Study of Some Physiological and Histological Parameters of Albino Rats Administrated with a Herbal Obesity Slimmer Product

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Abstract

The modern studies on the treatment of obesity have dedicated on the potential activity of plants to control obesity on the metabolism of lipid and glucose. The aim of this study is to investigate about the effect of AB slim on body metabolism of its – takers and determine its safety. 16 female rats (150 - 250) divided equally into 4 groups, the first group considered as control group and administered distilled water, the three other groups daily administered the prepared aqueous solution of AB slim capsule for 45 days. The animals weighed after 24 hr. of the last administration, the animals were weighed. The results showed after weeks of treatment that the animals gain weight instead of losing it and there were no beneficial effects of this remedy on lipid profile, in contrast there was an increase in LDL levels and decrease in HDL. The hisopathological study showed degeneration and necrosis in most organs , liver, kidney, spleen and gastrointestinal tract.

Key words*: obesity, weight loss, herbal treatment, AB slim, histopathology.*

Introduction

The obesity in the world nowadays consider as a human public health problem which is leading to the death for women more than men in adults and children that have over weight [(1)]. There are many reasons for the obesity include gene and endocrine disorders, medications, or mental disorder [(2)]. Many people with health disorder be more acceptable to have over weight as psychiatric disorder patients and other [(3)].

The treatments of obesity mainly based on dieting and physical exercises, but the not considered diets may lead to hearts diseases and diabetes and many other disorders(4). Also the using of some plants may support the strategy for obesity control and weight management by enhancing the dominance of metabolic syndrome control [(5)]. The modern studies on the treatment of obesity have dedicated on the potential activity of plants to control obesity on the metabolism of lipid and glucose as green tea [(6)].

An enormous amount of herbal supplements are now present in the market and gyms for the controlling of obesity, even though they have not the same effect, reason being, supplements affecting different molecules thereby following distinctive mechanism of action varying completely from the other [(7)]. But the main action of these supplements focused on the receptors of the nervous system, by this means dealing with appetite and the metabolism of lipid and carbohydrate or caloric absorption or by increasing lipid excretion, increasing water removal, and improving mood[(8)].

Various supplements have not been studied and need more investigation to conclude efficacy and determine if supplements users vary from non-users with respect to their health outcomes when controlling for differences in diet quality. Further principles on production and marketing of these supplements would be needed[(9)].

AB slim is an traditional mixture of plants and herbs , it is used as a solution for the overweight problems and their complications. The aim of this study is to investigate about the effect of AB slim on metabolism in the body of its – takers and determine the safety of it.

Animals and Methods

Animals

16 female rats (150 - 250) were obtained from the College of Education for girls / Kufa University. These animals were kept under suitable environmental conditions of 20-25°C in an air-conditioned room andlight period of 12 hours daily. The animals were housed in plastic cages of dimensions 20 × 50 × 75 cm and had free access to water *ad-libitum*. The animals were kept for at least 2 weeks for adaptation before beginning the experiment.

Experimental design

16 rats were divided equally into 4 groups and housed in 4 cages. The first group considered as control group and administered distilled water, the three other groups daily administered the prepared aqueous solution of AB slim capsule for 45 days. The animals weighed after 24 hr. of the last administration, the animals were weighed. Blood samples obtained by heart puncture and the blood put in plane serum tube. Some organs were isolated for histopathological study, they include spleen , liver, kidneys, and parts of GIT, they were cleaned with normal saline then fixed with 10% formalin for 24 hr. then put in 70% ethanol for preservation until histological preparations.

Each capsule prepared for an average 70 kg human, this weight of capsule component dissolved in 700 ml of D.W., (10ml/kg), the animals were administrated according to their weight.

Histological study

The histological slides were prepared in histological unit in biology department/ college of science/ kufa university.

The histologic preparation were done according to Bancroft and Stevens (1982)(10). The prepared slides were examined with compound light microscope for study the histological changes induced by the treatment and compared with control samples.

Lipid profile measurements

Total Cholesterol Quantitative-enzymatic1-colorimetric determination of total cholesterol in serum (from Stanbio cholesterol Liquid color®) was performed.

