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HISTOLOGICAL ASSESSMENT FOR THE EFFECT OF USING BACON ON THE SKIN OF FEMALE RATS

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ABSTRACT

Adult twenty four and non-pregnant female rats were dosed with the carcinogen dissolved in olive oil by oral administration, at the rate of 1 ml, and in two doses, each dose containing 0.5 ml of the carcinogen, and the second dose was given three days after giving it to the first dose, nother group of non-pregnant adult female rats was injected with 0.5 ml of acetone solution containing the carcinogen. The second dose is injected three days after the first dose, The animals were fed on laboratory-made sauces from beef containing 156 mg/kg of sodium nitrate to kg of minced meat for forty-five days with daily follow-up of the animals.

behavior Drinking water was continuously provided to the group of rats, while 1% ethanol alcohol solution was given to the other group to know The effect of the interaction between bacon and alcohol, The results showed the appearance of external histological changes after seven days of dosing with the carcinogen, while tumors appeared after seventy-two hours of injecting the carcinogen. The results also showed the cohesion of the subdermal layer and its containment of intact sebaceous glands and hair follicles, and the appearance of healthy collagen fiber bundles with white blood cells and fibroblasts when fed to rats on commercial forage, but when feeding on commercial forage, the results showed the distribution of fat cells regularly with bundles of collagen fibers and the appearance of vessels Bloody engorged with blood, and hair follicles appear soundly and clearly in the skeletal muscles.

The results also showed that when feeding with commercial feed and injecting the carcinogen, the epidermis layer appears in a very thin way surrounded by keratin from the outside, and the dermis layer contains bundles of colloidal fibers. due to the appearance of skin cancer.

The histological sections showed the separation of the epidermal layer from the dermis layer containing bundles of collagen fibrous fibers with abnormalities in the hair follicles and sebaceous glands and a clear spread of white blood cells around them. of colloidal fibers in the dermis and atrophy of the sweat glands, when feeding rats on bacon with the administration of the carcinogen, which indicated the effect

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of bacon containing sodium nitrate in accelerating the emergence of cancer cells, The results also showed that rats fed bacon while drinking alcohol-containing water led to the appearance of the skin complexion is thin with sloughed keratin threads and blood vessels engorged with blood, with the degeneration of some fat cells and deformation in the hair follicles. And infiltration of white blood cells, including lymphocytes.

Keywords: Carcinogenic substance, 127 Dimethylbenzene, sodium nitrate, bacon, alcohol, female rats, skin cancer.

Introduction

Several studies indicate that there is a relationship between eating meat and the risk of cancer. The formation of mutations, heterocyclic amines and polycyclic hydrocarbons depends mainly on cooking methods, their release and production, in addition to the effect of cooking on fats, nitrous + amine and heme iron compounds found in meat products, which are considered among the Factors affecting the incidence of colorectal cancer are the two types most closely associated with the consumption of red meat, and studies show that eating meat may increase the risk of other types of cancer including breast cancer, stomach cancer, prostate cancer, pancreatic cancer, lung cancer, laryngeal cancer, bladder, kidney, and endometrial tumors. the womb(Alexander,2013).

The American Cancer Institute also suggested that eating red meat, as a high-energy food, could have an effect on obesity, which is a major risk factor for cancer (Ferguson, 2010).

As Ferlay et al., (2010) showed that eating 100 g / day of red meat increases the risk of cancer to 14%, while this increase in infection is 31% for those who eat processed meat up to 100 g / day.

han et al., (2011) also indicated that eating more than 100 g/day of red meat increased the risk of colorectal cancer to 37%, and the increased rate of colorectal cancer was 21% when eating more than 50 g/day of red meat. Processed meat.

It has been observed in various studies that individuals who consume large amounts of red or processed meat with more energy-rich food products including sugar and alcoholic beverages, and reduce the intake of vegetables and vitamins are more likely to develop cancer

(Oostindjer et al., 2014).

In Iraq, some studies were recorded that show the primary relationship between eating different types of meat and indicators of heart disease and cancer (Al Douri, 2019).

Therefore, this current study aimed to make a comparison of two types of meat, namely, regular beef and beef bacon, to which sodium nitrate was added at a rate of 156 mg/kg when fed to rats after feeding or injecting the carcinogen (substance, 127 dimethylbenzene) into the breast of females and observing the effect of carcinogenicity in the breasts of females. It depends on the histological changes in the breast.

