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Original Article

Study of the Histopathological Effect of Consuming Endomycosis as a Diet in Laboratory Rats

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Abstract: In the current study, laboratory rats of the white type, Rattus norvegicus, were used in the current study, as they were obtained from the Department of Life Sciences - College of Sciences - University of Thi Qar, whose ages ranged between 14-18weeks and weights (190- 200) grams. laboratory rats were prepared, which were divided into two groups, each group consisting of 5 animals, according to the following:
1. The first group was a control group that was given water and bread for 30 days.
2. The second group, which is the treated group, was given water and indomie, where the amount of each animal was 50 grams per day for a period of 30 days. The study showed an increase in weight in laboratory animals in relation to the indomie group the study showed a non-significant decrease in GOT for the indomie treatment group compared with the control group within the probability level $p \leq 0.05$. The study showed a non-significant decrease in GPT, for the indomie-treated group compared with the control group within a probability level of $p \leq 0.05$ Through The study showed a non-significant decrease in GPT for the indomie treatment group compared with the control group within a probability level of $p \leq 0.05$ .The study showed a significant increase in Urea in the endometriosis group compared with the control group within the probability level $p \leq 0.05$. The study showed a non-significant increase in testosterone in the indomie group, compared with the control group, within a probability level of $p \leq 0.05$. The study showed a significant increase in ALK, Urea and GLUCOSE in the indomie treatment group compared with the control group within the probability level $p \leq 0.05$. The study showed pathological changes in the kidneys for the indomie group. used; independent 2 samples student t-test was used to analyze the differences between the mean of two groups. The correlation between the groups of study was analyzed by pearson correlation. The statistical tests a P value ≤ 0.05 was considered statistically significant.

Key Words: indomie, Rattus norvegicus and LH

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Introduction:

1.1.BACKGROUND

The human body needs to eat food in appropriate quantities in order to obtain the nutrients it needs, as the body obtains energy through eating food, and therefore it is able to move, grow, do all the different actions, fight germs and sources of disease, and do by preserving and restoring what is damaged from the body. [1]

Thus, nutrition is considered one of the elements that ensure that a person continues to live. And that proper nutrition gives a person access to a healthy and disease-free body; Nutrition is considered a protective wall and protector for the body from exposure to many dangerous diseasessuch as cancers, heart attacks and other diseases. [2]

Nutrition is how we get the food we need to grow healthy and strong. Vitamins and minerals help our bodies function and grow. [3]Malnutrition is an imbalance in dietary intake. It occurs when a personhas too much or too little food or essential nutrients. A person with malnutrition may lack vitamins, minerals, and other essential substances that their body needs to function. [4]

The severity of malnutrition ranges from slight, marginal, to severe cases that cause irreversible damage even if the person survives. Patient malnutrition develops gradually and is difficult to diagnose at its onset, and may progress to cause significant physical damage. Prior knowledge contributes to the symptoms Malnutrition by providing immediate treatment. [5] There are complications of malnutrition, most notably: weak immunity in the patient and the speed of his exposure to infection, as well as problems in wound healing, in addition to that, difficulty in balancing salts and fluids inside the body and difficulty in controlling temperature. [6] The Indomie are an instant noodle sold dried in packets or cups. The noodles are quick and easy to make and can be eaten as a snack or part of the main meal. [7] The indomie is widely used pasta product all over the world. [8] The product composed of Pasta and flavor substances, which added to food as Food Colors, Preservatives, Antioxidants, Sweeteners, Emulsifiers, Stabilizers, Thickeners and Gelling Agents or Flavor enhancers and anti-bacterial and antifungal. [9] These substances contain Sodium Bicarbonate: had a long history of use in food stuff, feed and industrial processes. the bicarbonate ion is normal constituents of vertebrates as the principal extracellular buffer in blood and interstitial fluids. the excess of sodium and bicarbonate excreted in urine, therefore assumed the normal handling and use will not have any adverse effects.[10] while the consequences of accidental or excessive oral ingestion had been described as causative of stomach rupture due to gas development and may cause metabolic alkalosis. [11]

1.2. AIM OF STUDY

Investigating the negative effects of eating indomie as a diet in tissues rats

2.1. NUTRITION

Nutrition means the human intake of food that represents the various nutrients beneficial to the human body, which help it to grow and build the cells of the body properly and give it the energy necessary for the functioning of all vital organs within the human being to be able to followup on his life activities. It also works mainly to protect the human being from various health problems that may Infected by some viruses or malnutrition. [12]

In the modern era, the concept of nutrition is an independent science on its own, and it is the science that specializes in explaining the underlying relationships between food and its impact on human health and how the various vital organs perform. [13]

2.2. THE IMPORTANCE OF NUTRITION

An adequate supply of nutrients is needed to sustain all The body functions and daily activities with maximum efficiency, thus Ensure a healthy life. Health and nutrition are closely related and Ensuring proper development and quality of life, and the jobs are as follows:

1- Controlling the level of sugar and preventing it: There are some people whose body is more exposed to diabetes than others, as it may be due to genetic reasons, or as a result of obesity, and therefore eating healthy food works to reduce weight as well as the level of glucose in the blood, which prevents the risk of infection and resistance to occurrence. [14]

2- Increasing the efficiency of the digestive system: the vitamins acquired from food play an important role in resisting the harmful effects of the intestines that may affect the digestive system with constipation, indigestion, and ulcers, which results in inflammation ofthe intestines, stomach pain, and the inability to eat.

