

Effect of Some Alcoholic Extracts in Reducing the Fat Content of the Liver Tissue in Rat

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Abstract

Objective: This research was carried out in rats in a special place of the laboratory of histopathological diseases in the period 6/9/2018 until 23/11/2018, this study to detect effect of the addition of the alcohol extract of ginger in the reduction of fat in liver tissue of rats.

Method: Eight groups and replicates for each group. The groups were homogenous in weights and were placed in 13 cages. Each group consisted of 10 rat and at 5 fares each. In the first treatment, rat were fed on regular feeding without adding and feeding rats in the second treatment sessions add to it the alcoholic extract of ginger in Turkey 150 mg / kg. The third group is the same as the normal food after adding the alcohol extract of ginger at a concentration of 300 mg / kg.

Results: The results of the study showed a high morale in the rates of reduction of fat in the liver tissue of rat fed on the alcohol extract of the ginger and improved the conversion factor of food by adding the extract of alcohol extract of each of the ginger.

Keywords: Cholesterol, liver tissue, alcohol extract of each of the ginger

Introduction

The cultivation of medicinal and aromatic plants and herbs has spread in most parts of the world and has been used for its medicinal effectiveness and quick cure for diseases which are used as whole herbs, powders, or aqueous or aquatic or oily extracts¹¹. Zingiber is a plant that is found in the hot areas. Rizhomes are used under the soil and contain volatile oils with pungent smells and pungent taste. They are also squirrels or yellowish white. They contain the ginger root nodes on resins, the most important of which are Gingerol¹¹

Methods

Preparation of the alcoholic extract of ginger

Get the ginger from the local markets and cut the raw

ginger into very small pieces. Solve 30 g of raw material in alcohol to get the ginger extract in 70 ml of ethyl alcohol at 96% concentration and place in a clean glass jar in a dark place, 4 times daily for at least two weeks. The solution is then filtered with Whatman1 filter paper²⁰. The solution is then placed in the rotary evaporator, at a temperature of 45 m for the purpose of extracting the solution. The solution was then placed in an electric oven at 45 ° C for 20 minutes to dispose of the remaining alcohol. After extracting the extract, it was weighed by a sensitive balance and stored in clean containers.

Histological study of light microscopy

For the purpose of studying the histological structure of the liver of mice, the following chemicals and colors were used⁷

Aqueous Bouin's Solution

I use this solution in the installation and have attended the accreditation⁷

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Alcoholic alcohols

Attended progressive concentrations of ethanol alcohol 30%, 50%, 70%, 80%, 90% and

95% using distilled water¹⁶

Harris Hematoxylin Stain

This is a color of basal colors that are generally used for all animal tissues, especially when using the color of the Eocene⁷

Dissection of animals

At the fifth week of the rat's lifetime, 8 rats were taken from each treatment. The total number of mice was 16 and then the animal was explained after anesthesia based the following¹²

-Place the animal in a Dissecting Tray.

- remove the skin, and then remove the sternum Caudal appendage until the area separated with the gravitational bone Coracoid bone Cranial.

- Make a cut in the skin in the lower abdominal region.

- Elevation of the liver after cutting the suture that connects it to the transverse septum barrier separating the pericardial cavity and the abdominal cavity.

- The samples were transferred to the installed solutions Formalin.

Preparation of histological slides

I attended paraffin slices based on¹⁶

. Fixation

Place a section of samples in a 10% formalin solution in time 24 hours. **Washing**

Samples installed with a formalin solution washed 10% concentration with tap water for half hour.

Dehydration

The samples were passed with an ascending sequence of ethyl alcohol for the purpose of drawing water from the sample, starting from 70%, 80%, 90%, 95% and 100% for half an hour per concentration.

Clearing

Sample samples with Xylene for 15 minutes to make samples more transparent.

Infiltration

Before the leakage, the samples were transferred to a mixture of xylene and paraffin wax, melting 58-56m at 1: 1 for half an hour, then placed in molten paraffin wax and repeated three times for half an hour each.

Embedding and making blocks

The samples were immersed in the same type of wax used for filtration. The molten wax was poured into special molds for this purpose. The samples were then transferred to the air bubbles to remove hot bubbles around the sample and leave the mold to harden.

