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# ***NUTRITIONAL STUDIES ON PROMISING PLANTS FOR NEPHROPATHY TREATMENT OF MALE ALBINO RATS.***

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## **NUTRITIONAL STUDIES ON PROMISING PLANTS FOR NEPHROPATHY TREATMENT OF MALE ALBINO RATS.**

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### **ABSTRACT**

The present work aimed to evaluate the effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all(as5%) on reinopathic rats. For this purpose , the study included about 35 rats about 150/200(g) weight. Biological & chemical analysis of serum and histopathological investigation of internal organs were carried out. The experiment lasted for 4 weeks and eventually urine samples were collected for each rat for 24 hours and size measwredand estimated (creatinine - urea - uric acid - protein - sodium - potassium). The weight of the rats and collect blood samples after collected fasting 12 hours and then serum separated to estimation of (creatinine - urea - uric acid – lipid profile - sodium - potassium - GPT-ALP-GOT). The weight of the internal organs (liver - kidney - heart - spleen - lung) determined and fixed in 10% formalin for histopathological examinations. finally a statistical analysis of all the data and was done.

### **INTRODUCTION**

Chen et al.,(2006)claimed that almond provides with a nutrient-dense source of vitamin E, manganese, magnesium, copper, phosphorus, fibre, riboflavin, monounsaturated fatty acids and protein. Although almost 50% of almond weight is fat, incremental intakes of 7 g /day of this tree nut

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reduced low-density lipoprotein (LDL) cholesterol concentration by 1%, especially within the context of diets recommended by the National Cholesterol Education Program. Habitual almond consumption does not lead to weight gain, and their inclusion in low-calorie diets appears to promote more weight loss than a comparable carbohydrate-based low-calorie diet. Also, almonds have a low glycemic index and do not adversely impact insulin sensitivity. Almonds are an excellent source of bioavailable  $\alpha$ -tocopherol,

Gray et al.,(2000) announced that *Sambucus nigra* (elder) has been documented as a traditional treatment of diabetes.. The results, demonstrated the presence of insulin-releasing and insulin-like activity in the traditional antidiabetic plant, *Sambucus nigra*.

Khan et al.,(2012) said that *Juniperus excelsa* Bieb. is used in folk medicine for lowering blood pressure (BP). Its BP-lowering effect, endothelium-dependent and endothelium-independent vasodilator effects, and cardio-modulatory effect was studied. The crude extract of *J. excelsa* (Je.Cr) induced a dose-dependent (10-300 mg/kg) fall in the arterial BP of anesthetized rats. In isolated rabbit aorta, Je.Cr (0.01-5.0 mg/mL) inhibited high K(+) (80 mM)- and phenylephrine (1  $\mu$ M)-induced contractions, like that caused by verapamil and papaverine. In guinea pig atria, Je.Cr initially caused mild cardiac stimulation, followed by inhibition, like that exhibited by papaverine. These results reveal that cardiovascular effects of *J. excelsa* are mediated possibly through a combination of Ca(++) antagonism, nitric oxide-modulating mechanism, and phosphodiesterase inhibitory mechanism, which explain its medicinal use in hypertension.

Fellers et al.,(1990) reported that Grapefruit is an excellent source of many nutrients and phytochemicals that contribute to a healthy diet. Grapefruit is a good source of vitamin C, contains the fiber pectin, and the pink and red hues contain the beneficial antioxidant lycopene. Studies have shown grapefruit helps lower cholesterol, and there is evidence that the seeds have antioxidant properties. Grapefruit forms a core part of the "grapefruit diet", which was with low glycemic index ,being able to help the body's

metabolism burn fat. The grapefruit albedo needs to be investigated for amelioration of nephropathy. The same could be suggested for almond nut, elder and Juniperus excelsa.

## **MATERIALS AND METHODS**

### **1- The used plants and their preparation:**

The plants used in this study were:

- Almond nut (*Prunus dulcis*)
- Sambucus herbs(SP.L.)
- Juniperus seeds (SP.L.)
- Grapefruit albedo (*Citrus paradise*)

The plants ,nuts&grapefruit obtained from supermarket and the special shop and then dried, milled and added to diet.

### **"Biological experiment"**

#### **2-Basal diet composition of tested rats:**

The basal diet consisted of casein (12 % ), corn oil (10%) , choline chloride (0.25%) , vitamin mixture (1%), cellulose (5%) , corn starch (up to 100%) and salt mixture (4%), according to ( Campbell, 1963), and the composition of salt and vitamin mixture were according to (Hegsted et al., 1941and Campbell, 1963).

#### **3-Preparation of Rats with Impaired Kidney:**

Impaired kidney could be induced in normal healthy male albino rats by intra-peritoneal injection of gentamicin(aminoglycosides antibiotics) obtained by Memphis Co. form Pharm .Chem.Itd.Cairo.A.R.E.at 10 mg/kg/day for 6days in which the nephrotoxicity,one of the adverse reaction of gentamicin takes place.