3- breathing

4- Blood circulation

5- digestion

6- Metabolism

7- Maintaining body temperature.

8- Growth and repair of body tissues[15] Good nutrition prevents:

- Diabetes, - Heart Disease., - Obesity., - High Blood Pressure., - Certain Cancers., - Osteoporosis[16]

2.3. NUTRITION CONCEPTS (TYPES OF NUTRITION)

It consists of the following:

Nutrition is divided into the following categories or types:

1- Carbohydrates

It is the source of energy for the body and includes carbohydrates and sugars. The body breaks down starches and sugars into the simple sugar glucose, which is the fuel used by red blood cells. Glucose is also the main energy source for the brain and nervous system and can be used by muscles and other body cells.

2- Proteins

Proteins consist of amino acids, which are small units necessary for the growth and repair of body tissues. Protein makes up about one-fifth of the total weight of the body. It is the main component of hair, skin, muscles, internal organs, and bones. Proteins are found in foods from animal sources such as meat, poultry, fish, eggs, and dairy products. [17]

3- Fats

Fat is the main source of energy and transports certain vitamins to any place needed by the body and provides an energy reserve, and since fat moves through the digestive system slowly, it leads to delaying hunger pangs, and it is of two types, saturated fats and unsaturated fat

4- Vitamins

Vitamins are essential to the body, but in limited amounts. They keep the body's tissues healthy and help the body's many systems function properly. Each vitamin has a specific role to play, and any deficiency or excess of any of them can interfere with another function. [18]

Vitamins are divided into:

- Water-soluble vitamins: Vitamin C includes ascorbic acid, and eight B vitamins except for vitamin B12. These vitamins are not stored in the body for a long time.

- Fat-soluble vitamins: They are four vitamins, vitamin A retinol, vitamin D from the group of secosteroids, vitamin E, and vitamin K from naphthoquinone compounds. These vitamins are digested and absorbed with the help of fats in the diet, and can be stored in fat for long periods in adipose tissue and liver. [19]

5- Minerals

It is a group of essential nutrients needed to regulate body processes and fluid balance. Minerals form the structure of bones and teeth.

6- Water

Water plays an active role in many chemical reactions in the body, and is also needed to transport other nutrients, regulate body temperature, and help eliminate waste. 50% to 60% of the body is water, and the body's water needs can be secured by drinking plain water, fruit juices, milk, and soups, as most types of fruits contain 90% of their mass on water. [20]

2.4. MALNUTRITION

Your body needs a variety of nutrients, and in certain amounts, to maintain its tissues and its many functions. Malnutrition happens when the nutrients it gets don't meet these needs. You can be malnourished from an overall lack of nutrients, or you may have an abundance of some kinds of nutrients but lack other kinds. Even the lack of a single vitamin or mineral can have serious health consequences for your body. On the other hand, having an excess of nutrients can also cause problems. [21]

2.5. TYPES OF MALNUTRITION

Malnutrition can mean undernutrition or over nutrition. It can also mean an imbalance of macronutrients (proteins, carbohydrates, fats) or micronutrients (vitamins and minerals).

1- Undernutrition

Undernutrition is what most people think of when they think of malnutrition. Undernutrition is a deficiency of nutrients. You may be undernourished if you don't have an adequate diet, or if your body has trouble absorbing enough nutrients from your food. Undernutrition can cause visible wasting of fat and muscle, but it can also be invisible. You can be overweight and undernourished.

2- Macronutrient undernutrition

Also called protein-energy undernutrition, this is a deficiency of macronutrients: proteins, carbohydrates and fats. Macronutrients are the main building blocks of your diet, the nutrients that your body relies on to produce energy to maintain itself. Without them — or even just one of them — your body soon begins to fall apart, breaking down tissues and shutting down nonessential functions to conserve its low energy. [22]

3- Micronutrient undernutrition

Micronutrients are vitamins and minerals. Your body needs these in smaller amounts, but it does need them, for all types of functions. Many people are mildly deficient in certain vitamins and minerals from a lack of variety in their diet. You might not notice a mild vitamin deficiency affecting you, but as micronutrient undernutrition becomes more severe, it can begin to have serious and lasting effects.

4- Over nutrition

The World Health Organization has recently added over nutrition to its definition of malnutrition to recognize the detrimental health effects that can be caused by excessive consumption of nutrients. This includes the effects of overweight and obesity, which are strongly associated with a list of non-communicable diseases (NCDs). It also includes the toxicity that can result from overdosing specific micronutrients. [23]

5- Macronutrient over nutrition

When your body has an excess of protein, carbohydrate and/or fat calories to use, it stores them away as fat cells in your adipose tissue. But when your body runs out of tissue for storage, the fat cells themselves have to grow. Enlarged fat cells are associated with chronic inflammation and with a host of metabolic disorders that follow. These can lead to NCDs such as diabetes mellitus, coronary artery disease and stroke.

6- Micronutrient over nutrition

You can actually overdose on vitamin and mineral supplements. More research is needed to explain how this happens and how much is too much of a certain vitamin or mineral. In general, micronutrient over nutrition is uncommon and doesn't occur from diet alone. But if you take mega doses of certain supplements, it can have toxic effects. It's a good idea to check with your healthcare provider first. [24]

2.6. CAUSES OF MALNUTRITION

Malnutrition in developed countries is unfortunately still more common in situations of poverty, social isolation and substance misuse. However, most adult malnutrition is associated with disease and may arise due to:

1- reduced dietary intake.