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Materials and Methods

Raw Meat Samples

Beef samples were obtained from the local Qasaba market stores in the city of Tikrit and were minced three times for the purpose of preparing them for the manufacturing process, then adding the ingredients to them and giving them to the rats.

Manufacture of bacon and packed in membranes

0.5% salt with 156 mg/kg of sodium nitrate was added to a kg of minced meat at a rate of three times in the mincing machine and mixed well and then packed in the trays (intestines) and the sandwiches were dipped in boiling water for 3-5 minutes and then the sandwiches were cooled directly for the purpose of reducing heat.

Storage in the freezer for the purpose of use

The Sun stored the miniatures filled with bacon in the freezer at a temperature of -18 ° C for 45 days from 11-1-2020 until 15-12-2021 for the purpose of preservation and given to rats at different intervals.

reparing the experimental animals

I write experiment animals

Adaptation was made to the rats on the new conditions in which they live for five days before the beginning of the experiment for acclimatization to the new conditions. The rats were fed a prepared standard meal, which is an integrated mixture as shown in the preparation of the standard diet, and then the other groups were fed on the experimental ration containing on cured meats.

Preparing experimental animals

Male white (laboratory) rats were used at an average of (24) rats, ages ranged between 2-1.5) months, and average weights ranged between (200-150) grams. The animals were obtained from the animal house / College of Veterinary Medicine - Tikrit University. The laboratory animals were placed in cages. Plastic, taking into account that the space is to the extent that guarantees freedom of movement, and sawdust was used to brush the floor of the cage, in order to secure the greatest amount of moisture absorption, as the sawdust is changed periodically to maintain the cleanliness of the cage, as it was emphasized to provide drinking water stored inside sterilizable plastic bottles. , while providing food by the open method. And setting the temperature of the rats' room at 22° C, humidity rates 50%, and regulating the lighting cycle so that it is 12 hours of light and 12 hours of darkness (Bashandi, 2003).

Preparation of 5% ethanol alcohol solution, which is offered for drinking, for the purpose of knowing the interaction between bacon and alcohol

A 5% ethanol alcohol solution was prepared by combining 5 ml of ethanol with 95 ml of distilled water and then fed to female rats.

Preparation of the carcinogen

100 ml of the carcinogenic substance, 127 Dimethylbenzene anthracene, was dissolved in 20 ml of olive oil

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Dosing rats with the carcinogen

The carcinogen dissolved in olive oil was dosed according to the method indicated to the rats via oral administration at the rate of 1 ml and in two doses, each dose 0.5 ml of the carcinogen. The second dose was given three days after giving the first dose (Saravanan et al., 2016).

Injection of the carcinogen

Male rats were injected with 1 ml into the scrotum and in two doses. In each dose, 0.5 ml of the carcinogen dissolved in acetone is injected according to the method mentioned, and the second dose is injected three days after the first dose (Takeshi et al., 2012).

Histological examinations

Histological studies were performed on the skin of female rats immediately after slaughtering the animals. The samples were washed with diluted saline solution to remove blood, diluted with 10% formalin solution, then washed with running water and transferred into containers containing 70% alcohol for the purpose of preparing wax samples for them.

Tissue diagnosis

Tissue diagnosis was carried out using an optical microscope (Olympus Japan) and the changes in the studied tissues were identified in the tissue laboratory of the College of Veterinary Medicine / Tikrit University.

Visual and behavioral monitoring

The rats were monitored during the 45-day trial period to follow up the external macroscopic changes of the rats, general shape, weight - ears - tail and skin - legs - hair - eyes - activity and movement.

Results and discussion

Follow up on cancer

Picture (1) The appearance of skin cancer in the breast area of female rats that were injected with the carcinogenic substance after seven days of dosing.

