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Effect of Lipo6 Black on Kidney and Liver Histology in Adult Rats

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Abstract

Obesity, a problem that does not only have negative effects on appearance, but also has health dimensions. It increases the risk of heart disease, diabetes, and some types of cancer. There must be solutions to this problem, and one of these solutions is the use of fat burners Lipo 6 Black. The purpose of this study is to determine the extent of the effect and safety of Lipo-6 black on liver and kidney tissue. Fifteen adult rats weighing between 160-250 g (five control rats, five rats treated with 0.5 mg/kg /day of Lipo 6 black and five rats treated with 0.2mg/kg /day of Lipo 6 black).The rats were distributed in three groups randomly. Histological sectioning of both liver and kidney were made after three months. The results were intraglomerular vascular ,interstitial vascular congestion in kidney and degeneration, necrosis, lymphocyte infiltration, hemorrhagic increased sinusoids in liver. Lipo 6 black medicine is good for burning fat, but we do not recommend using it for people who suffer from heart diseases, especially blood pressure diseases, liver and kidney diseases.

Keywords: *Blood pressure, Caffeine, kidney, Lipo-6 Black, Liver.*

Introduction

One of the most common problems that people suffer from nowadays is obesity. Obesity is defined as the excessive or abnormal accumulation of fat or adipose tissue in the body, which worsens health by increasing the chance of developing diabetes mellitus, cardiovascular disease, hypertension, and hyperlipidemia [1, 2]. It is a major public health problem that has gotten worse during the last 50 years. Obesity is a complicated disease with a multiple etiology. It is the second leading cause of avoidable death after smoking [3].

Obesity therapy requires a multifaceted approach and may last a lifetime. A 5% to 10% weight loss can greatly improve an individual's health, quality of life, and economic burden, as well as the overall health of the country [1-5]. The sports and nutrition have received a lot of attention over the last few decades, and they are certain to gain considerably more attention in the future, considering how vital, if not critical, nutrition is to athletic performance. Indeed, nutrition effects almost vary. Supplement use and its effects on human performance and health is a fascinating topic in sports nutrition [6].

Dietary supplements can assist athletes ingest the appropriate quantity in calories, carbs, and protein in their body. They have a duty to be seen by way of nutritional complements rather than alternatives aimed at the healthy system. While it is true that the majority of dietary complements available for athletics minimal logical proof support their possible ability toward improves teaching and performance [7-9]. Some of the most essential dietary supplements in sports nutrition are divided into the following categories: Sports

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nutrition, health supplements, protein, and amino acids [6].

In recent decades, research has shown that adjusting nutritional intake can improve athletic performance. It has led to an increase in products tailored to the needs of active people. Athletes commonly use supplements and have access to a diverse choice of goods. Global enhancement use among sportspersons is estimated to range between 40 – 88% [7].

"Fat burners" are a popular dietary supplement category [6]. Lipo 6 black: is a powerful besides widely used fat burner that employs fluid capsules for superior absorption then rapid effects. Lipo6 black is a sympathomimetic drug that regulates lipolysis through stimulating beta-adrenergic receptors in fat tissue and increasing serum catecholamine concentrations [8]. Activated adrenaline receptors, resulting in lipolysis and thermogenesis when norepinephrine levels rise.

Lipo6 black is mostly consist of [Synephrine, Yohimbe, Caffeine, guggulsterones, Phenylethylamine, and Diiodo-thyronine] besides added chemicals [9]. Lipo 6 black improves metabolic rate and helps burn stubborn fats. It contains potent substances that decrease hunger and help cut back on eating between meals. The supplement also increases mental alertness and energy levels, allowing to go for longer periods of time without being tired [10]. One of the most important advantages of Lipo 6 black is limiting fat and carbohydrate concentration, lowers desires in among mealtimes] [11].

Aim of the study to determine the extent of the effect and safety of Lipo-6 black in different concentration on liver and kidney tissue in animal model.

