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THE EFFECT OF CAMEL MILK IN THE TISSUE CHANGES TO THE KIDNEYS OF LABORATORY MALE RATS TREATED BY CADMIUM

Lamyaa Kadhim Oudah

Department of Pathological analysis / College of Science / Thi-Qar University

ABSTRACT: *The study was carried out on 72 mature male laboratory white rats. The males were randomly divided into forth equal groups, each group consist of 12 rats. The first group was intrapertoneally treated with 0.2ml normal 0.9% NaCl physiological saline solution as the control group. The second group was orally given 1ml of camel's milk . The third group was intrapertoneally injected 0.2ml Cadmium chloride (1, mg/kg body weight). The fourth groups was also intrapertoneally injected 0.2ml with Cadmium chloride (1, mg /kg body weight) intrapertoneally then orally given 1mlof camel's milk. The study continue for 30successive days and the animals weight was measured at the end of each week .The end of the experimental period , sixth animals from each group were sacrificed. The histopathological study revealed negative symptoms in kidney tissue such as hyperplasia , hyper pigmentation ,increasing in thickness of connective tissue, hemorrhage, necrosis , degeneration, splitting among tubules , On the other hand, the treatment with camel's milk improved the histopathological changes in kidney.*

KEYWORDS: Camel Milk, Cadmium Chloride, Laboratory Rats, Kidney

INTRODUCTION

Cadmium (Cd) is considered one of the most toxic heavy metals, found in the environment due to human activities, classified as the seventh most dangerous toxic material, characterized by a length as half-life period in addition to multiple industrial uses(ASTDRE, 2005) . Extends the toxicity of cadmium to many organs of the body, kidney is considered of target organs by cadmium when it enters the body of the ability to accumulation in soft tissue, causing functional changes in the kidney tissue (Esrefoglue etal., 2007). Where the seriousness of cadmium is in easy absorption through the digestive and respiratory systems and in general targets the kidneys and proved that the kidney store large amounts of cadmium (Thijssen et al., 2007) . Camel milk high ability to resist bacteria and viruses, which have a role in the treatment and eliminate the some diseases where found that camel milk is rich in vitamins C, B2, B12, as it contains high levels of potassium, magnesium, iron, zinc and other essential nutrients and antibodies which plays a role in absorption and reduction of toxicity of heavy metals (Yilidirim., 2009) . It also works as an antioxidant, and works to activate Cisplatin is used in the treatment of various cancer cases (Al-Numair., 2011) . Because of importance of milk, many researchers studying the composition and chemical properties, they found that camel milk has a good quality of effective protective proteins against bacteria and viruses such as(Lactoferrin and Lacto peroxidase and Lysozyme), which make it more superior to cow's milk in terms of nutrients (El-gammal and Moussa, 2007; Hassan et al. 2009; Mal and Pathak, 2010).

This study aimed to show the therapeutic role of camel milk in the elimination of toxic cadmium.

MATERIALS AND METHOD

Camel s milk samples

The collection of milk samples from the herd of camels with one hump of age (6-8 years). Adopted in the herd fed mainly on grass, which grows in the natural grassland in addition to the dates, bran and water. It was obtained milk samples in a way manual milking (Hand milking). Then-mediated transfer of milk refrigerator Cooled to the laboratory, were used in the dosage experimental animals.

Laboratory Animals

Used in this study of laboratory rats type Norwegian White ***Rattus norvegicus***, it was obtained from male animal house of the Biology Department / College of Science / University of Thi Qar. It ranged in age between (8-10) a week and weights between (200-250) grams. Rats placed in plastic cages and by (6) rats per cage.

Laboratory animals were treated for conditions within the 12-hour cycle of light and 12 hours of darkness and temperature (22 ± 2) m º (El-Missiry et al., 2000). Which were divided into four groups and by 6 per animal group, according to the totals below: -

The first group: - (a group control group Control) injected into the peritoneal cavity (IP) using a medical syringe Disbosable syring capacity (1) ml to 0.2 ml of physiological solution NaCl concentration of 0.9%.

Second group : - dose orally by oral dosing tube (Stomach tube) (1) mL of camel milk.

Third group: - injected into the peritoneal cavity (IP) using a medical syringe Disbosable syring capacity (1) 0.2 ml and cadmium chloride concentration of 1 mg \ kg.