2- reduced absorption of macro- and/or micronutrients

3- increased losses or altered requirements

4- increased energy expenditure (in specific disease processes). [25]

2.7. CONSEQUENCES OF MALNUTRITION

Malnutrition affects the function and recovery of every organ system.

1- Muscle function

Weight loss due to depletion of fat and muscle mass, including organ mass, is often the most obvious sign of malnutrition. Muscle function declines before changes in muscle mass occur, suggesting that altered nutrient intake has an important impact independent of the effects on muscle mass. Similarly, improvements in muscle function with nutrition support occur more rapidly than can be accounted for by replacement of muscle mass alone. [26]

2- Cardio-respiratory function

Reduction in cardiac muscle mass is recognized in malnourished individuals. The resulting decrease in cardiac output has a corresponding impact on renal function by reducing renal perfusion and glomerular filtration rate. Micronutrient and electrolyte deficiencies (eg thiamine) may also affect cardiac function, particularly during refeeding. Poor diaphragmatic and respiratory muscle function reduces cough pressure and expectoration of secretions, delaying recovery from respiratory tract infections. [27]

3- Gastrointestinal function

Adequate nutrition is important for preserving GI function: chronic malnutrition results in changes in pancreatic exocrine function, intestinal blood flow, villous architecture and intestinal permeability. The colon loses its ability to reabsorb water and electrolytes, and secretion of ions and fluid occurs in the small and large bowel. This may result in diarrhea, which is associated with a high mortality rate in severely malnourished patients. [28]

4- Immunity and wound healing

Immune function is also affected, increasing the risk of infection due to impaired cell-mediated immunity and cytokine, complement and phagocyte function. Delayed wound healing is also well described in malnourished surgical patients.

5- Psychosocial effects

In addition to these physical consequences, malnutrition also results in psychosocial effects such as apathy, depression, anxiety and self-neglect.[29]

2.8: THE MALNUTRITION UNIVERSAL SCREENING TOOL

MUST is a simple, rapid and easy method to screen patients and has been proven to be reliable and valid. It aims to identify those at risk by incorporating:

1- current weight (BMI)

2- history of recent unintentional weight loss

3- likelihood of future weight loss. [30]

2.9: DIAGNOSIS OF MALNUTRITION

The first step in diagnosing malnutrition is that the doctor seeks to find out the cause, and if the cause is due to digestive disorders or other diseases, then the following examinations are required:

1- blood test.

2- An examination to measure questionable nutrients, including: iron.

3- Albumin check to see the percentage of protein in the blood and to ensure that there are no kidney or liver diseases. [31]

2.10: TREATING MALNUTRITION

Patients are treated according to the health status and cause of malnutrition, but in general malnutrition is dealt with in the following ways:

2.10.1: Treatment of malnutrition in simple

1- Eat fortified food rich in protein.

2- Make sure to eat snacks between main meals.

3- Drinking beverages full of calories.

4- Avoid excessive movement and stay home.

2.10.2: Treatment of severe malnutrition cases

In the event that the patient is unable to take food orally, or if he is exposed to a health problem that impedes swallowing, the doctor may install a feeding tube that enters directly from the nose towards the stomach, and the patient may be fed intravenously. [32]

2.11: THE INDOMIE

Instant noodles were first produced in Japan in 1958. They had become popular among people around the world, both in developed and developing countries. According to a 2008 survey, it was found that the annual consumption of instant noodles in the world averaged about 94 billion cups. [33]

2.12. INDOMIE INDUSTRY STAGES

Indomie is a brand of instant noodles by Indofood, the world's largest instant noodle manufacturer, located in Indonesia. Indofood is one of the world's largest manufacturers of dried instant noodles based in Indonesia.[34]

The process of making Indomie goes through many steps, and these are the most important:

1- Selection of wheat: It starts with choosing the type of wheat analyzed in a laboratory to ensure its quality and suitability for the production of Indomie.

2- Milling: Wheat is ground and sifted into flour, which forms the basis of indomie.

3- Kneading: The basic dough is made of wheat flour, water, salt and yeast.

4- Laminating: where the dough is pressed until it reaches a thickness of one millimeter.

5- Cutting and molding: After the dough reaches its required thickness, it is cut and molded in a spiral shape to take the well-known indomie shape.

6- Cooking: The whole dough is cooked after cutting it at a temperature of 100 degrees Celsius.

7- Moulding: Where the dough is placed after being cooked with moulds, in preparation for the next stage.

8- Frying: The dough is fried in molds with pure palm oil.

9- Cooling: After the frying process, Indomie is cooled with filtered air, in preparation for adding flavors and packaging.

10- Adding flavor and packaging: where the flavor is added in the quantities allowed globally, and then packaged to be ready for sale in the market.

2.13: INDOMIE NOODLES:

Cartons of one mostly consumed variety (normal size consists of 70 g, containing 7 g seasoning) of a popular Indomie noodle (Indomie instant noodles, Kingdom of Saudi Arabia (KSA)) were obtained from a supermarket in Erbil,

Kurdistan Region-Iraq. The ingredients contained in the Indomie noodles were: wheat flour, vegetable oil, iodized salt, sodium polyphosphate, sodium carbonate, potassium carbonate, guargum, tartrazine and antioxidant (Tert butylhydroquinone (TBHQ). The seasoning powder (spices) contains iodized salt, MSG (621), sugar, hydrolyzed vegetable protein, soy powder, pepper, garlic powder and chicken flavor.[36]

2.14: INDOMIE BENEFITS

Indomie is made from wheat to which salt, starch, palm oil, spices and flavorings have been added. It is similar to the vermicelli that is used in most homes, depending on the materials from which the noodles are made.