Trimming and Sectioning

The molds were waxed using a sharp scalpel and mounted on a wooden stand. The mold was placed on the Rotary Microtome. The models were then cut into serial sections with a thickness of seven micrometers. The sections were then placed on clean glass slides coated with a thin layer of Mayer's aluminum and distilled water. Hot plate temperature 37 m to dry

Staining

The textile slides were colored with their own colors and the following :

Harris hematoxylin and eosin

The sections were colored with hematoxylin Harris-eosin

- Histological sections were put in the xylene and in two stages for ten minutes for each stage

- The syllables underwent a downward chain of concentration of ethyl alcohol

- Rinse the sections with Hematoxylin Harris for 15 minutes and then wash with tap water for 2 minutes. After that, wash the sections in distilled water for 2 minutes.

- The sections were painted with the eosin coating for 3-4 minutes, transferred to ethyl alcohol 70% concentration for 2 minutes.

- Dry the sections with a series of progressive

concentrations of ethyl alcohol 70-100% and for 2 minutes per concentration.

- Raise sections by using xylene in two phases and for 2 minutes for each stage.

Mounting

The plates were placed using a Dextrin Plasticizer Xylene (D. P. X). Then, covered with glass cover and no bubbles, the glass slides were transferred to a 37 ° C hot plate and left to dry.

Microscopy

Microscope Photography Microscopic slides were examined using a light microscope and various magnification powers to suit the current study requirements. The microscopic slides were selected with a digital microscope equipped with a digital camera and a standard 12-megapixel Canon camera was used to visualize prototypes.

Results and Discussion

The Liver

The results of the current study showed the effect of alcohol extract of ginger in the morphological description and tissue composition of the rat liver and compared it with the treatment of control and the following.

The histological of the liver in the rat of the control treatment

The hepatic tissue in the rat appeared to treat the control of hepatic cells, which are covered with a Glisson capsule, composed of a thin layer of connective tissue that extends from deep inner barriers. Among the hepatic cells are a number of sinusoids that are lined with two types of cells They are endothelial cells that are flat cells that are not linked to each other. Their nuclei

are compressed and dark-colored and their cytoplasm is somewhat unnoticeable, while caper cells appear in the irregular blood cell cavity, and hepatic cords, The hepatic tissue in the mice appeared to treat the control of hepatic cells, which are covered with a Glisson capsule, composed of a thin layer of connective tissue that extends from deep inner barriers. Among the hepatic cells are a number of sinusoids that are lined with two types of cells They are endothelial cells that are flat cells that are not linked to each other. Their nuclei are compressed and dark-colored and their cytoplasm is somewhat unnoticeable, while caper cells appear in the irregular blood cell cavity, and hepatic cords appear around the veins He passed Central veins, as well as the portal area of the branch of hepatic portal vein, the hepatic artery branch and the branch of bile ducts, and occasionally the lymphatic cell branch (Fig. 1, 2 and 3) in their study on chickens⁸.

Sinusoids have appeared in narrow sinuses in mice and this is consistent with what has shown through their studies on chickens and ducks.

Polygonal shape (23.4 μm), a nucleus or two spherical nuclei, and one or more central nuclei, showed a cytoplasmic granularity, because it contains a diverse group of organelles. This result is consistent with what the researchers⁸ The branch of the hepatic portal vein located in the inner courtyard is characterized by the thinness of its wall and its large cavity. It is surrounded by endothelial cells surrounded by smooth muscle fibers, while the hepatic artery branch is characterized by its wall thickness, small cavity, limp, smooth muscular fiber^(8,21) referred to large bile ducts lined with simple epithelium based on the original lamina propria and surrounded by smooth muscle fibers covered with serosa. The primary bile ducts are lined with vertical epithelial cells.