HDL- Cholesterol

Low density lipoprotein (LDL) cholesterol and very low density lipoprotein (VLDL)cholesterol fractiond are precipitated from serum or plasma by means of magnesium chloride / dextran sulfate reagent, according to finely et al. high density lipoprotein (HDL) cholesterol is then determined in the supernant fluid, using a cholesterol reagent and the derived dilution factor in the calculation.

Serum Triglyceride (TG)

Stanbio triglyceride liquid color a quantitative enzymatic-colorimetric determination of triglyceride in serum was performed.

Calculation of LDL-Cholesterol (Friedewald et al., 1972) (11)

This was done by using the following equation:

LDL in mg/ dl = Total cholesterol – (VLDL + HDL-cholesterol)

Calculation of VLDL-Cholesterol (Friedewald et al., 1972) (11)

This was done by using the following equation:

VLDL in mg/ dl = Triglyceride / 5

Results

Body weight

The results in the figure (1) showed an significant increase in body weight in treated animals when compared with control group.

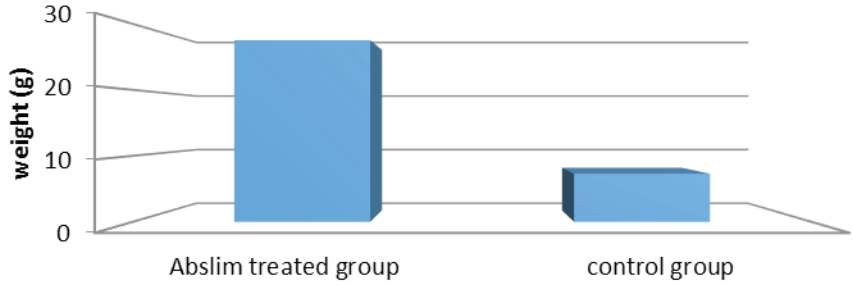

figure 1. weight gain after treatment in treated and control group (g)

Lipid profile

There were an significant increase P<0.05 in total cholesterol and triglycerides and a little non significant decrease in HDL and non-significant increase in LDL in the treated group in comparison with control group(Figure 2).

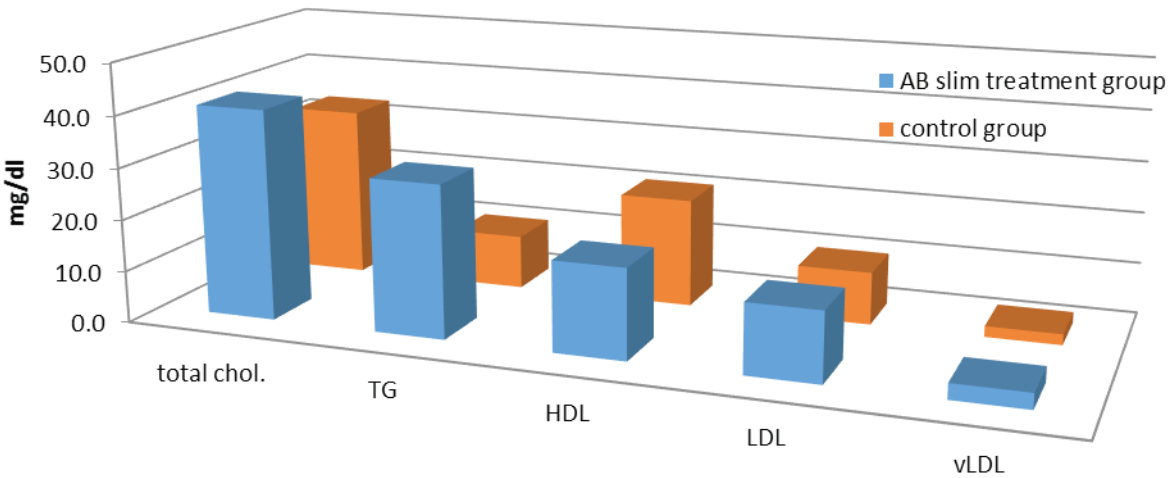

figure 2. lipid profile parameters in treated and control groups

3.3. Histolopathological study

Pathological changes were observed in AB slim treated animals in several organs, while the same organs of control animals had normal tissues. In the liver of treated animals there were some observations include: hemorrhage, cellular degeneration, sinusoidal dilution.