Indomie contains vitamin B, which gives energy to the body, helps reduce stress and increases concentration.

1- Indomie contains zinc, which is important for the immune system.

2- Calcium is useful for bone growth.

3- Iron is important for strengthening the blood. [37]

2.15: INDOMIE DAMAGE

1- Its lack of nutrients and its richness in carbohydrates

2- Linking its consumption to an increased risk of developing metabolic syndrome

3- Some types of processed noodles are contaminated with toxic substances such as lead.

4- Some types of instant noodles contain carcinogenic substances

5- Some types of noodles contain high amounts of salt

6- Toxic substances may be released from cartons of noodles

7- Cover the noodles with a waxy substance to prevent sticking

8- They contain other dangerous chemical. [38]

MATERIALS AND METHODS IF

3-1-Materials

Table No. (1) shows the chemicals used to perform the experiments rent study:

NO	SUBJE NAME	PROCESSING COMPANY ANDORIGIN
1.	Chloroform	Fluka (Switzerland)
2.	Xylol	Scharlau(Spanish)
3.	Eosin stain	BDH (England)
4.	Hematoxylin stain	Nerck (Germany)
5.	Formalin	BDH(England)
6.	Ethanol	G.C.C(U.K)
7.	Canada balsam	Mundk (India)
8.	Paraffin wax	Merck (Germany)
9.	Fluoxetine	Actavis (Malta)
10.	NaCl	Merck (Germany)
11.	normal saline	Pharmaceuticals company

3-2-Examination Kits

Table No. (2) shows the number of examination sused to perform the experiments of the current study:

NO.	KIT	PROCESSING COMPANY ANDORIGIN
1.	Urea	**Biomerieux –France**
2.	LH	**Bio labo- France**
3.	GOT	**Bio merieux –France**
4.	GPT	**Bio labo- France**
5.	ALK	**Bio merieux –France**
6.	FSH	**Roche /Germany**
7.	CRE	**Roche /Germany**
8.	UREA	**Roche /Germany**
9.	TEST	**Roche /Germany**
10.	**GLUCOSE**	**Roche /Germany**

Table No. (3) shows the devices used to perform the experiments of the current study:

N0	THE DEVICE NAME	PROCESSING COMPANY ANDORIGIN
1	Refrigeror	Concord- France
2	Oven	Binder- Germany
3	Centrifuge	HERMLL Z 200A -Germany
4	Coulter	Genex – U.S.A
5	light microscope	micros- Japan
6	Balance Sensitive	DENVER – Germany
7	Rotary microtome	Euro mex – England
8	Hot plate	Lassco – India
9	Camera	microspore camera –China

3-3-Preparation of experimental animals

In the current study, laboratory rats of the white type, Rattus norvegicus, were used in the current study, as they were obtained from the Department of Life Sciences - College of Sciences - University of Thi Qar, whose ages ranged between 14-18weeks and weights (190-200) grams. The animals were transferred to The animal house of the Department of Biology - College of Sciences, and was examined by a veterinarian to ensure that they are free of diseases, and then the animals were left during the study period in the animal house under controlled conditions in terms of temperature (20-25 C) and a lighting cycle (12 hours, lighting - 12 hour of darkness) during the study period.

The rats were placed in plastic cages for breeding rats, and the cages were covered with sawdust. The sawdust was changed weekly, taking into account the aspect of cleaning and sterilizing the cages from time to time. They were given water and the integrated.

3-3-1-Design of study

laboratory rats were prepared, which were divided into two groups, each group consisting of 5 animals, according to the following:

1. The first group was a control group that was given water and bread for 30 days
2. The second group, which is the treated group, was given water and indomie, where the amount of each

animal was 50 grams per day for a period of 30 days.

3-4-The collection of blood sample

After the end of the experiment, the animals were dissected after being anesthetized with chloroform, then the blood was drawn directly from the heart by cardiac puncture using medical syringes with a capacity of (5 ml). Blood tests, while the other section was placed in plastic tubes free of anticoagulant and later separated in a centrifuge at a speed of (3000) revolutions for 10 minutes in order to obtain a sufficient amount of serum, then the serum separated from the coagulated blood was withdrawn and placed in tubes of special temperature. Temperature (-20) until biochemical tests are performed on it.

3-5-Histological study

After the end of the treatment period, the animals were dissected for each group when the (kidney) was removed, and the histological sections were prepared according to the method used by Bancroft and Gamble (2008) according to the following steps:

1-Fixation

The samples were fixed with formalin solution (10%) for a period of 48 hours, in order to preserve the arrangement, size and shape of the cells and tissues of the samples as if they were in their natural form.

2-Washing

After completing the fixation process, the samples were washed with running water to remove fixative residues.

3-Dehydration

The samples were passed through a series of escalating concentrations of ethyl alcohol (35%, 50%, 70%, 80%, 95%, 100%), respectively, for a period of (2 hours) for each concentration, in order to draw water from the samples.

4-Clearing

After that, the samples were transferred to an equal mixture of chloroform and ethyl alcohol for a period of (2 hours), then they were transferred to chloroform, where the samples were left for a period of (12-24) hours, so that the samples became clearer.