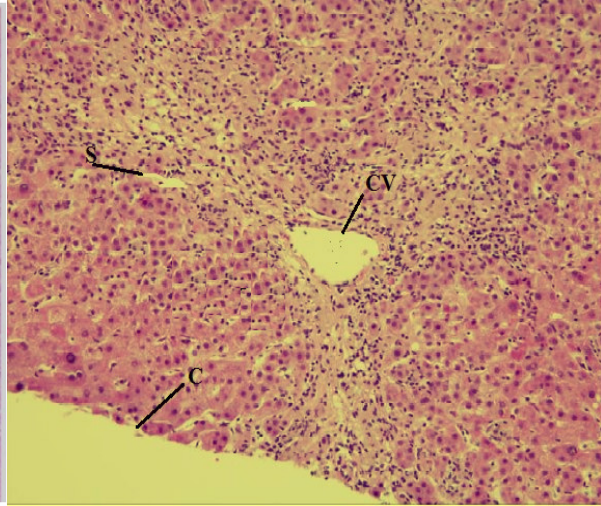
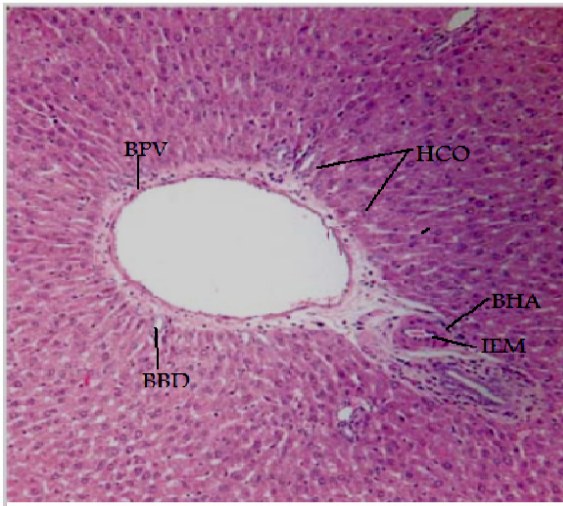


Figure 1: A transverse section of the liver of the control group in rat, showing the apillary patina, hepatic artery branch hepatic vein branch and bile duct branch (hematoxylin-eosin color) 10 X

Figure 2: A transverse section of the liver for a control group in rat showing the central vein, vein and hepatic cords (stained hematoxylin eosin) 10X.

- | | |
|--------------------------------------|------------------------|
| BPV Branch of portal vein | C Capsule |
| HCO Hepatic cords | CV Central vein |
| IEM Internal elastic membrane | S Sinusoid |
| BHA Branch of hepatic artery | |
| BBD Branch of bile duct | |

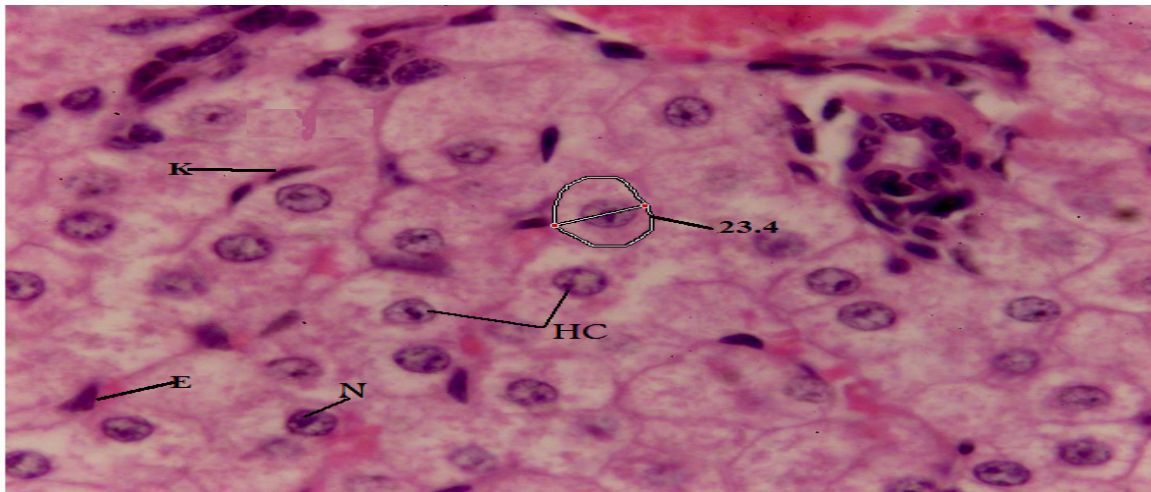


Figure (3): transverse section of the liver of the control group in mice shows hepatic cells, cells Kieffer, hepatic cells cytoplasm containment gaps (colored Hematoxylin - eosin) 40X.

