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# Effects of anabolic steroids (Dainabol) on kidney in albino Female rats

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**Abstract :** This study was conducted at the laboratory of the department of biology, faculty of the science / university of Kufa , 24 female rats that were used. In this,study was conducted to investigate the effects of dainabol on kidney in female rats (*Rattus* norvegicus), after administration of dainabol at three doses (10, 30, and 50)mg/kgb.wt. For six-weeks, kidney showed severe histopathological changes, at high doses, the results revealed a significant increase in urea levels from (20.60±0.40 to 57.00±1.58), uric acid levels from (1.520±0.258 to 2.608 ±0.258), creatinine levels from (0.494±0.004 to 1.140±0.068), and significant decrease in total protein from (6.580±0.107 to 5.220±0.102) at high doses of dainabol when compared with control groups.
**Keywords** : Dianabol, anabolic steroid, kidney damage.

## Introduction

Health risks of anabolic steroid can be produced by excessive doses or long term[1].Anabolic Androgenic Steroids (AAS) have oftenbeen the performance increasing drug of choice for sportspersons in avariety of disciplines and stay one of the most controversialtopics in sports today.Anabolic Androgenic Steroids are synthetic derivatives of testosteronesex hormone inthemale and display both androgenic and anabolic effects on the body. Advisory council on the misuse of drug[2]androgenic refer to development of masculine characteristics while anabolic effects refer to bind effect of these hormones with tissue

AAS is a extensiveproblematic that is not limited to professionalathletesforthe examplesits also using it in the bodybuilders[3]. According to their route of administration Anabolic steroid were classified, either injection or by orally , it should be noted here that injectable , AAS always injected nerve intravenously andinjected intra muscularly[4]

Orally administrated of AAS has an effect on the body quicklymore than their injected counterparts, the duration of action active result of their short-half life and also the body was taken more regular base[5].

Dianabol is one of the most main medications that are used to express body building and increase bodyguards a strong androgenic effect because they are rising male hormone ofrats which leads to the cells of muscle isstimulatingto retain a greatnitrogen concentration which would create the cell to maintainmore amount of protein that workings to build massof muscle and more this steroid hormone is one of the

important derivatives industry of testosterone , which is exerted in to the body by the testes and adrenal gland has been altered so that structural qualities overcome male[6].

Ther aretwo groupsof anabolic steroidsusers:firstgroup include those who use them to enhance their strength and athletic ability, or/and enhance their physical appearance by adding muscle massthe second group who use these products for medical purposes (anabolic steroids are prescribed for a small number of legitimate medical purposes) . There are different groups that use performance enhancing drugs and abuse with steroids[7].

## Materials and method

### Preparation of dianabol solution

The dianabol was obtained from (Pfizer lab,Germany) at a concentration (10mg/kg) , the dianabol dose (10, 30, 50mg/kg.b.wt.) were prepared by dissolving the tablets from dainabol in (10) ml ofnormal saline to make stock solution and different doses from stock solution were prepared[8].

### Experimental animals

24rats (*Rattus* norvegicus) of female sex weighing ( 210-290)g,the animals were housed in aplastic caged. The caged were embedded within wooden shelves in the animal house of Faculty of Science, University of Kufa, under standard environment condition (12 hr,light-dark cycle andtemperature 22-25 ºC). They are divided in to 4 groups (6) animals for each group.

**Group 1:** as a control, rast were treated with (0.5 ml/kg ) of distilled water(DW), give orally.
**Group 2:** The ratsare treated with dainabol at dose 10 mg/kg for 6 weeks, give orally.
**Group 3:** The ratsaretreated with dainabol at dose 30mg/kg for 6 weeks, give orally.
**Group4:**The animals were treated with dainabol at dose 50 mg/kg for 6 weeks, give orally.

### Blood samples

Thesample of blood was collected directly from rats by heart puncture , one dayafter the last dose. The small amount of blood samples was kept in sterile tubescontaining anticoagulant (heparin) AFM-DISPO and placed in refrigerator at 4 c inorder to the measure some haematological parameters , while the remainder of thesesamples were kept in sterile centrifuge tubes to separate the serum[9].