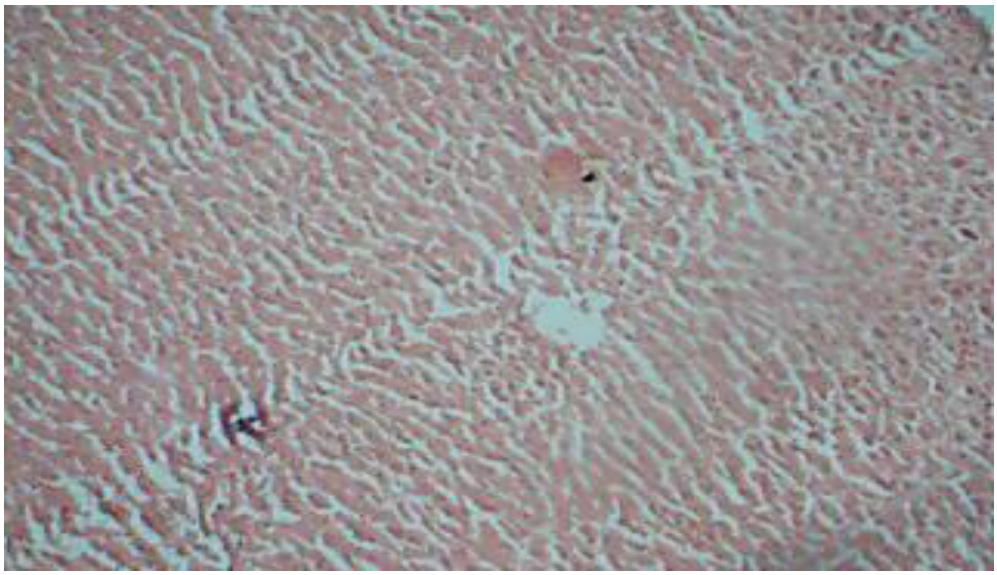

Figure (3) liver section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (100X)

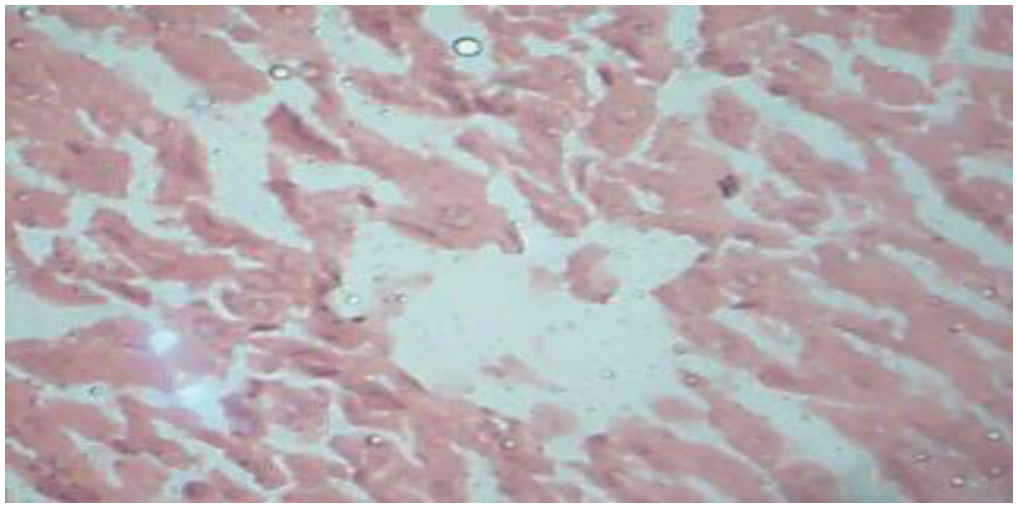

Figure (4) liver section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (400X)