Fourth group: - injected peritoneal cavity (IP) using a medical syringe Disbosable syring capacity (1) 0.2 ml and cadmium chloride concentration of 1 mg \ kg. The dose orally by oral dosing tube b (1) mL of camel milk. The dosage and injection all animals experience every day for 30 days in a row.

Dissecting animals, after ether sedation material at room temperature was nephrectomy.It was prepared slides paraffin (histological sections) according to the method described from (Humason, 1978).

RESULTS AND DISCUSSION

It showed a microscopic examination of the kidneys animals , first control group and the group that was dosage b (1) mL of milk camels natural glomerulus and renal tubule natural distal renal tubule natural proximal and into Bowman's capsule clearly appears as in Figures (1,2).

While it observed in the microscopic examination of the kidneys of animals treatment by cadmium chloride concentration of 1 mg / kg of body weight histological changes represented congestion blood vessel and the disintegration of the connective tissue between the blood vessel as shown in Figure (3), contraction and hyperpigmentation glomerulus and obstruction the renal tubules form (4) where cadmium caused as a result of its effectiveness cells not to get

adequate food on the one hand and blood clotting in the blood vessels of the other, which leads to lack of blood supply Anoxia tissues and thus cell death and necrosis (Wtodezimierz., et al 2006) .

Rupture of the lining of the renal tubule cells crowding and led to the obstruction the renal tubules Residues of dead cells (Barella., Et al.2004). Pigmentation cells also was observed, because the cells degrade the nucleus (Pyknosis) Thickening which leads to the concentration of pigment in nuclei. Poisoning and lead to the destruction of the renal glomerulus renal glomerulus and obstruction some of the tubule hyperplasia hyperplasia occurring to the lining of the tubule (Brzoska et al., 2004).

It was for camel milk when used in dosage for animals fourth group (that have been treated with cadmium chloride) and then dose camel milk a positive impact as it began effects pathological low intensity form (5) where it was noted normal glomerulus and partial obstruction of some of the renal tubules and some tissue sections showed a clear improvement in terms of natural glomerulus and tubule proximal and distal form (6) any other similar to what was observed in the first group and the control group dosage by camel milk only .

Camel milk treatment has led to reducing the previous changes when compared with the injected groups cadmium chloride reason for this may be due to the contain the camel milk are high in vitamins-effective antioxidant such as vitamins E, C, as vitamin works C factor Chelating agent used for the treatment of poisoning heavy elements (Liobet et al., 1990) .

It is said the possibility of cadmium interact with factors biomolecules that cause tissue damage (Hsu and Guo, 2002), while vitamin E is very effective anti-oxidant found in the cell membranes where it is believed he impedes interactions included antioxidant meta-fat chain and works to removal of varieties effective oxygen ROS formed during oxidative stress (Gokalp et al., 2004).

Also referred Hashem et al. (2009) that camel milk to reduce renal absorption of heavy metals because it contains high levels of causing protective effect of camel milk vitamins against damage caused by toxic aluminum chloride materials, and protect the lining tissue cells renal the tubules from damage that (Barella et al.2004).And it shows the role of the metallic elements in the cellular protection as found (Al-Numair, 2010). The magnesium protects the cells from the effect of of heavy metals such as aluminum, mercury and lead. However, the histological sections of the kidneys showed recovery glomeruli form Natural almost with partial obstruction of of some renal tubule may be the reason for not fully healed to the period required by the milk to complete its role in the treatment.