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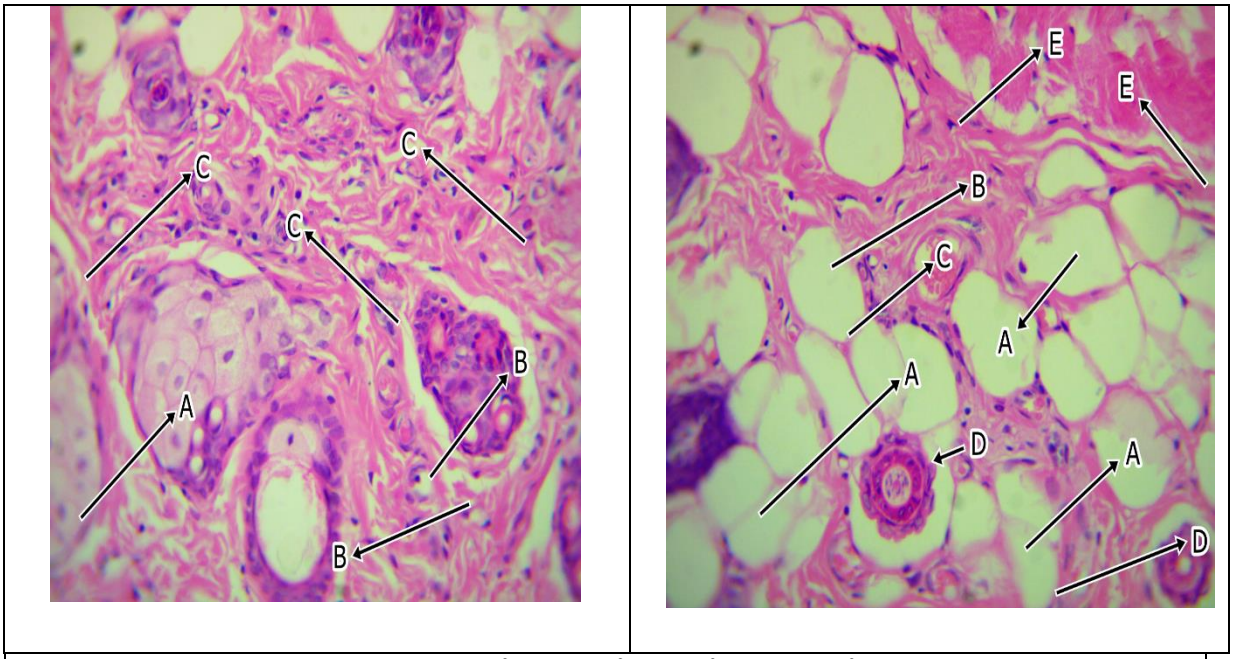
Picture (2) The appearance of skin cancer in the breast area of female rats that were injected with the carcinogen after seventy-two hours.

Histological Examinations:
Feeding rats on natural feed



3A A section of tissue in the skin of a fed rat On natural feed **3B**

Picture (3A) shows the histological section in rats fed with normal forage, in which the subdermal layer is coherent and contains sebaceous glands (A), hair follicles (B), healthy collagen fiber bundles with white blood cells and fibroblasts (C) H&E,40X).

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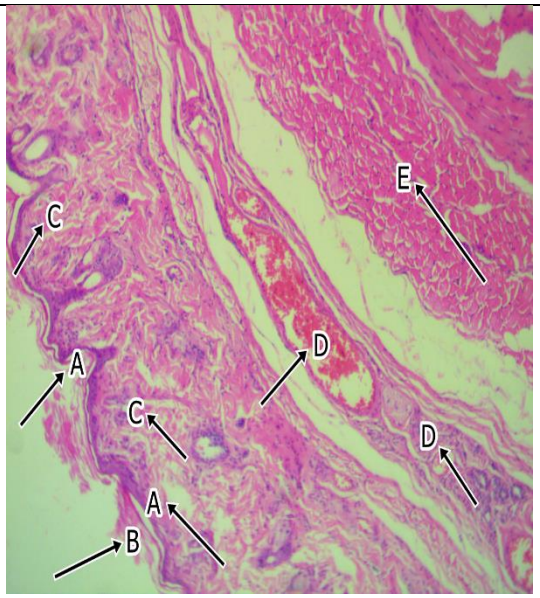
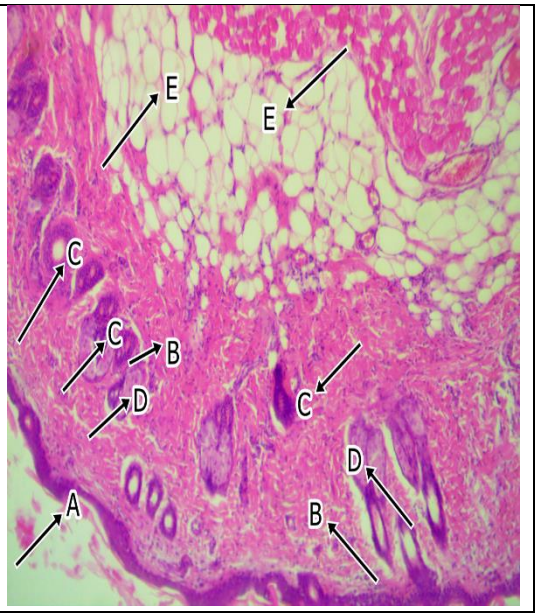
The picture (3B) shows the histological section of the rats fed with normal forage, and it is noted that fat cells are distributed regularly (A) with bundles of collagen fibers (B), blood vessels engorged with blood (C), hair follicles appear in a healthy and clear picture (D). Skeletal muscles (E) (H&E, 40X).