5-Infiltration & Embedding

The samples were placed in a mixture of paraffin wax and chloroform with a melting point of (56-60) C in a hot oven for (2 hours), after which they were buried in wax only for (24) hours, then the wax was poured into molds prepared for this purpose and then left at room temperature. to harden and then kept in the refrigerator.

6-Trimming and Sectioning

The wax molds containing the sample were trimmed and then glued to the wooden mold of the rotary microtome and cut to a thickness of (3-5) micrometers. After obtaining the strips, they were placed on the glass slide after putting a drop of Mayer's albumin and several drops of water, then the slides were transferred. To a hot plate at a temperature of (45-50) C in order for the sections to adhere well and to avoid falling off during dyeing, after which they were left to dry well.

7-Staining

The histological sections were stained as follows:

- The wax was removed from the samples by placing them in xylene, in two stages, for 10 minutes each time. second
- The slides were passed through a series of escalating concentrations of ethyl alcohol (30%, 50%, 70%, 80%, 90%, 100%) for two minutes for each stage, then they were washed with distilled water for two minutes for each stage.
- The sections were stained with hematoxylin for (4-5) minutes, then washed with tap water for two minutes

until the color turns blue.

- Then the slides were placed in eosin dye for a period ranging from (30 seconds - 1 minute.)
- The slides were passed through a series of escalating concentrations of ethyl alcohol (35%, 50%, 70%, 80%, 95%, 100%) for two minutes for each concentration.
- The slides were transferred back to xylene for 10 minutes to clarify them.

3-Mounting

A drop of Canada balsam was placed on the slide, then the cover of the slide was placed, then it was left on a hot plate to dry and examined under a light microscope of Japanese origin equipped with a microscope camera.

3-6-Statistical analysis

Statistical calculations were made using the Statistical Package for the Social Sciences (SPSS) (version 20.0) presented using their mean and standard deviation (mean±SD) and parametric tests were used; independent 2 samples student t-test was used to analyze the differences between the mean of two groups. The correlation between the groups of study was analyzed by pearson correlation. The statistical tests were approved by assuming a null hypothesis of no difference between mean of variables, a P value ≤ 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

4.1. Effect of Indomie on body weight of laboratory rats

The results of the statistical analysis showed that there was increase in the body weight of the second group to a significant level compared with the control group at the level of probability ($p \leq 0.05$) after The results of the current study showed a significant increase in the body weight of laboratory mice after 30 days for the Indomie group, compared to the control group. The reason for the increase in body weight may be due to the accumulation of fat in the body because Indomie contains large amounts of carbohydrates, from which the body begins to store sugar in excess of the body's need Show Table (4-1).

Table (4-1) The effect of Indomie on the body weight of laboratory rats

The group	**Weight at the end of the fourthweek (gm)**
The first group control	202.80±1.12
The second group Indomie	241.00± 40.61

Effect of Indomie on Biochemical of laboratory rats

Through table (4-2), the study showed a non-significant decrease in GOT for the indomie treatment group compared with the control group within the probability level $p \leq 0.05$.

Through table (4-2) The study showed a non-significant decrease in GPT for the indomie treatment group compared with the control group within a probability level of $p \leq 0.05$.

The study showed a non-significant decrease in ALK Indomie treatment group compared with the control group within the probability level $p \leq 0.05$.

The study showed a non-significant decrease in LH in the treatment group compared with the control group within a probability level of $p \leq 0.05$.

The study showed a significant decrease in FSH for the indomie treatment group compared with the control group within the probability level $p \leq 0.05$. The study showed a significant increase in CRE in the endometriosis group compared with the control group within the probability level $p \leq 0.05$.

The study showed a significant increase in UREA in the endometriosis group compared with the control group within the probability level $p \leq 0.05$. The study showed a non-significant increase in testosterone in the indomie group,

compared with the control group, within a probability level of p≤ 0.05. The study showed a significant increase in GLUCOS in the indomie treatment group compared with the control group within the probability level p ≤ 0.05 show Table (4-2).

Table (4-2): Comparison of study variables among patient and healthy control groups.

Variables	Patients (mea±SD)	Control(mean±SD)	t – test (p – value)
GOT (mg/dL)	17.7 ± 6.98	20.5 ± 4.59	0.4254†
GPT(mg/dL)	23.3 ± 6.47	26.8 ± 7.86	0.4194†
ALK (mg/dL)	75.5 ± 13.9	73.2 ± 18.7	0.8111†
LH(mg/dL)	3.77 ± 2.75	4.74 ± 2.86	0.5625†
FSH(mg/dL)	3.23 ± 1.31	7.48 ± 1.60	0.0005**
CRE	1.17 ± 0.403	0.667 ± 0.197	0.0212*
UREA	41.8 ± 5.67	25.8 ± 6.74	0.0012**
TESTERON	2.77 ± 1.60	3.84 ± 1.50	0.2601†
GLUCOS	118 ± 11.8	82.5 ± 9.77	0.0002**

*= difference of statistical significance, p≤ 0.05.

**= difference of high statistical significance, p≤ 0.005.

†= difference of no statistical significance, p≥ 0.05.

Table (4-3): correlation of study variables among patient group.