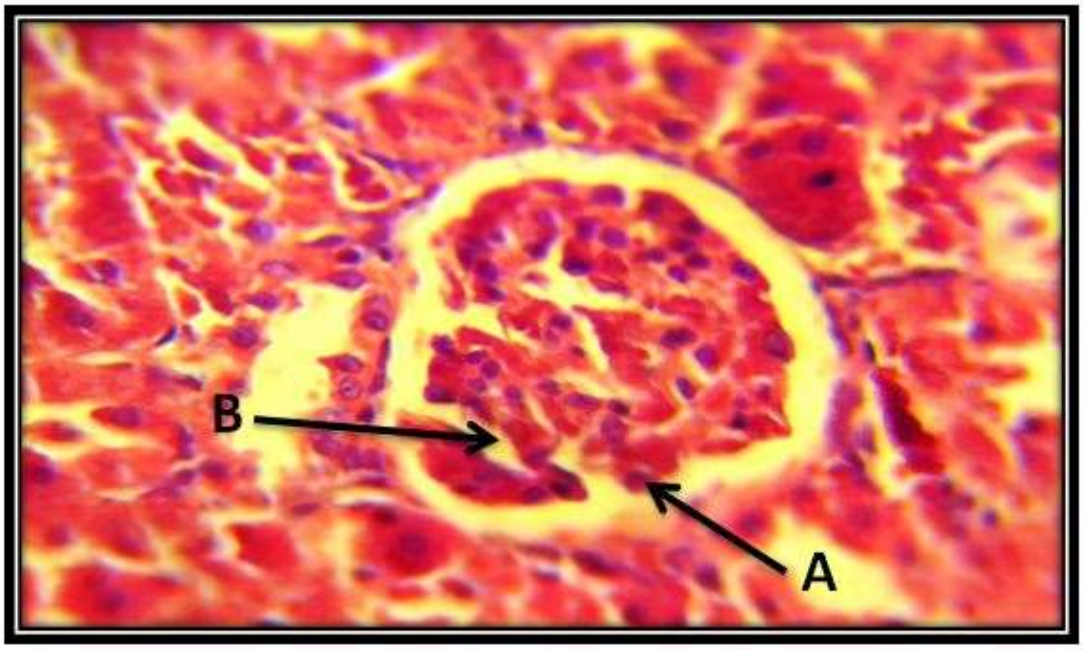

Figure (1) cross-section of the Kidney Tissue rats control group in which notes into Bowman's capsule (A) and natural glomerulus (B) power magnification 400X (H & E).

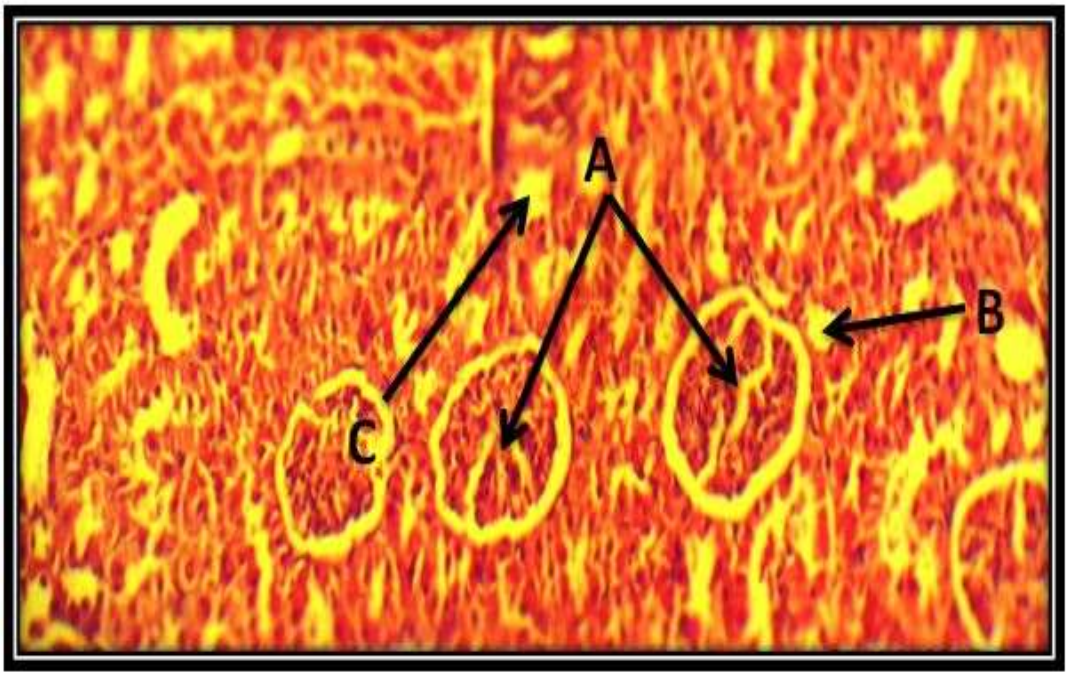

Figure (2) cross-section of the kidney tissue rats camel milk doses which noted natural glomerulus (A) and normal renal distal tubing (B) and proximal (C) magnification power 400X (H & E).