3c- histological section of the skin of a fed rat On natural feed + dose of the carcinogen



3d- histological section of the skin of a rat fed natural forage

The picture (3c) shows the histological section in the rats fed the natural forage with the carcinogen dose. It is noted that the epidermis layer appears in a very thin shape surrounded from the outside by keratin (A), the dermis layer contains bundles of colloidal fibers (B), hair follicles (D) The subdermal layer has extensive blood congestion with degeneration of the adipose tissue and the cytoplasm of skeletal muscle fibers in the subcutaneous area (E (H&E,40X).

The picture (3D) also shows the histological section in the rats fed the natural forage. It is noted that the epidermis is composed of a layer of multi-row squamous cells (A), the dermis layer consisting of a dense connective tissue that contains the sebaceous glands accompanying the hair follicles, as well as the sweat glands (B). The subdermal layer consists of fatty tissue continuous with skeletal muscle cells and contains some congested blood vessels (C) (H&E,40X).

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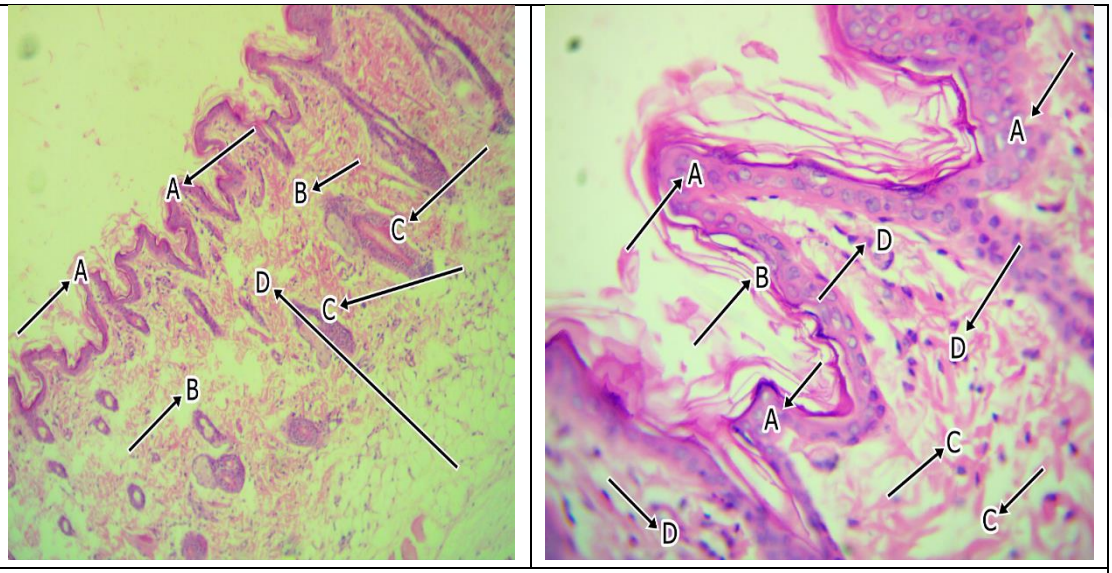
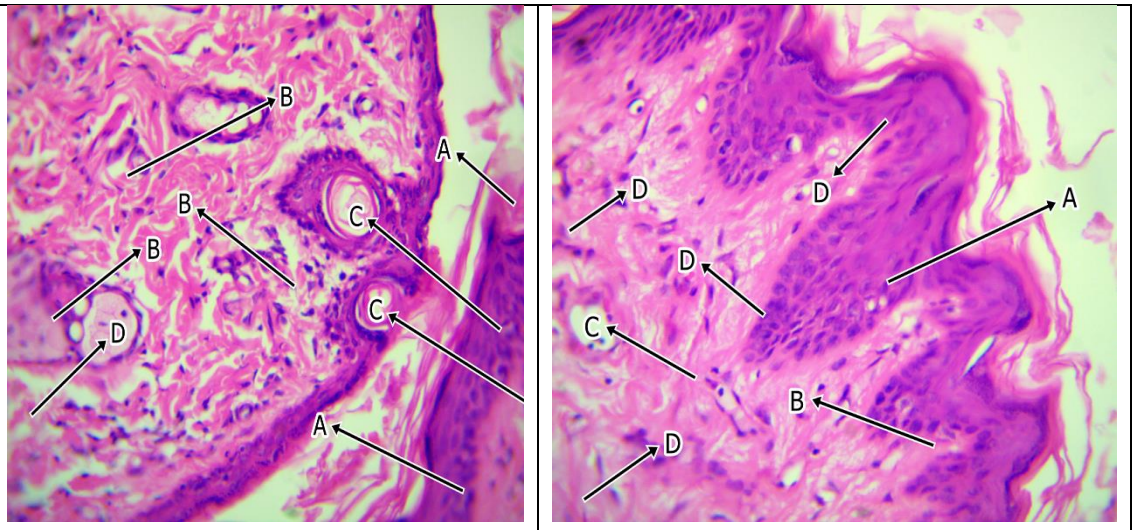
Feeding rats bacon