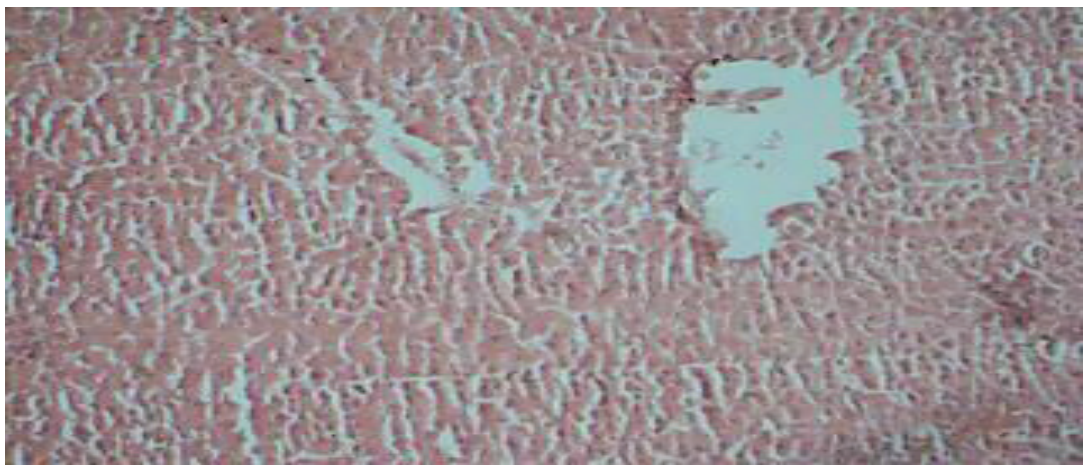

Figure (5) liver section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (100X)

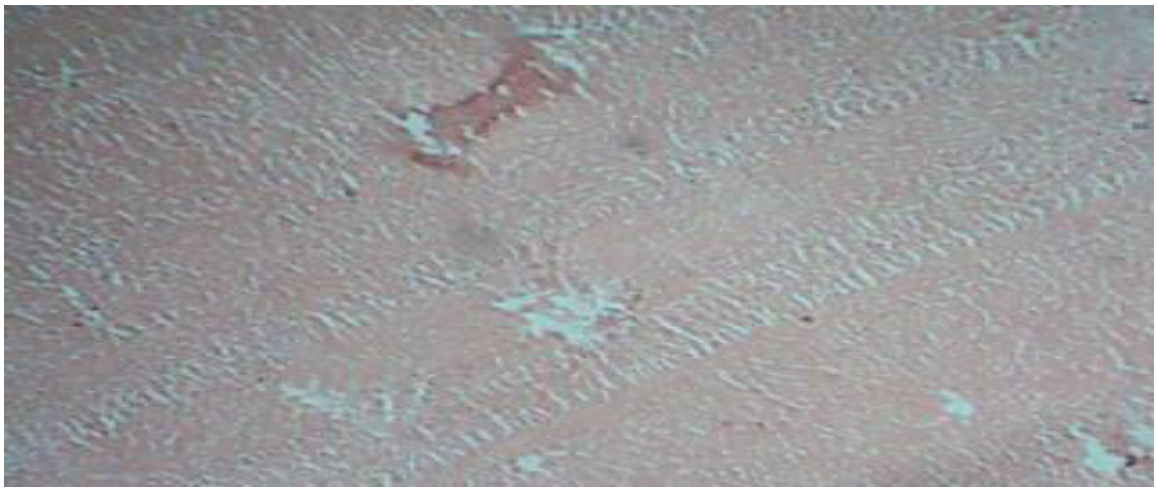

Figure (6) liver section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (40X)

In kidneys, the changes included: dilation in Bowman's space, cellular degeneration in tubules, glomerular atrophy.