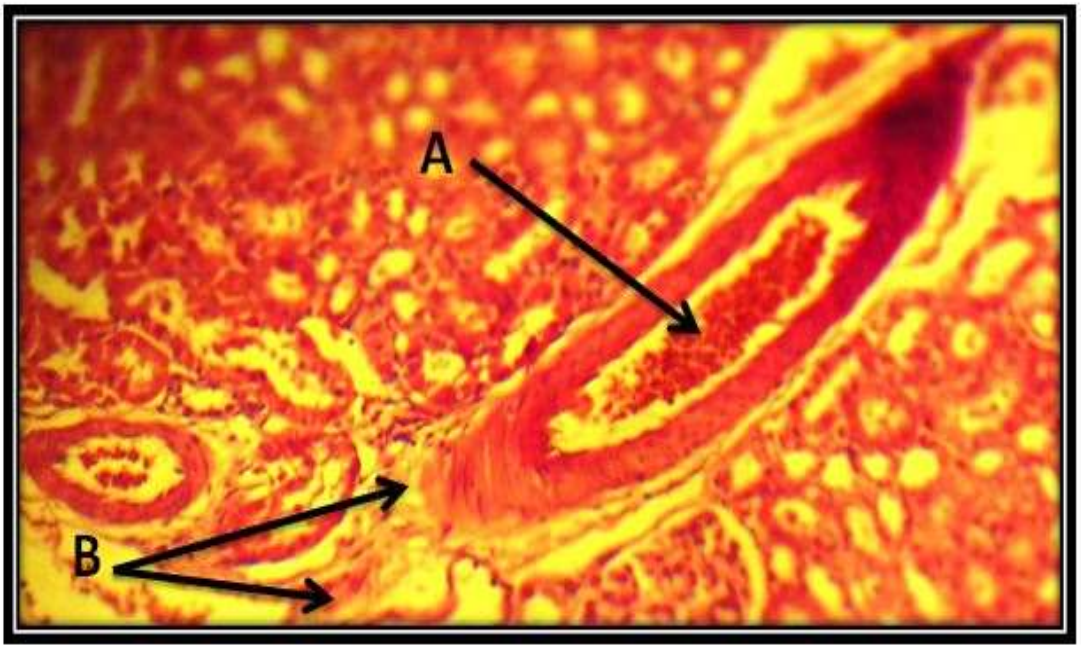

Figure (3) cross-section of the Kidney Tissue rats treated 1 mg of cadmium chloride / per kg of body weight where noted congestion blood vessel (A) and the disintegration of the connective tissue between the blood vessels (B) power magnification 400X (H & E)