	GOT	GPT	ALK	LH	FSH	CRE	UREA	TEST	GLUCOSE
GOT		0.38	0.73	-0.52	0.48	-0.88	-0.76	-0.36	0.44
GPT	0.38		0.34	-0.39	0.42	-0.25	0.08	-0.18	-0.48
ALK	0.73	0.34		0.16	0.05	-0.41	-0.22	0.06	0.60
LH	-0.52	-0.39	0.16		-0.58	0.76	0.72	0.60	0.27
FSH	0.48	0.42	0.05	-0.58		-0.34	-0.38	-0.26	-0.27
CRE	-0.88*	-0.25	-0.41	0.76	-0.34		0.92*	0.47	-0.36
UREA	-0.76	0.08	-0.22	0.72	-0.38	0.92		0.41	-0.45
TEST	-0.36	-0.18	0.06	0.60	-0.26	0.47	0.41		0.29
GLUCOSE	0.44	-0.48	0.60	0.27	-0.27	-0.36	-0.45	0.29	

*= difference of statistical significance, p≤ 0.05.

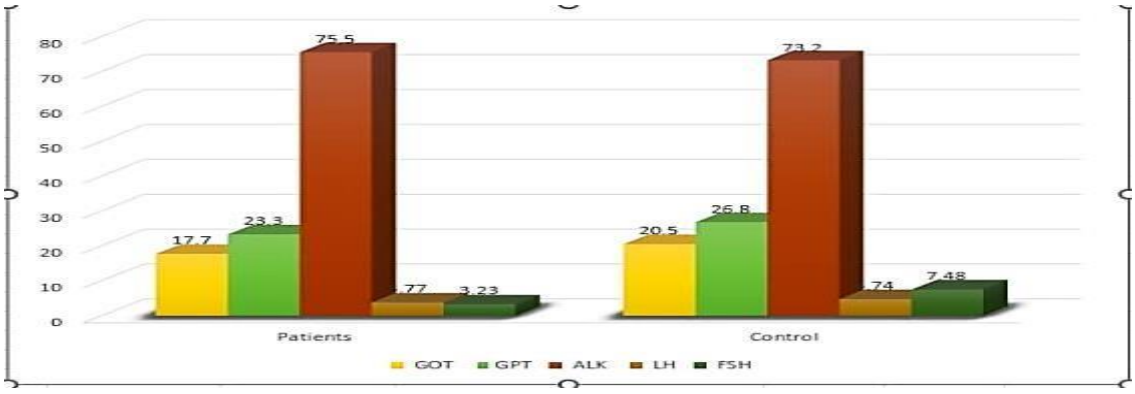

Figure:(4-1) shows the effect of indomie on biochemical analysis in laboratory animals

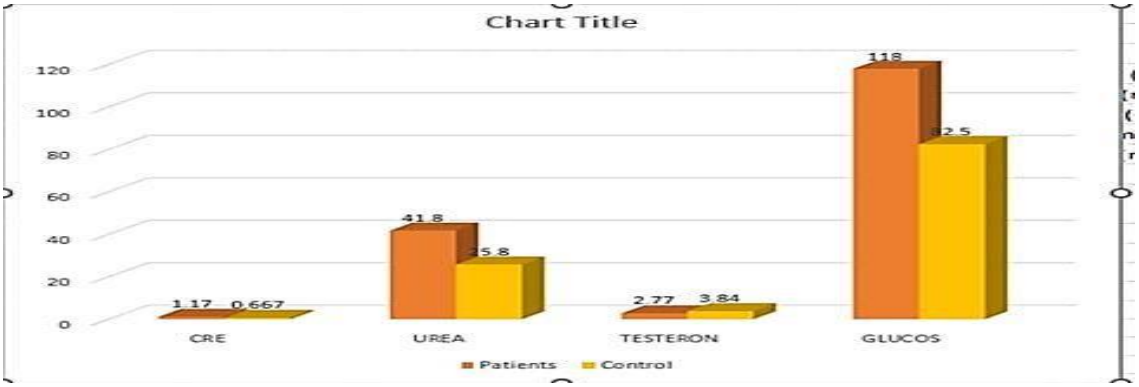

Figure:(4-2) shows the effect of indomie on biochemical analysis in laboratory animals

The study showed a non-significant decrease in GOT, GPT and ALK enzymes in the indomie treated group, as these enzymes, whether increased or decreased, mean that there are problems in the heart, liver, kidneys, and muscle fibrosis. The decrease in these enzymes may be due to liver, heart, muscle poisoning, or tissue changes. Or we lack proteins, which causes a deficiency in their formation, and this is probably because of indomie, where the ingredients are soy, wheat, preservatives, and some chemical dyes, some of which oxidize as a result of poor storage and become a carcinogen, and this is consistent with [32]

The decrease in the testosterone hormone is due to the accumulation of fats in the blood due to endometriosis. As a result, this decrease in the level of these hormones leads to the inhibition of the activity of the aromatase enzyme in the testis, which is important for converting testosterone into estradiol and estrone in the adrenal cortex and adipose tissue. (Hsia [21]that estrogen results from the conversion of male hormones (androgens) into female hormones through a series of metabolic processes necessary for its production. [31] indicated that antidepressants such as sertraline and fluoxetine work to inhibit Aromatase enzyme, thus affecting the estrogen production process and causing a decrease in its concentration in the blood

The decrease in testosterone may be due to a defect in its production process from Liddick cells that work under the stimulation of the hormone LH and FSH secreted from the pituitary gland. Therefore, any factor that affects the secretion of this hormone or affects its receptors will have a negative effect on testosterone production and thus a decrease in its concentration in blood, the study [17]

The results of the statistical analysis of the current study showed a significant increase in the concentration of creatinine and urea and the level of glucose in the blood in the group treated with indomie of laboratory rats compared with the control group. [35]