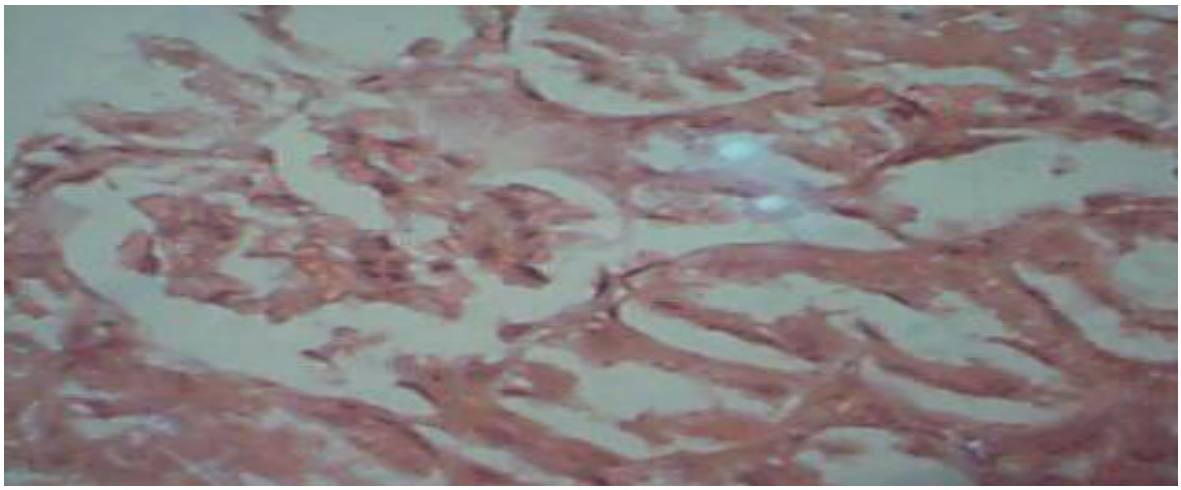

Figure (7) kidney section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (400X)

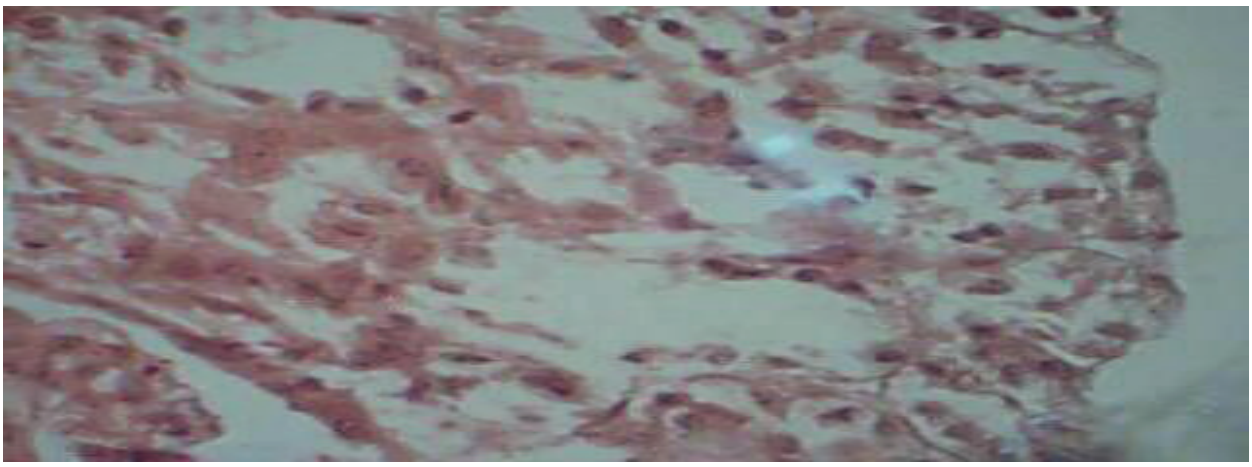

Figure (8) kidney section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (400X)

In the spleen there was a distinct dark pigmentation which related with abnormal high proportion of erythrocyte, and that mean a distinct congestion of the spleen. Also hemorrhagic areas observed.

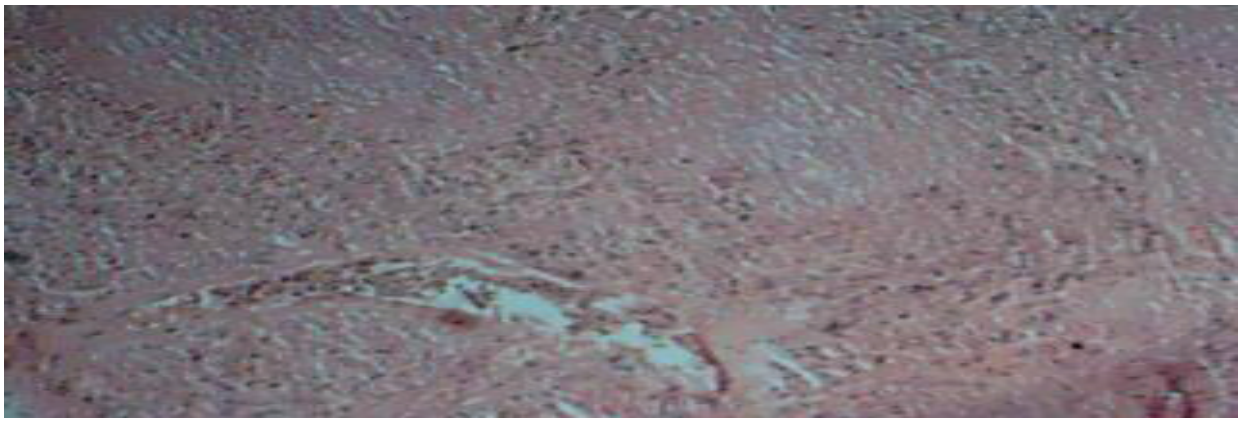

Figure (9) spleen section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (100X)