(4A) Section of tissue in rat skin fed bacon (4B)

Picture (4A) shows the histological section in rats fed bacon, in which the skin, epidermis and epidermis with stratified squamous cells (A), dermis with soft connective tissue (B), hair follicles (C), and some sebaceous glands extending into the depth of the dermis are observed. It contained adipose tissue (D) (H&E, 40X).

Picture (4b) shows the histological section in rats fed bacon. The epidermis of the skin is composed of stratified squamous cells (A), keratin layer (B), dermis in which soft connective tissue (C), white blood cells (D) H&E,40X .



5A ection of tissue in rat skin fed bacon 5B

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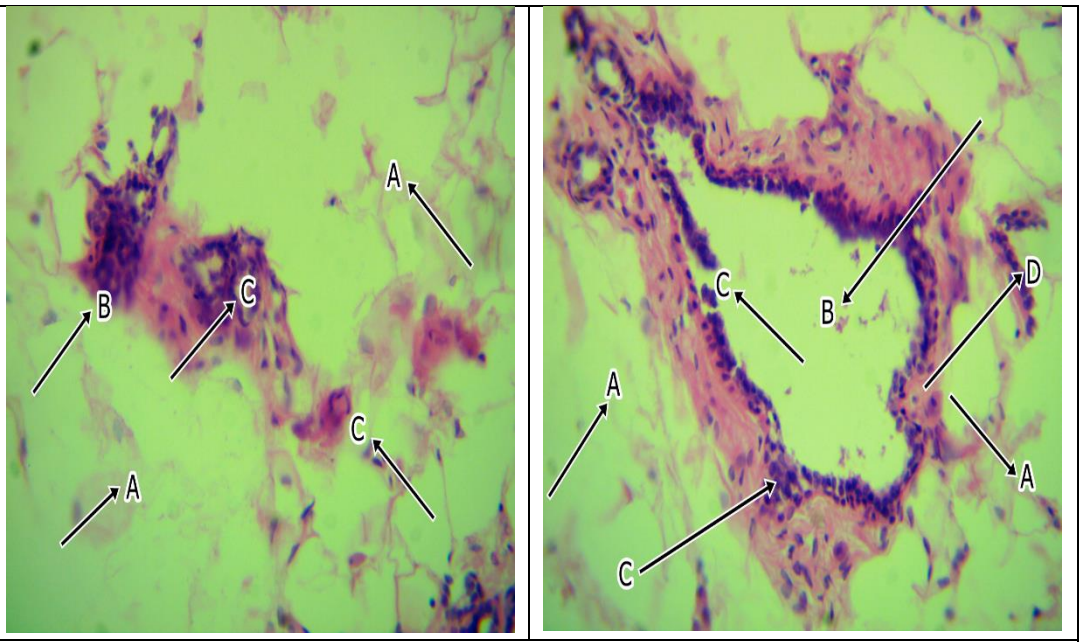
Picture (5a) shows the histological section in rats fed bacon, in which the separation of the epidermal layer (A) from the dermis layer (B) containing bundles of collagen fibrous fibers with abnormalities in the hair follicles (C) and sebaceous glands (D), And a clear spread of white blood cells around it (E) H&E, 40X).