- | | |
|-----------|--------------------------|
| HC | Hepatocyte |
| N | Nucleus |
| K | Kapfer cells |
| E | Endothelial cells |

The histological structure of the liver in rat treated with the alcohol extract of ginger at a concentration of 300 mg / kg:

The results of histological study showed that liver-fed rat on the standard diet plus her alcoholic extract of ginger concentration of 300 mg / kg in which distension may occur in the liver cells and the increase in the hepatic cells size as the diameter reached hepatic cell 30.4 micron and observed increasing the level of bilateral cells cores with expansion Central venous and get a blood congestion in the blood vessels and for the expansion of the bile duct branch (6 and 7 and 8 photos) compared with the control group may be due to the alcoholic extract of ginger, which may be attributed to the liberation of acid Alarkidunk located in phosphorescent fat that enters in the composition of the elk cells Friendly, leading to activation Almothinat Prostaglandins, which caused the expansion of blood vessels and the events of the expansion of the bile ducts³. As for the reduction of

the protein level of fat Lipoprotein lowland density of LDL-C, and raise the protein level of fat and high-density High-density Lipoproteins may inhibit ginger absorption of cholesterol from the intestine and increases raised as a result of increased Adrar yellow This is indicated by the researcher and his group¹³ thereby is reflected in the reduction of LDL-C and raise HDL-C, or perhaps because of the containment of ginger on the high content of vitamin C, which stimulates the secretion of insulin and works Kamadada antioxidants thus occurs on the reduction in LDL-C and raise the HDL-C and this is what he referred⁴ and the ability of Ginger rhizomes powder to cause swelling in the cells Liver compared to what is in the control treatment may be due to the possession of ginger extract compounds have a similar action to insulin hormone in its ability to alter the metabolism of carbohydrates and increase the formation of calcification by increasing the entry of glucose into the cells, causing swelling^(4,17)

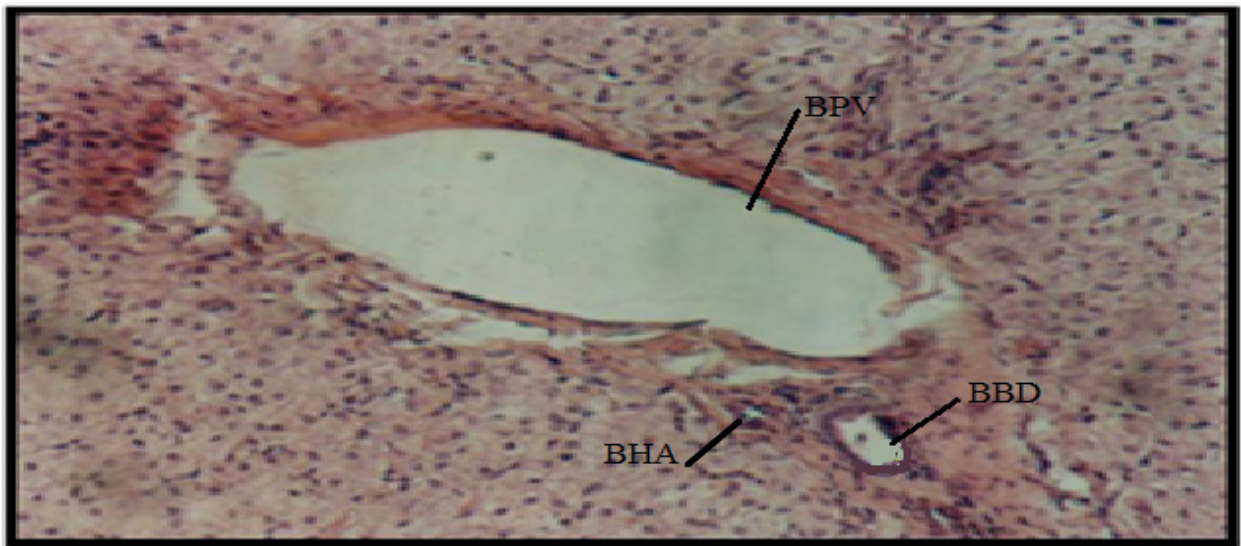


Figure 4: A transverse section of the liver of rat (treated with ginger extract 300 mg / kg), showing the hepatocellular patina, weed in the hepatic artery branch, the hepatic portal vein and the bile duct (hematoxylin- eosin) 10x.