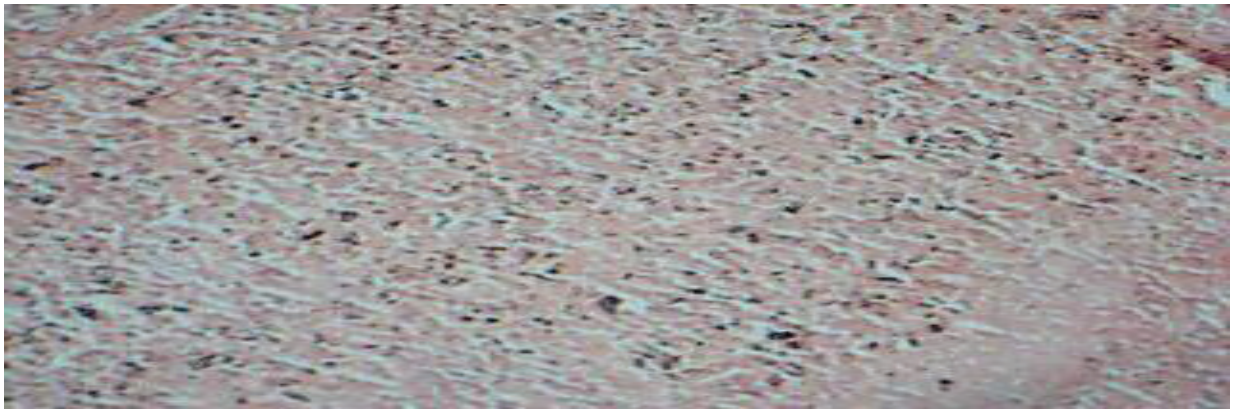

Figure (10) spleen section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (400X)

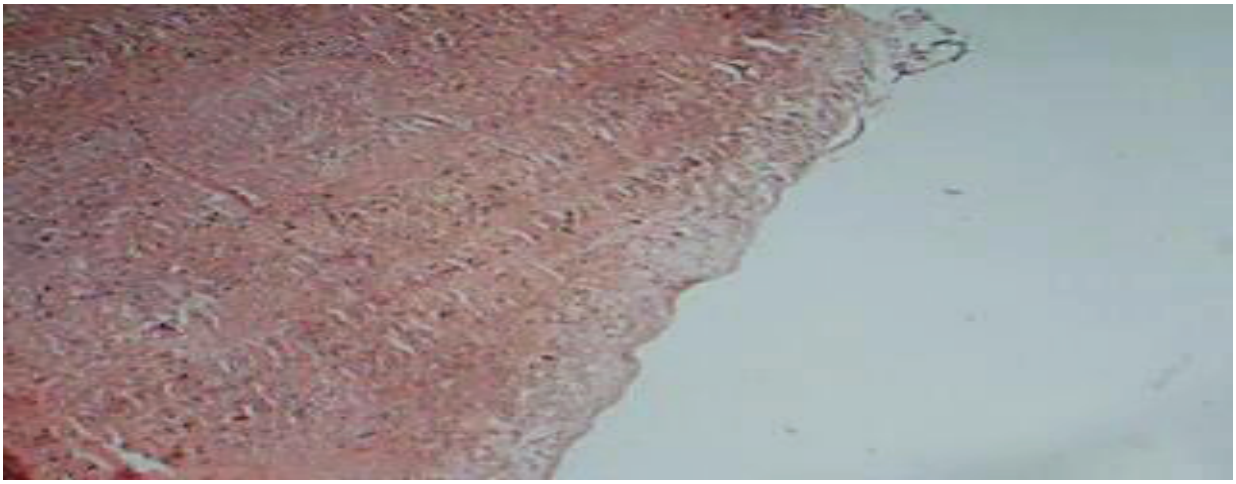

Figure (11) spleen section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (40X)

Gastrointestinal tract show a mucosal dystrophy, submucosal degenerations, and hemorrhage in some areas.