Materials and Methods

This an animal experiment including 15 adult rats weighing between 160-250 g. Animals were divided into three groups five rats in each group selected randomly. There were 5 control rats (received distal water), 5 treated rats with 0.5 mg/kg b.w./day of lipo 6 black in 5cc distilled water DW, and 5 treated rats with 0.2 mg/kg b.w./day of lipo 6 black in 5cc DW. The animals were kept in Plastic cages at the college of Pharmacy, University of Babylon. The standard breeding environments were 3 months at a laboratory temperature of [24±20]. In addition, provided suitable water and food to the animals throughout the trial. The study was ethically approved by the department of laboratory science of college of Pharmacy, University of Babylon.

The Chemical and Method

Lipo 6 black was utilized in this experiment as a powder. For the first group, we administered [0.5 mg/kg b.w./day. lipo 6 black in 5cc.D.W orally. In the second group, 0.2 mg/kg b.w./day of lipo 6 black in a 5cc D.W was administered orally everyday through intubation.

Experiment lasted for three months, during which the rats' weight was measured and mortality counted every month. Finally, at the end of the three months the animals were anesthetized with ether sacrificed. In the final phase, the liver and kidney are taken for histological study.

Histological Study

The liver and kidney were removed, fixed with 10% formalin, then dehydrated with increasing ethanol concentrations. Tissue samples were dehydrated, rinsed with xylene, impregnated with fluid paraffin wax, embedded, and then blocked. 5 micrometer-thick slices were stained with hematoxylin and eosin.

Statistics

The weight of the animals expressed in grams and the level of significance was tested using independent sample t-test at p value≤ 0.05.

Results

Significant reduction in animal weight were noticed after one month as compared with the baseline weight of the same animals in both treatment groups. (Table 1 and 2).

Three months after the start of the current study, there were noticeable and significant weight loss. Unfortunately, some cases that treated with a dose of (0.5 mg/kg b.w./day lipo 6 black) were lost.

Table 1. The Weight of the Rats Before and After Treatment with "0.5 mg/kg b.w./day lipo 6 black in 5cc. D.W."

NO	Weight Before Treatment	Weight After One Month	Weight After Two Months	Weight After Three Months
1	210g	190g	162g	died
2	163g	149g	died	
3	190g	162g	160g	died
4	238g	215g	211g	died
5	180g	150g	died	

Table 2. The Weight of the Rats Before and After Treatment with "0.2 mg/kg b.w./day Lipo 6 Black in 5cc. D.W."

NO	Control	Weight Before Treatment	Weight After One Month	Weight After Two Months	Weight After Three Months
1	200g	177g	170g	165g	162g
2	201	243g	239g	233g	229g
3	220	248g	240g	238g	230g
4	215	173g	166g	161g	158g
5	200	224g	219g	211g	205g

Histological results for the remaining rats that treated with a 0.2 mg/kg b.w./day lipo 6 black yielded mild interstitial vascular congestion and intraglomerular vascular congestion in kidney as compared with control histological results (Figure 1 and 2).

