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THE EFFECTS OF ORLISTAT DRUGS ON THE HISTOPATHOLOGY OF KIDNEY OF MALE RATS

By:

Noor Alhuda Yaseen

Zainab Ibrahim sarhan

Shahlaa Muslim Hadi

Supervised by :

Dr.Rafah Saleem Almuttairi

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بسم الله الرحمن الرحيم

)قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا ۖ إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ(

صدق الله العظيم

Introduction:

Obesity is a leading cause of mortality in both adults and children around the world. It is considered by experts to be one of the most important public health hazards of the 21 centuries [1]. Despite the fact that recently released guidelines promote lifestyle modification as the first line of treatment for obesity, weight loss accomplished through lifestyle modification is still mode.(8)

XENICAL (orlistat) is a gastrointestinal lipase inhibitor for HYPERLINK "https://www.rxlist.com/script/main/art.asp?articlekey=4607"obesity management that acts by inhibiting the absorption of dietary fats (2). When these enzymes (pancreatic lipase) are blocked (10), they cannot digest some fats in the diet, and this allows about 30% of the fat eaten in the meal to pass through the gut undigested .It is available as capsules (120 mg).(9), (3)

Xenical is used together with dieting for the treatment of obese (very overweight) patients with a body mass index (BMI) greater than or equal to 30 kg per square meter, or overweight patients (BMI greater than or equal to 28 kg/m^2) who are at risk of illness because of their weight. (2)

Xenical is given as one capsule during or up to one hour after each main meal (15). If a meal is missed or contains no fat, Xenical should not be taken. (3)

Treatment with Xenical should be stopped after 12 weeks if patients have been unable to lose at least 5% of their body weight since the start of treatment. (3) Between the possible side effects of Xenical severe stomach pain ,blood in urine ,painful or difficult urination ,or no urination, swelling in feet or ankles ,shortness of breath ,loss of appetite ,dark colored urine ,clay-colored stools, yellowing of the skin or eyes (jaundice),oily or fatty stools ,oily spotting ,rectal pain (2)

Xenical should not be used in people who may be hypersensitive (allergic) to orlistat or any of the other ingredients.(2)

AIM OF THE WORK:

The aim of this work is to study the histological changes that may occur in the kidney of male albino rats after treatment with different doses of orlistat and try to Find out the underlying mechanisms of such changes.

Materials and methods:

Animals and breeding:

In this investigation 10 adult male albino rats were In this investigation 10 white employed . The animals were placed into 2 groups, each with 5 animals. The animals were grown in the College of pharmacy / University of babylon animal home in plastic cages. In addition to supplying the animals with adequate water and food during the duration of the experiment.Before beginning the experiment, which was fed a normal diet the animals were left for a week to allow adaption throughout the experiment.

Chemicals and medicines:

Orlistat was used in this experiment in the form of a capsule was dissolved in distilled water and administered to each animal in an oral dosage syringe (5cc D.W and orlistat 1.4mg) . The treatment period lasted for 70 days, daily oral dosing. The animals then anesthetized with ether and sacrificed, and their kidneys were collected for histological analysis.

Tissue preparation:

According to Bancroft's idea (16), histological sections of the kidney (5 thick) were generated to evaluate the alterations that may be discovered in the treatment animal groups compared to the control group.

Results and discussion:

As demonstrated in the Figure (1) the kidney of controlled rats showed normal histology while in Figure(2) the kidney in male albino rats received orlistat showed renal congestion.

And in Figure(3) the kidney in male albino rats received orlistat showed lymphocytic infiltration.

The kidneys of albino rats reveal significant lymphocytic infiltration and congestion which might be due to the direct influence of orlistat on the body's inflammatory processes (14), or it could be linked to another factors that causes infiltration in the rat's liver kidney.(7)

According to published data on the effect of orlistat administration ,histopathological examination of kidney tissue revealed that orlistat affect on the organ, as it caused a breakdown in some kidney tubules with glomerular atrophy and an expansion of Bowman's capsule with congestion and bleedingy (7). In one investigation, similar outcomes were found, orlistat caused the emergence of a focal necrotic area with infiltration of inflammatory cells, the appearance of blood vessels, and congestion of some renal tubules with degeneration due to nephritis (5),(6)

In Conclusion:

It is importance to note that orlistat is considered as antiobesity drugs that had diverse effects on the kidney tissue by induce structural changes to the kidney like lymphocyte infiltration and congestion of blood vessels, and hence it must be used under medical observation. Using an antioxidant supplements may ameliorate the harmful effects of orlistat.

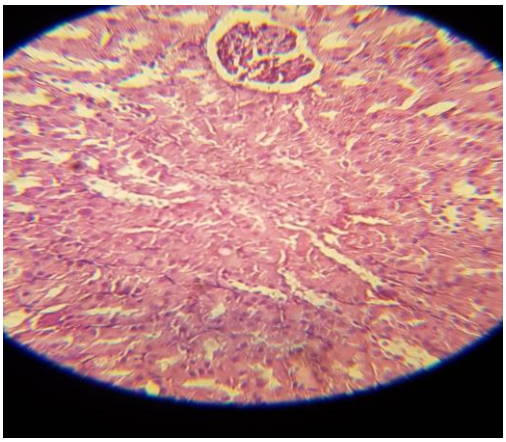
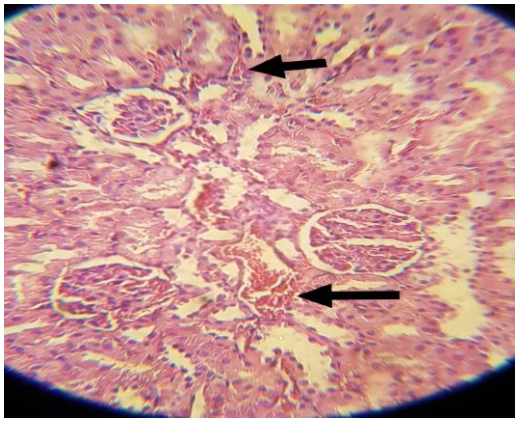
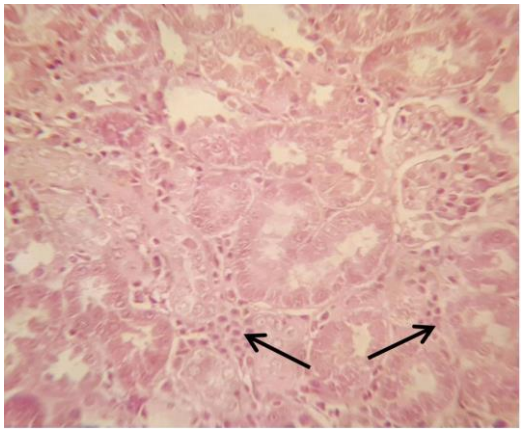


Figure (1) cross section of kidney in controlled rats showed normal histology.



Figure(2)cross section of kidney in male albino rats received orlistat showed renal congestion (black arrow).



Figure(3) cross section of the kidney in male albino rats received orlistat showed lymphocytic infiltration(black arrow)

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