The picture (5b) shows the histological section in rats fed bacon. It shows rows of squamous cells in the epidermis (A), the dermis consisting of dense connective tissue (B), blood vessels (C), white blood cells (D) H&E, 40X).

Feeding on bacon and dosing with carcinogens



(5A) tissue section in the skin of a rat fed on Bacon + carcinogen dose (5d)

Picture (5c) shows the histological section in rats fed bacon with the carcinogen ingestion. In it, a subdermal layer in the skin is noted, consisting of a soft connective tissue (A), a dense lymph nodular cell cluster around some blood vessels (B), and the presence of Low number of lymphocytes (C) (H&E, 40X).

The picture (5d) shows the histological section in rats fed bacon with the carcinogen ingestion, in which adipose tissue degeneration (A) is observed in the subdermal and skin area, hair follicle cysts and necrosis of its cells (B) with infiltration of lymphocytes around it (C) and cellular accumulation Lymph in adipose tissue (D)(H&E, 40X).

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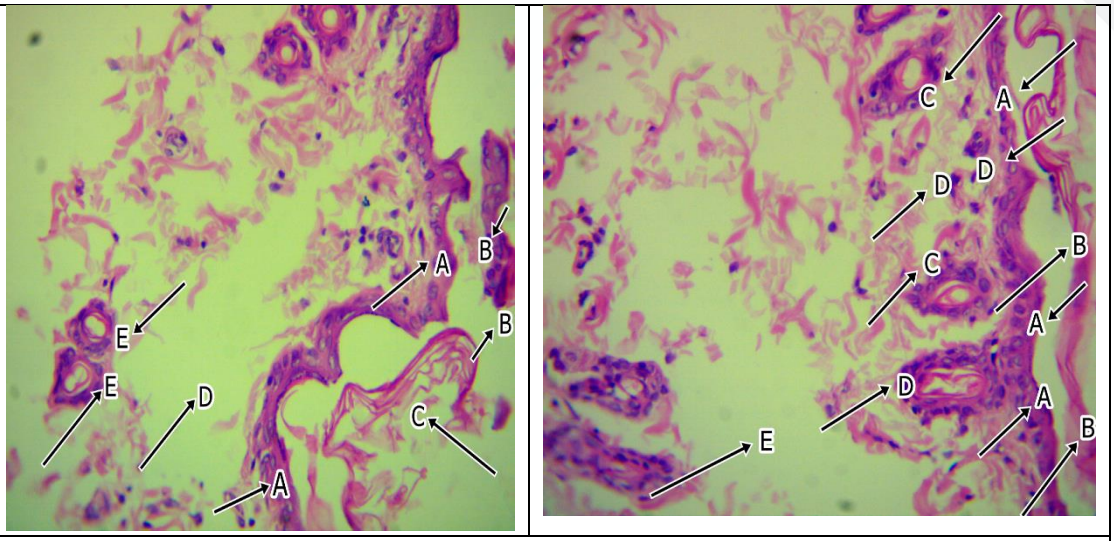
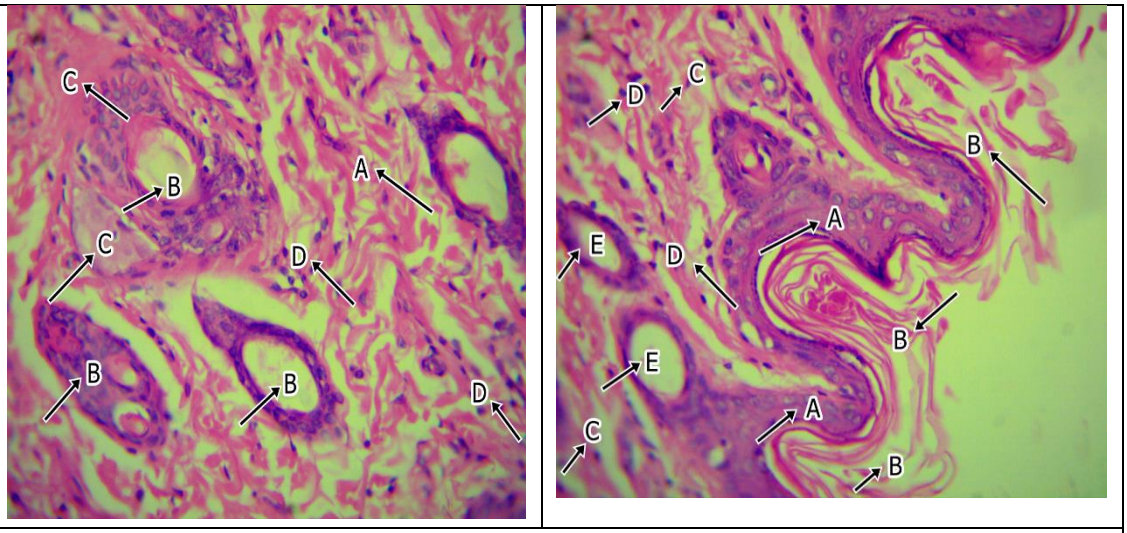