Measuring the concentration of urea and creatinine is one of the necessary and reliable diagnostic evidence in measuring the effectiveness of the kidney to perform its functions represented in removing these compounds from the blood through the process of glomerular filtration and disposal with urine. Many studies have shown that an increase in the concentration of creatinine and urea is often evidence of a disorder in kidney function [19]

The integrity of the glomeruli is an indicator of the efficiency of the filtration process, which is responsible for it, and that there is no damage to the glomeruli as a result of eating meals rich in fat, which causes a decrease in glomerular filtration, as he explained [20]

As for the increase in the level of glucose in the blood due to the multiple sugars resulting from indomie, where these sugars are broken down by enzymes, which results in monosaccharides such as glucose in the blood after the liver stored a certain part of it in the form of glycogen, as well as in the kidneys and muscles [23]

4-3- The histopathogical examinations of the kidney

The histopathogical examinations of the kidney for indomie treatment group showed congestion of blood vessels and infiltration with neutrophil in lumen, These effects may be belong to sodium bicarbonate Humans are exposed to dietary glutamate from two main sources either from ingested dietary protein or ingestion of foods containing significant amounts of free glutamate (naturally present, or added in the form of MSG/hydrolyzed protein). Dietary

glutamate is absorbed from the gut by an active transport system into mucosal cells where it is metabolized as a significant energy source. Very little dietary glutamate actually reaches the portal blood supply. The net effect of this is that plasma glutamate levels are only moderately affected by the ingestion of MSG and other [20]. Dietary glutamates Also, the renal histopathological examination showed mononuclear cell aggregation around blood vessel and between renal tubules.

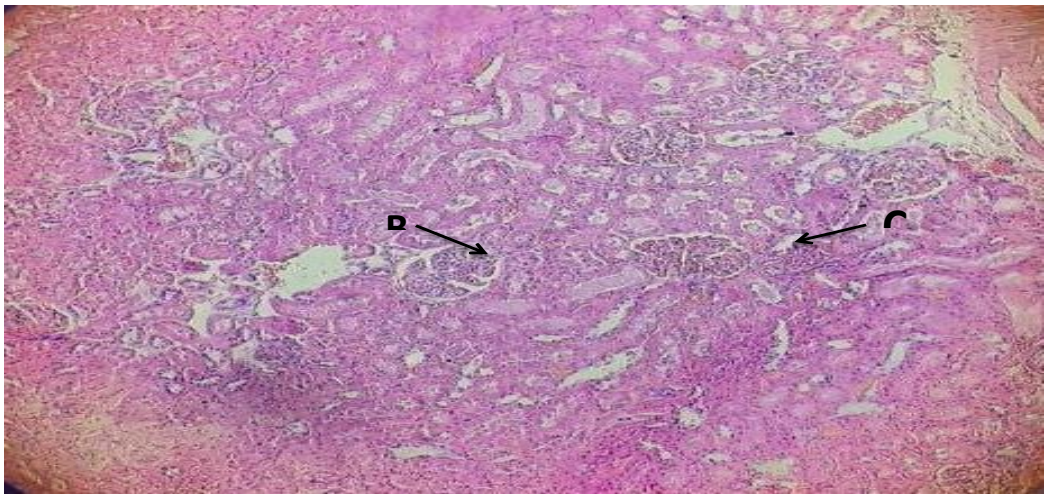

Figure (4-3): Section of kidney tissue showed normal Bowman's capsule, and Normal convoluted tubules, (H&E) (100X).

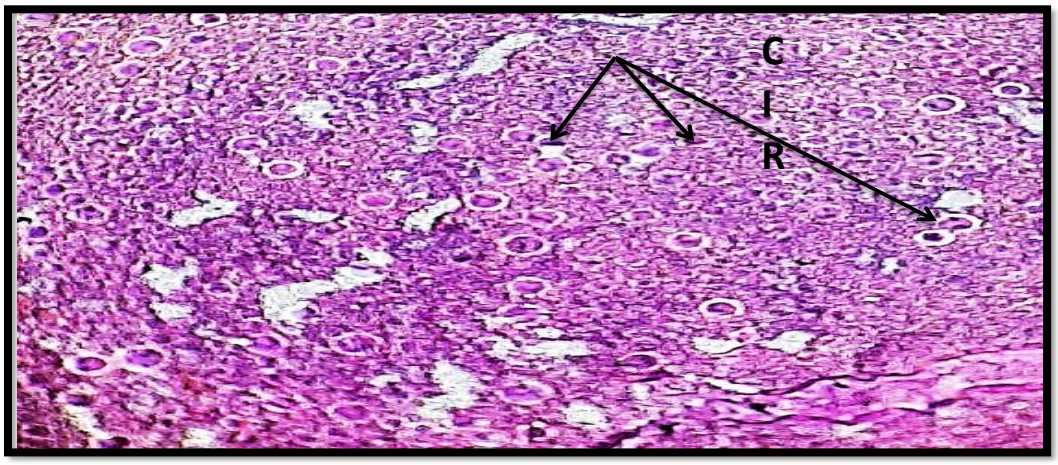

Figure (4-4): Section of kidney tissue rat treated with Indomie showed change in renal glomeruli (H&E) (100X)