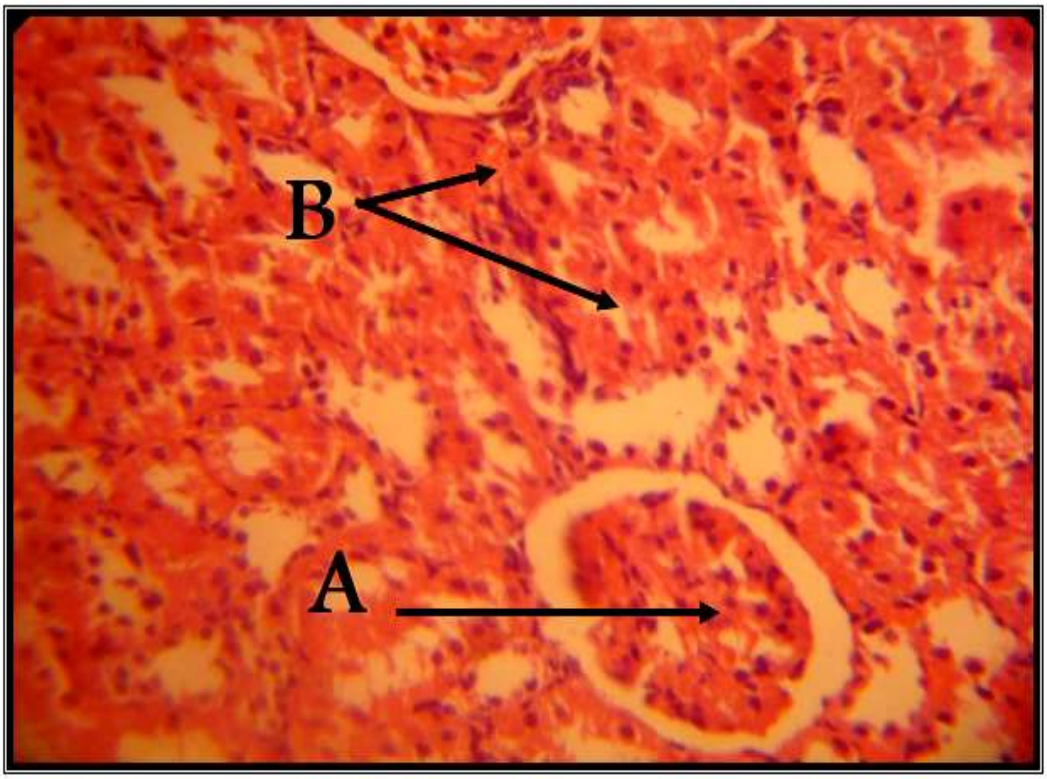

Figure (4) cross-section of the Kidney Tissue rats treated 1 mg of cadmium chloride / per kg of body weight where noted contraction and hyperpigmentation glomerulus (A) and renal tubule occlusion power magnification 400X (H & E)

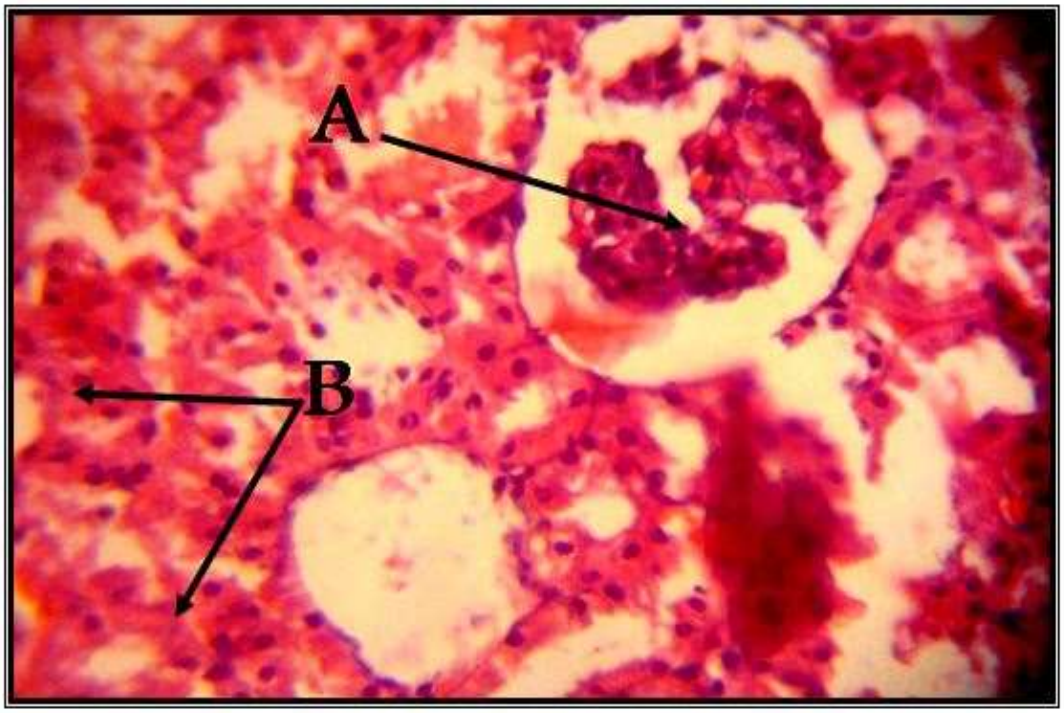

Figure (5) section in the treatment of kidney tissue treated by cadmium and camel milk shows And obstruction of of some molecular renal tubule (B) power (a normal glomerulus) A magnification 400X (H & E)

Figure (6) cross-section of the Kidney Tissue rats Treatment group by cadmium chloride and then dose b (1) mL of camel milk which noted natural glomerulus (A) and renal tubules proximal (B) and distal (C) magnification power 400X (H & E)

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