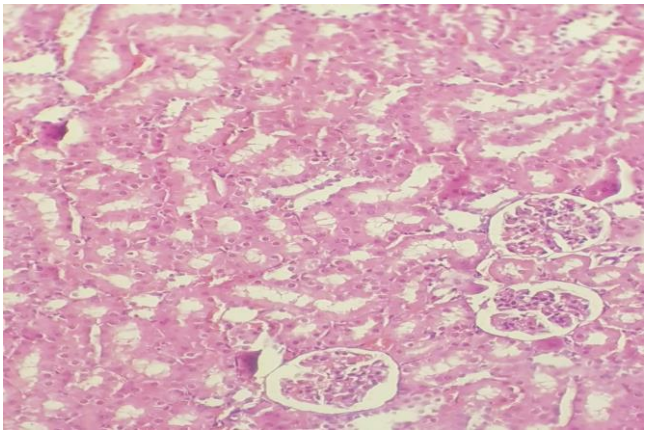

Figure1. Cross Section of the Normal Kidney (Control) Stain with (H&E) 400X

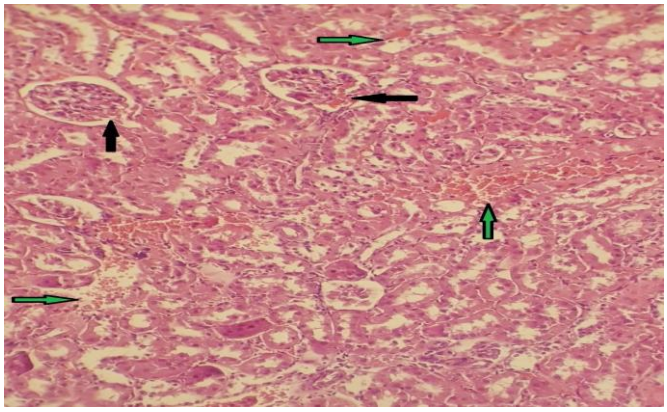

Figure 2. Cross Section of the Kidney Explain Mild Interstitial Vascular Congestion [Green Arrow], Intraglomerular Vascular Congestion [Black Arrow], Stain with(H&E) 400X

Furthermore, areas of degeneration and necrosis were found in the liver when compared with normal liver histological section as shown in (Figure 3 and 4). On the other hand, lymphocytes infiltration was noticed as shown in Figure 5.

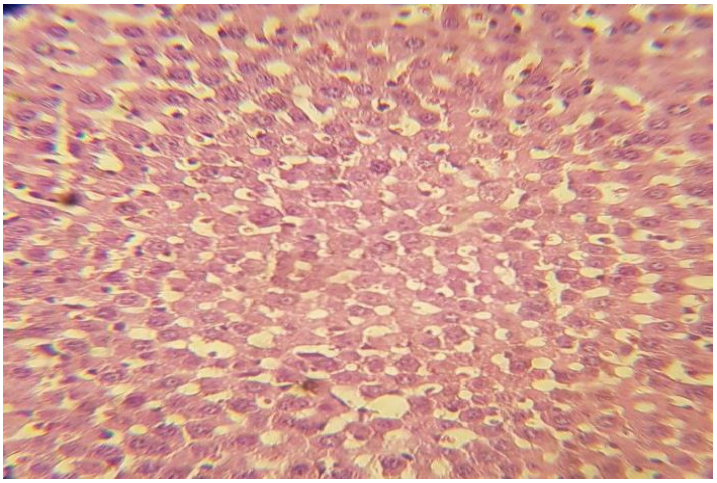

Figure 3. Cross Section of the Normal Liver (Control) Stain with (H&E) 400X

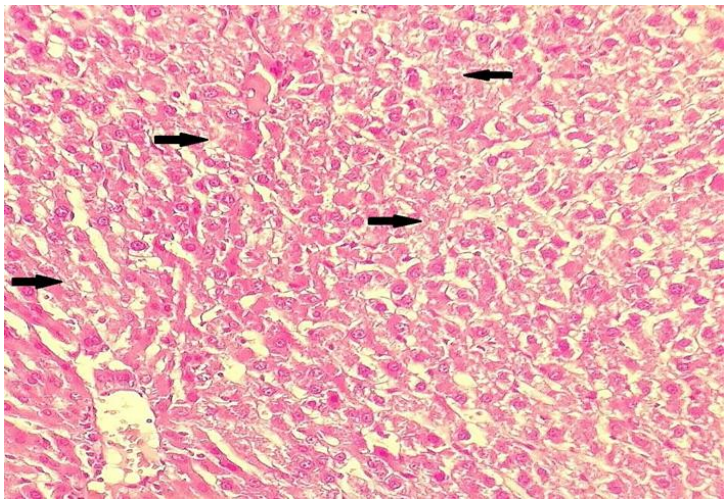

Figure 4. Cross Section in Liver Showing Area of Degeneration and Necrosis- [black Arrows] Stain with (H&E) 400X