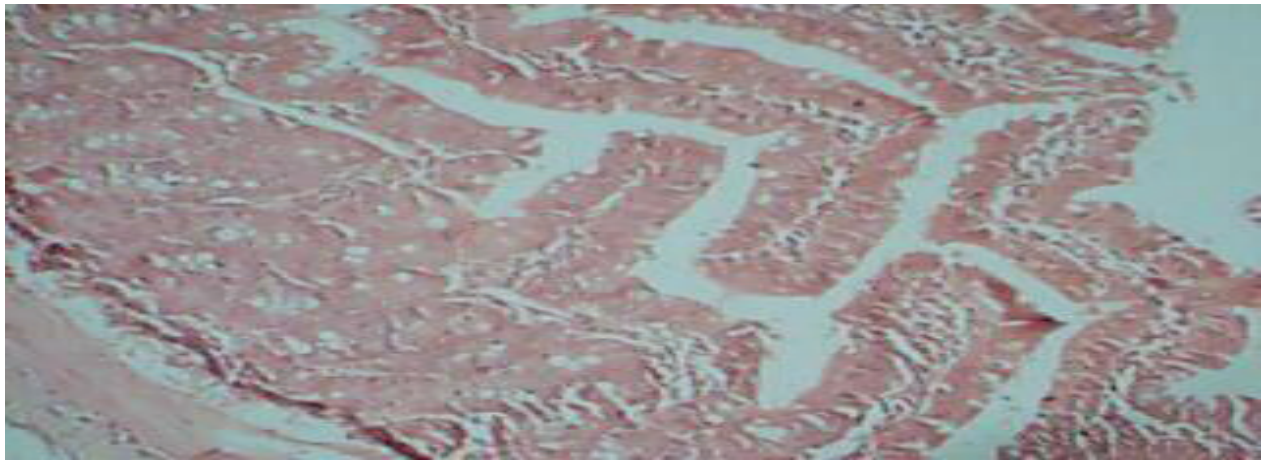

Figure (12) gastric mucosa section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (100X)

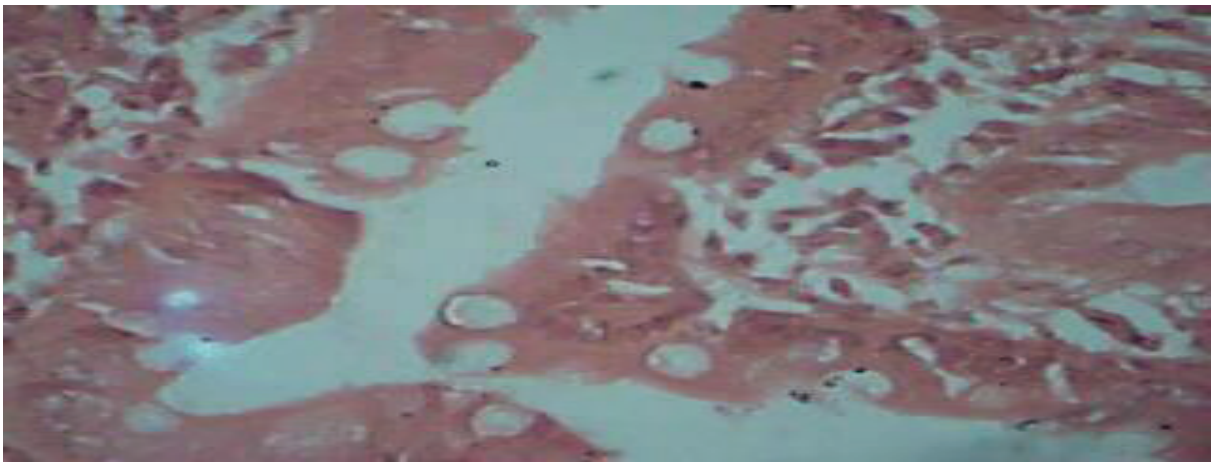

Figure (13) intestinal mucosa section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (400X)