- BPV** **Branch of portal vein**
- BHA** **Branch of hepatic artery**
- BBD** **Branch of bile duct**

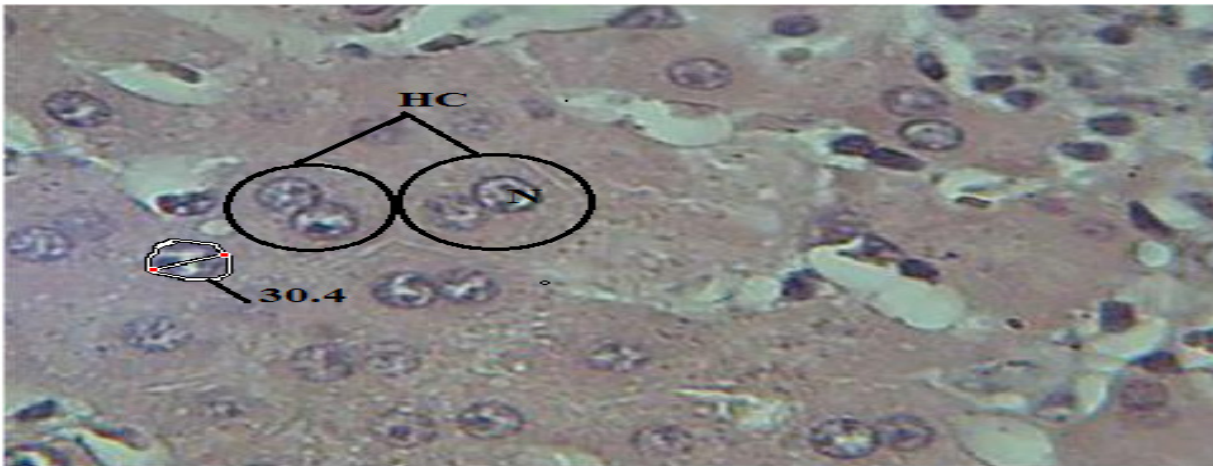


Figure 5: A cross section of the rat liver (a coefficient of ginger extract 300 mg / kg), showing double-core cells, increased hepatic cell diameter and disappearance of fat cells compared with the 40x hematoxylin-eosin control group.

N Nucleus
 HC Hepatocyte

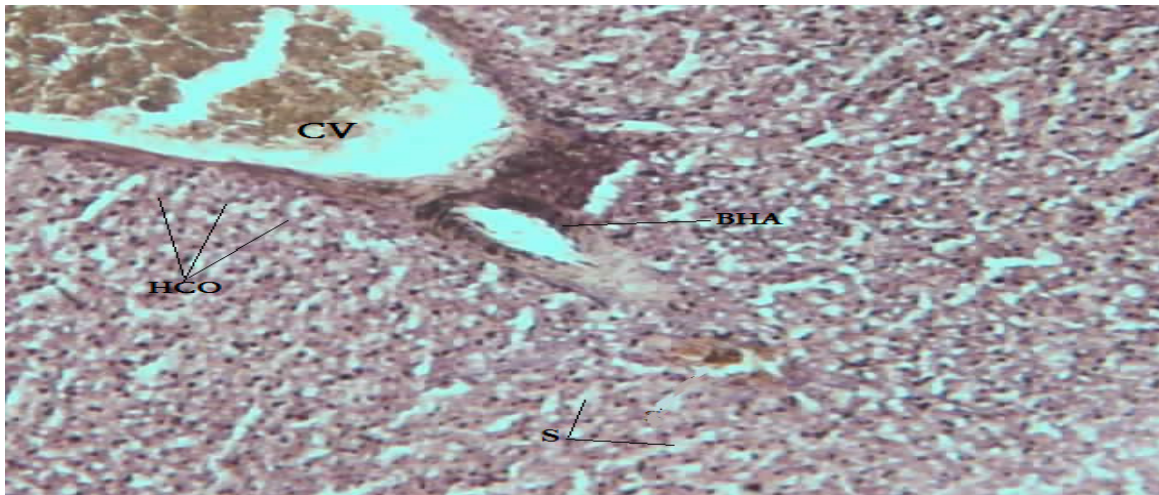


Figure 6: Transverse section of rat liver (treated with ginger extract at 300 mg / kg concentration) showing hepatic cell proliferation and liver vein congestion (hematoxylin-eosin color) .10X

CV Central vein
 S Sinusoids
 HCO Hepatic cords

All experimental protocols were approved under the *Al Mustaqbal University* college, Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Financial disclosure

There is no financial disclosure.

Conflict of interest

None to declare.

Ethical Clearance

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