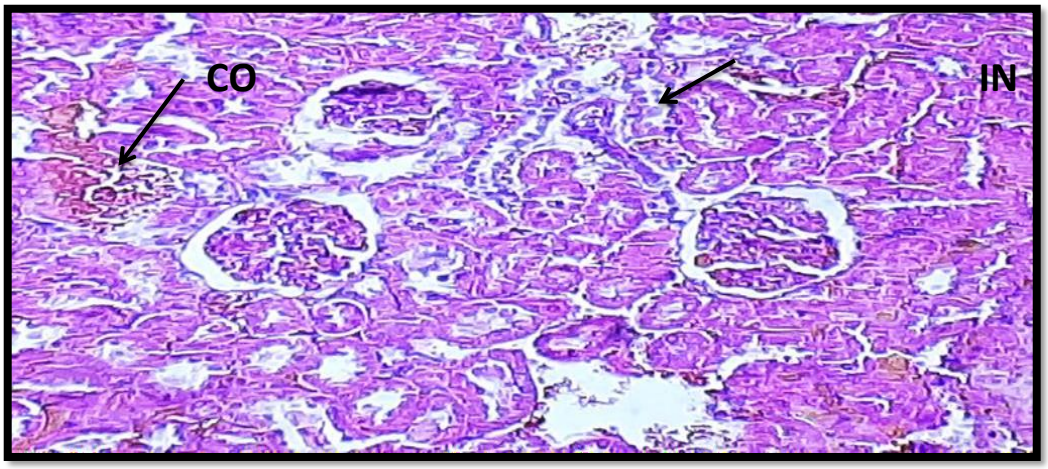

Figure (4-5): Section of kidney tissue rat treated with Indomie showed Hematoma Infiltration (H&E) (400X).

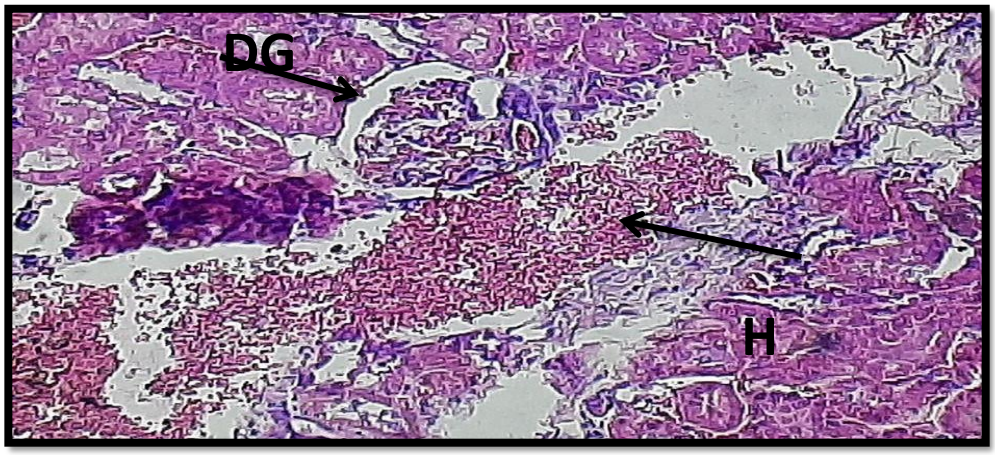

Figure (4-6): Section of kidney tissue rat treated with Indomie showed Damage to the Glomerulus and Hemorrhage (H&E) (100X)

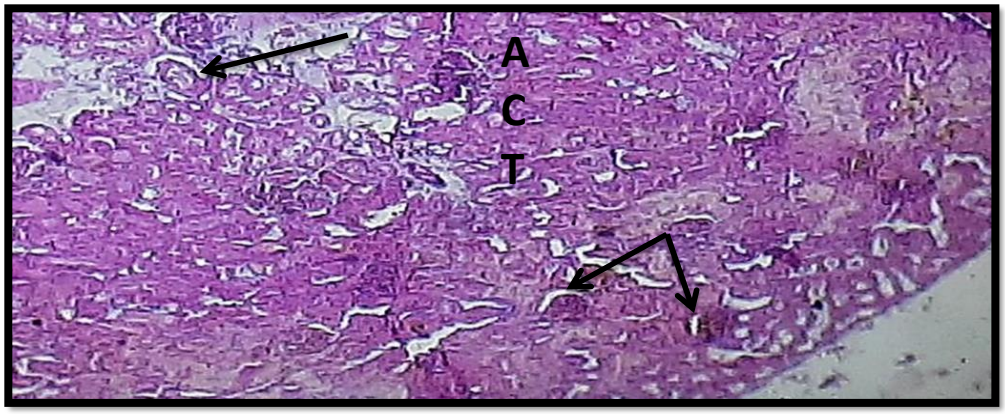

Figure (4-7): Section of kidney tissue rat treated with Indomie showed abnormal Bowman's capsule, and abnormal convoluted tubules, (H&E) (100X)

Conclusions and Recommendations

4.4.1. Conclusions

1. The study showed an increase in weight in laboratory animals in relation to the indomie group
2. The study indicated a non-significant decrease in GOT, GPT, LH, FSH, TEST, and a significant increase in Glucose, Urea, ALK.
3. The study showed pathological changes in the kidneys for the indomie group.

4.4.2. Recommendations and Future Works

1. Study of other organs such as the heart and liver.
2. Study of the physiological parameters of the heart such as cholesterol and CRP.
3. He used more advanced techniques such as immune histochemical technique and what we know as IHC, as well as using electron microscopy to study cell components.
4. The use of molecular techniques to identify the genes affecting the most recent disease.

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