### Preparation of histological sections

We make it depending on method by[10].

### Determined of Uric acid, urea, creatinine, and total proteinconcentration in Serum

by using kits is supplied by Biomaghreb and biomerieux, France[11].

### Statistical analysis:

The result for experiments were analyzed by using statistical programe SPSS version 17 ,using one way Anova , mean and standard errors as well as multiple comparisons in average of animal groups by using least significant difference (L.S.D)and below the probability (0.05)[12].

## Results

### Effect of dianabol onuric acid, urea,creatinine and total protein measurements:

The results in figures (1-5) showed a significant increase ($p<0.05$) inuric acid, urea, and creatinine levels, but significant decrease ($P<0.05$)in the levels for total protein in this group treated dianabol when comparisonto control. Groups of the animals dainabol at concentrations 10, 30, and 50 mg/kg/b.wt. For 6 weeks.

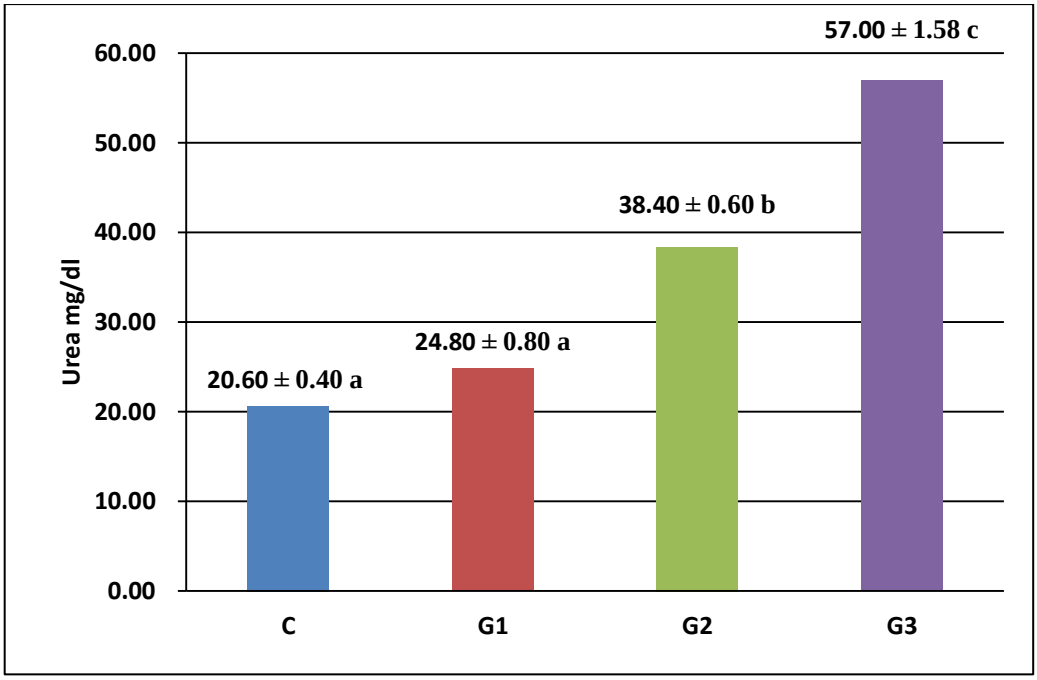


**Figure (1): Effect of dainabol in the serum levels uriea in female rats.Values are mean ±SE.**

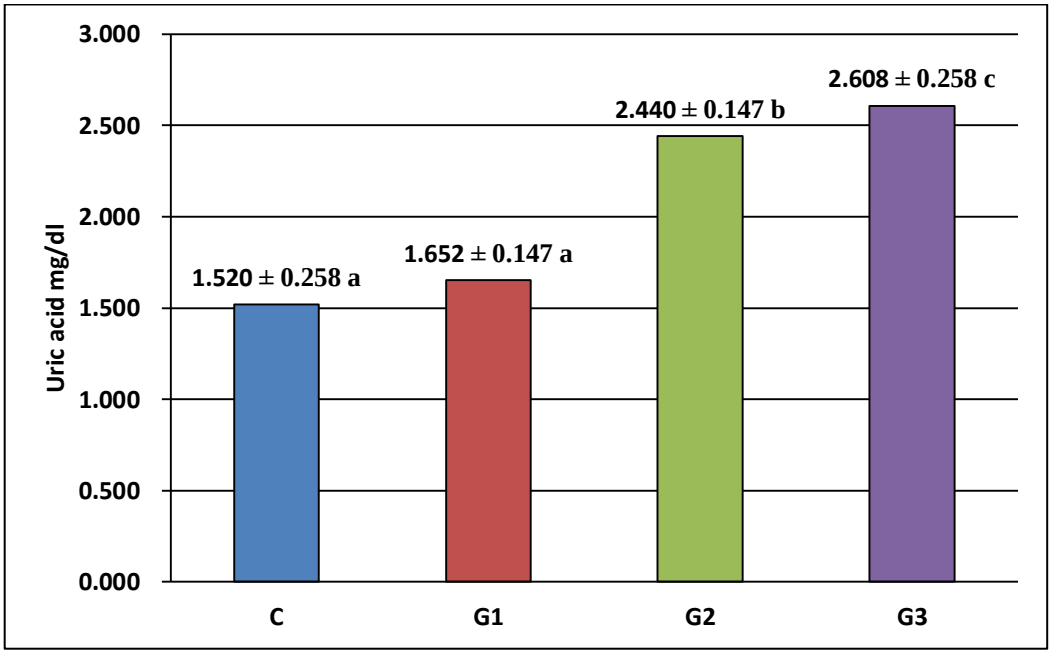