(6A) Section of tissue in rat skin (6B)
Feed on raw meat + dose of the carcinogen

Picture (6a) shows the histological section in rats fed uncured meat with the carcinogen ingestion. The epidermis of the skin is observed with a row of degenerated cells (A), necrosis of epidermal cells (B), keratin filaments shedding (C), necrosis of collagen fibers in Dermis (D), sweat gland atrophy (E) H&E, 40X).

Picture (6b) shows the histological section in rats fed uncured meat with the carcinogen ingestion, in which atrophy of epidermal cells and low number of cells (A), sloughing of the keratin layer (B), sweat glands (C), limited infiltration of white blood cells in Dermis (D), collagen fiber necrosis (E) H&E, 40X).

The interaction between bacon and alcohol with carcinogenic ingestion



(6C) Section of tissue in rat skin (6D)
Bacon fed + carcinogen dose + alcohol

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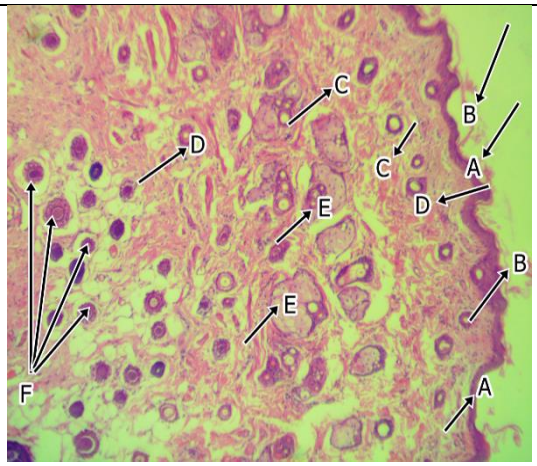
The picture (6c) shows the histological section in rats that were fed bacon with the carcinogen dosed and given alcohol. It notes the subdermal and subcutaneous layer and bundles of collagen fibers (A), hair follicles (B), sebaceous glands (C), white blood cells (D) H&E,40X).

The picture (6d) shows the histological section in rats that were fed bacon with the carcinogen dosed and given alcohol. It was noted that squamous cells were layered (A), keratin layer (B), dermis with dense connective tissue (C), white blood cells (D). Hair follicles (E) (H&E,40X).



Histological section No. (7) in the skin of a rat Feed on raw meat + carcinogen dose + alcohol

Picture No. (7) shows the histological section in rats that were fed uncured meat with the carcinogen dosed and given alcohol. The skin epidermis (A), thin keratin threads (B), dermis of the skin (C), sweat glands (D), sebaceous glands are noted. (E), Hair follicles (F) H&E, 40X).