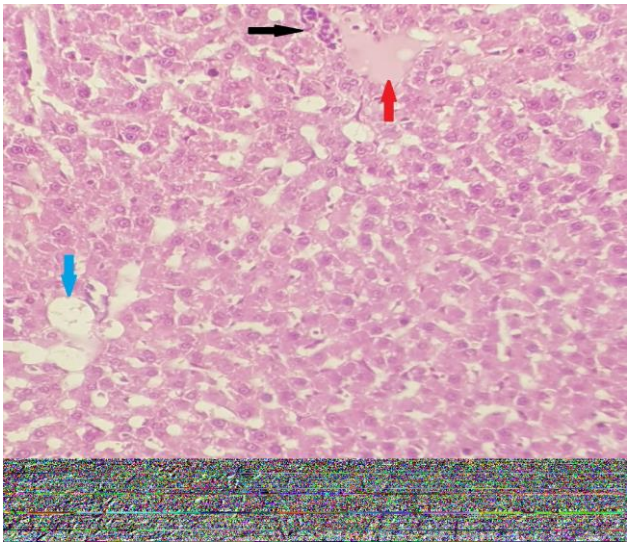

Figure 5. Cross Section in Liver Shows Lymphocyte Infiltration (black Arrow), Hemorrhage (Red Arrow), Area of Increased Sinusoids. (Blue Arrow) Stain with (H&E) 400X

Discussion

Lipo 6 black is a super concentrated formula that helps burn fat effectively. It has significant effect on weight as observed in the current study started after the first month of experiment.

Regarding histological findings, as compared with the normal kidney tissue. Mild interstitial vascular congestion and intraglomerular vascular congestion in the kidney were found. The emergence of these results may be due to the presence of caffeine in lipo 6 black, which increased renal congestion. The Caffeine's cardiovascular effects may be mediated by the inhibition of phosphodiesterases and the blockage of adenosine receptors [12]. It remained logical to predict that a rise in the concentration of these stimulants would open the door to unfavorable effects on blood pressure [13].

While it has been demonstrated that a single dose of sympathomimetic medications can boost blood pressure, heart rate, and sympathetic nerve activity in the body [14, 15]. Also, synephrine elevate blood pressure and heart rate [15, 16].

Cross section of the liver demonstrates areas of degeneration and necrosis in the liver, as well as lymphocyte infiltration, bleeding, and enlarged sinusoids. The reason for this result may be due to caffeine (one of the components of lipo 6 black) acting to reduce cell viability and increase necrosis, this results agrees with Amanda Maria [17].

In addition to that, caffeine may boost cortisol through activating central nervous system in men, but it may possibly interact with peripheral metabolic systems in women [17]. Besides, guggulsterones has been associated to liver injury for that reason persons with liver illness should take caution when using guggulsterones [18].

Figure 5 depicted the existence of lymphocyte infiltration and vascular congestion, were caffeine's effects enhanced. Moreover, the caffeine in lipo 6 black is metabolized using microsomal (P450) enzymes, most notably [CYP 1A2]. Hemorrhage, noticed in our study, could result due to the way that central nervous system [CNS] responds to the caffeine and additional stimulating substance, agreeing to Seifert et al [19]. According to Jing Fan (2019) [20], enlarged sinusoids may be caused by bleeding. The internal diameter of a hepatic sinusoids' reductions in tandem by way of the diminution in the blood flow speed inside sinusoids in addition to alterations in the systemic hemorrhages [21, 22].

Conclusion

Lipo 6 black is an effective fat burner. Lipo 6 black, a sympathomimetic medication, regulates lipolysis by stimulating beta adrenergic receptors in the adipose tissue through its content that increasing the serum catecholamine concentrations. Nevertheless, it has many risks and side effects. It is not recommended for use by people with high blood pressure. It also has different tissue remarkable effects especially in liver and kidney. We aspire to conduct more studies and research to know the extent of its effects on human.

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Conflict of Interest

Authors declare that there is no conflict of interest.

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