**Figure (2): Effect of dainabol in the serum levels uric acid in female rats.Values are mean ±SE.**

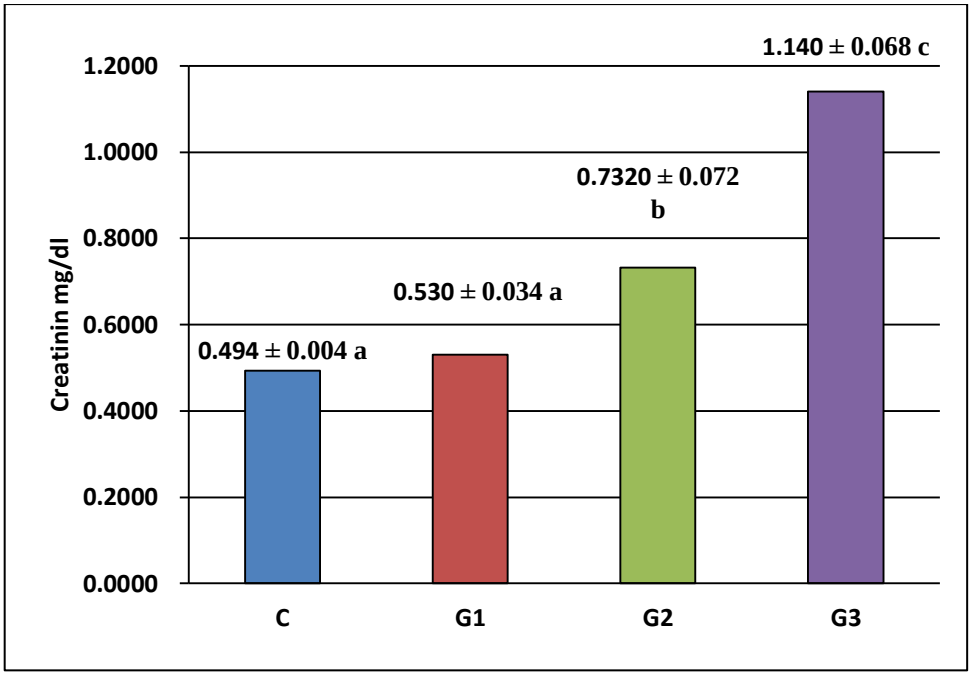


**Figure (3): Effect of prazosin at in the serum levels creatininin female rats**

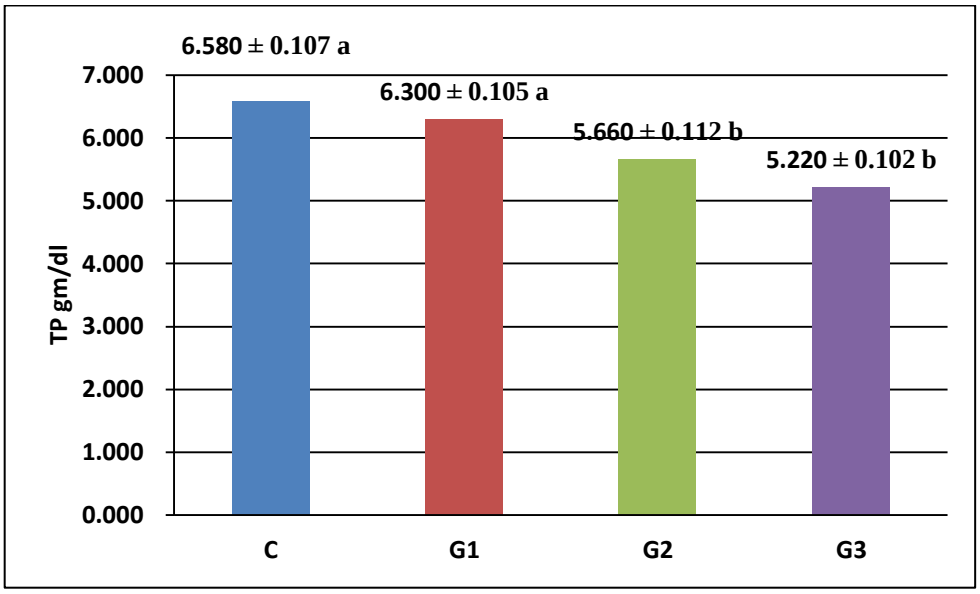


**Figure (4): Effect of dainabolat in the serum levels of total protein infemale rat**

**Histopathological changes**

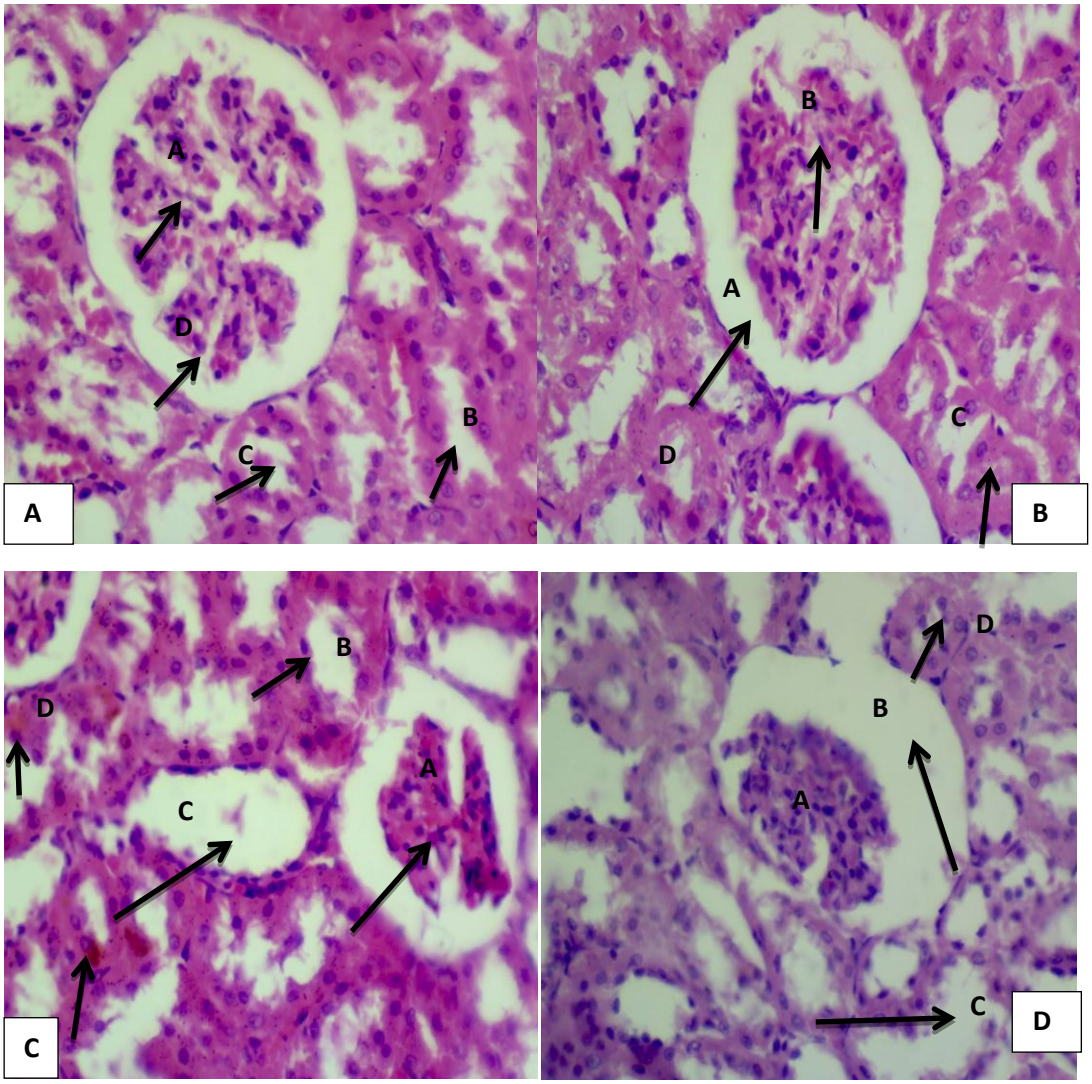


**Figure (5): Normal histological section of the kidney of rats demonstrating: A-glomeruli (tuff of blood capillary, glomerulus) B-Renal proximal convoluted tubule C-renal distal convoluted tubule. D-vesiral layer of bowman capsule. H&E stain 400x).**

## Discussion

Reactive Oxygen Species (ROS) molecules can react with cellular elements. Thus, an rise in its adecrease or generation in its detoxification can cause increment ROS availability that lead to oxidative modifications of lipids, DNA and proteins. These structural changes in biomolecules can alter cellular processes and function and play an important role in degenerative conditions and a range of common diseases[13]

