver tissue to repair the damage caused by the tissue [15].

The group of animals taken with camel milk is 0.5 mg / kg

The results of this examination showed that camel milk was really effective in inhibiting the negative effect in liver cells that appeared to be less severe than in the CCl<sub>4</sub> group alone. The results of this study showed that most of the liver cells were similar to what they had In the control group and this has been described by [16]. This natural appearance of the cell asserts that camel milk has an effective effect in inhibiting the negative effect of carbon tetrachloride (CCl<sub>4</sub>) in the liver cells. This effect is due to the presence of camel milk on antibodies with immunosuppressive effects, Reference [17] refers to a complete description of the immune system of the antibody as a gadget that is unique in relation to alternate organs of the labs where IgG3 and IgG3 immunoglobulins consist of only two heavy chains with no light chains. That the size of the antibody is of awesome significance in the way it works because large antibodies cannot reach the target compared to antibodies of small size, and antibodies in camels are ten times smaller than antibodies in humans [18]. These antibodies cross the bloodstream to milk and pass easily from the intestines to the bloodstream because of their small size. Camel milk contains many protective proteins that have antibacterial and antiviral properties, Lactoferrin, Lactoperoxidase, Lysozymes, N-acetyl -glucosaminidase, Peptidoglycan acknowledgment protein [19]. Although some liver cells appeared naturally, other hepatocytes were observed to have necrosis and diffusion with fat droplets resulting from the effect of CCl<sub>4</sub> and contain liver cells on cells with a normal nucleus, while other cells appeared to contain necrosis, suggesting that Camel milk is indeed important in the process of cellular repair of harm caused by the impact of carbon tetrachloride (CCl<sub>4</sub>)

Group of animals taken with camel milk (1) mg / kg

Group III The results of the current study indicated that the rats of the third group, which was injected with camel's milk, showed a normal appearance similar to that in the first group, However, some minor changes were observed, such as hydrolysis and blood congestion, with minimal adverse effect. Most liver cells were normalized. The physical appearance of liver cells characterized by a circulatory nucleus and a normal cytoplasm was observed. It appeared similar to what was described in the control group and was consistent with what was described [16]. Camel milk has protective liver effects that protect it from certain types of liver



poisoning. It is also known that camel milk is used in alternative medicine in the treatment of liver diseases and the effect of toxic substance on liver tissue is less clear because milk contains effective components in the building and growth of the body such as proteins, fats, sugar, vitamins, salts and other substances have all the protection and prevention of liver tissue. The mice who gave camel milk were less likely to have liver damage when given toxic substances such as carbon tetrachloride [20].

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