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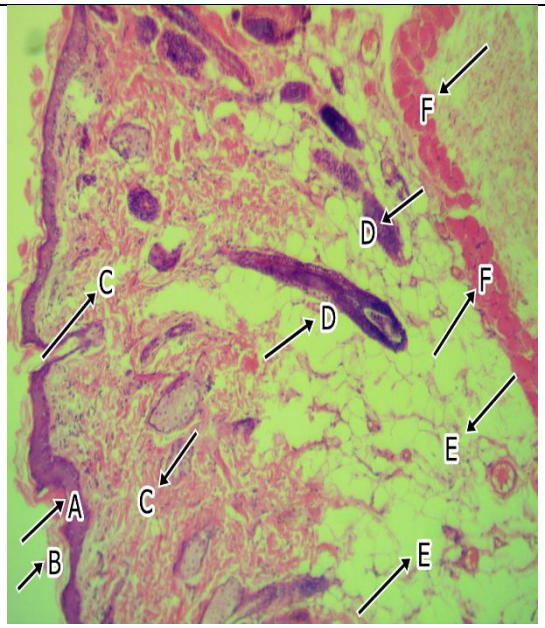
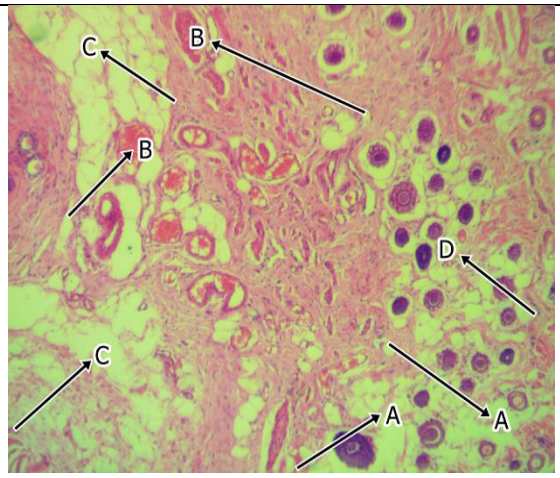


Histological section No. (8) in the skin of a rat Feed on raw meat + carcinogen dose + alcohol

Picture No. (8) shows the histological section in rats that were fed uncured meat with the carcinogen dosed and given alcohol. It was noted that the thin epidermis of the skin (A), excised keratin threads (B), the dermis with collagen fibers (C), hair follicles (D) adipose tissue (E), musculoskeletal tissue (F) (H&E, 40X).



Histological section No. (9) in the skin of a rat fed on raw meat + dose of the carcinogen + alcohol

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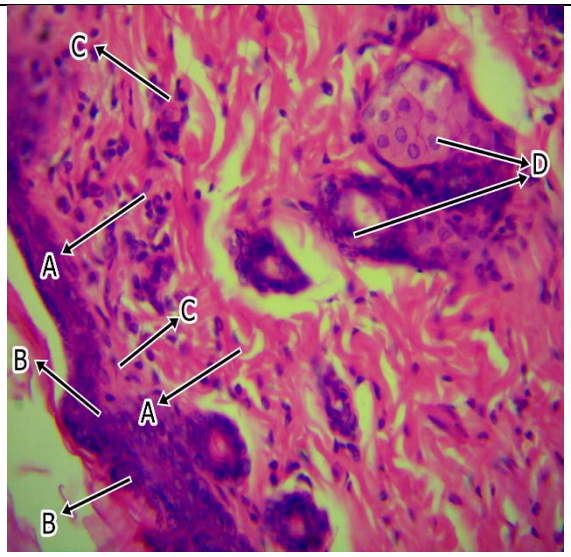
Picture No. (9) shows the histological section in rats that were fed uncured meat with the carcinogen dosed and given alcohol. It is noted that the subdermal layer of the skin and fatty tissue (A), blood vessels engorged with blood (B), degeneration of some fat cells (C), follicles Hair (D) (H&E,40X).



Histological section No. (10) in the skin of a rat fed on raw meat + dose of the carcinogen + alcohol

Picture No. (10) shows the histological section in rats that were fed uncured meat with the carcinogen dosed and given alcohol. It is noted that the epidermis of the skin is composed of a number of rows of squamous cells (A), keratin layer (B), the dermis, which has a dense connective tissue with infiltration of cells White blood, including lymph (C), hair follicles with sebaceous glands (D),
(H&E, 40X).

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