significant increment in urea and uric acid levels in contrast with control group, the take of dainabol that caused chronic renal impairment were associated with urea, uric acid and creatinine elevation and considered as indicators of kidney impairment, where the serum creatinine level doesn't rise until at least half of the kidney nephrons are destroyed renal injuries may contribute to low level of serum protein that might have resulted from remarkable release into urine due to inflammation of the glomeruli and tubules, there are some cases of diseasesespecially hepatic and renal diseases lead to a rapid loss in the plasma protein.The kidney redox balance was as well affected by AAS treatment, judging by thedecrease of total reduced thiol residues anddiminished catalase activity and increase in protein carbonyl content[14]. or may be attributed to necrosis, in the catabolism of protein after administration of dainabol ,in reated rats compared with the control group and these agree with the studyconducted by[15].

The histopathology results for this study due to the effect of dainabol in producing kidney damage as clear pathological changes were seen in the glomerulus, tubules, and blood vessels at 6-weeks, the dianabol well known to induce inflammatory responses , which lead to increases in lymphocytes percentages, this study was agree with previous study on AAS on liver has been demonstrated thatproduction of intracellular oxidant is greater active in the liver than in the tissues, like the increment of apoptosis and the inhibitors of apoptosis NF-κB,inflammatory cytokines, and Heat Shock Proteins[16]. The Drug concentration in the blood is affected by constriction of cause to a decrement in glomerular filtration of that drug which minimizes its protects and effect the tubular cells ,may be affect theatrophyand shrinkage of the glomeruli this means that the role of the drug may besuppressive to body immunity , and could be due to the renal damage , which lead to adecline in erythropoietin hormone [17]

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