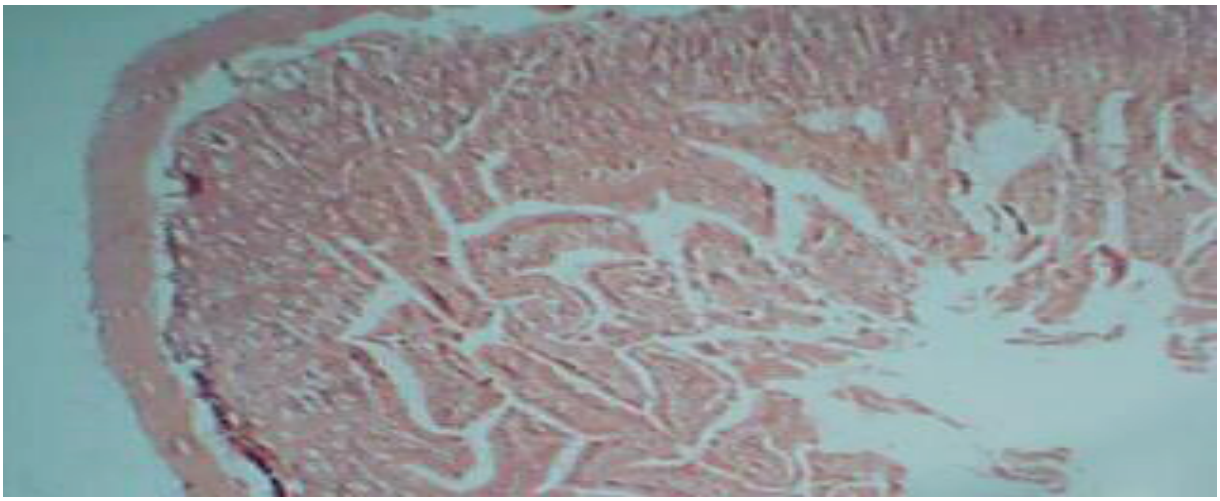

Figure (14) intestinal wall section of AB slim aqueous solution administrated rats. Hematoxylin eosin stain (40X)

Discussion

The useing of herbal medicine for weight reduction is not always safe. Moreover, for some herbal medicine the risk is sufficient to shift the risk-benefit balance against the use that medicine [12]. Some people believe that herbal medicines are safe. This case and review is about adverse complication of treating obesity with some herbal medicine.

An important demographic of natural health products users is serious, chronic, or recurrent medical conditions [13]. These individuals are also most likely to take prescription medications, and as the likelihood of an adverse event increases with the number of products taken concurrently, they are at an increased risk for experiencing drug–herb interactions. Although it seems that few reports of natural health products adverse events exist, studies have shown that adverse events due to NHP–drug interactions do occur but are underreported [14].

Many natural health products users report taking more than one natural health products simultaneously), which puts them at risk for herb-herb interactions [15].

In the current study we investigate an widely used herbal combination with a commercial name (AB slim), this product used recently as a weight lose remedy. Our results showed appalling outcomes. Firstly, after weeks of treatment the animals gain weight instead of losing it!!! This results exposes that some commercial herbal products may give their benefits by psychological effect on patients which may induce consumer to reduce their eating , so lading to weight loss.

Secondly, there were no beneficial effects of this remedy on lipid profile, in contrast there was an increase in LDL levels and decrease in HDL.

The hisopathological study showed degeneration and necrosis in most organs , liver, kidney, spleen and gastrointestinal tract.

We didn't found a comparable study about this product, most researches focused on a specific one herbal product but not on a combination of several herbals in one product. Besides the instruction leaflet of the product mentions the name of some herbal used but not their concentrations. Most ingredients found in this product (as the producers claim) have a strong effects. So the interactions among these herbals is likely to expected.

Natural health products drug interactions can be pharmacodynamic or pharmacokinetic and may result in additive (synergistic) or opposing (antagonistic) effects. In a pharmacodynamic interaction between chamomile and warfarin, the effects of one product are changed by the presence of the other, and a stable index of blood clotting, the INR, was raised [16].

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Conflict of Interest: None to declare.

Ethical Clearance: "All experimental protocols were approved under the Faculty of Sciences were carried out in accordance with approved guidelines".

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