#### **4-Experimental design and animal groups:**

Thirty five (35) adult male albino rats, Sprague - Dawley strain, weighting (150 ±10 g) were used. All rats were fed on basal standard diet for seven consecutive days as adaptation period. Then, rats were distributed into 7 groups each of 5 rats in which means of rats weight for all groups

were nearly equal. All the groups of rats were housed in wire cages and fed on the experimental diet for 4 weeks according to the following groups:

- Group (1): This group was fed on basal diet only as a negative control (healthy rats) (c-ve) (n=5).
- Group (2): This group was fed on basal diet only as a positive control (rats with impaired kidney by gentamicin) (c+ve) (n=5).
- Group (3): This nephritis group was fed on basal diet containing 5% Almond nut.
- Group (4): This nephritis group was fed on basal diet containing 5% Sambucus herbs.
- Group (5): This nephritis group was fed on basal diet containing 5% Juniperus seeds.
- Group (6): This nephritis group was fed on basal diet containing 5% Grapefruit albedo.
- Group (7): This nephropathy group was fed on basal diet containing 5% mixture of plants powder

#### ***5-Biological evaluation:***

During the experimental period (28days),the diet consumed recorded every day, and body weigh recorded every week. The body weight gain (BWG g),feed efficiency ratio (FER),and also organs weights determined according to Chapman et al., (1959).

#### ***6-Urine and serum:***

At the end of experiment period, the urine of each rats was collected for 24 hours and it was analyzed for determination the following parametera: Total protein, sodium and potassium.

Also, blood samples were collected after 12 hours fasting at the end of experiment in which the rats were scarified under ether anethsia. Blood samples were received into clean dry centrifuge tubes and left to clot at room temperature, then centrifuged for 10 minutes at 3000 rpm to separate the serum. Serum was carefully aspirated and transferred into clean cuvette tubes and stored frozen at-20°Cfor analysis. All serum samples were analyzed for determination of following parameters: urea, uric acid ,

creatinine, sodium & potassium, glutamic oxaloacetic transaminase (GOT), and glutamic pyruvic transaminase (GPT), alkaline phosphatase (ALP) protein, total cholesterol, triglycerides, high density lipoprotein and glucose.

At the same time the organs: Heart, kidney, lungs, liver, and spleen were removed, cleaned, weighted, and stored frozen in formalin solution 10% for histopathological testing according to method mentioned by Drury and Wallington (1980).

#### ***7-Analytical Methods:***

##### ***.Determination of urea:***

Urea was determined according to the enzymatic method of Patton and Crouch (1977).

##### ***.Determination of uric acid:***

Uric acid was determined according to the enzymatic colorimetric test of Fossatti and Prencipe (1980).

##### ***.Determination of creatinine:***

Creatinine was determined according to kinetic method of Henry (1974).

##### ***.Determination of serum glutamic oxaloacetic transaminases (GOT) and glutamic pyruvic transaminase (GPT) alkaline phosphatase (ALP), total protein:***

GOT and GPT activities were measured according to method described by Thefeld (1974) while determination of total protein according to the colorimetric method of Henry (1964).

##### ***.Determination of sodium:***

Sodium was measured according to the colorimetric method of Henry (1974).

##### ***.Determination of Potassium:***

Potassium was measured according to the colorimetric method of Henry (1964).

***.Determination of serum lipid:***

***1-Triglycerides***

Enzymatic colorimetric determination of triglycerides was carried out according to Fossati and Prencipe (1980)

***2- Total cholesterol:***

Total cholesterol was determined by colorimetric method according to NIHP(1984).

***3-HDL- cholesterol:***

Determination of HDL was carried out according to the method of Friedewald (1972) and Gordon and Amer(1977).

***4-VLDL&LDL- cholesterol:***

The determination of VLDL (very low density lipoproteins) and LDL (low density lipoproteins) were carried out according to the method of Lee and Nieman (1996) by calculation as follows:

$$*VLDL \text{ (mg/dl)} = \text{Triglycerides}/5$$

$$*LDL \text{ (mg/dl)} = \text{Total cholesterol} - \text{HDL} - \text{VLDL}$$

***5-Determination of atherogenic index (AI):***

Atherogenic index was calculated according to Nakabayashi et al., (1995) as follows:

$$\text{Atherogenic index (AI)} = \frac{\text{LDL} + \text{VLDL}}{\text{HDL}}$$

***8-Statistical analysis***

The obtained data were statistically analyzed using computerized SSPS (Statistic Program Sigmasat, Statistical Software, SAS Institute, Cary, NC). Effects of different treatments were analyzed by one way ANOVA (Analysis of variance) test using Duncan's multiple range test and (Snedecor and Cochran, 1967).

### **9- Histopathological examination :**

At end of the examination which continued for 28 successive days, all rats were sacrificed, organs including liver , kidney and heart were taken for histopathological examination according to Drury and Wallington (1980).

## **RESULTS AND DISCUSSION**

A-Effect of almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on body weight gain(BWG), feed intake(FI) & feed efficiency ratio(FER) of reinopathic rats.

### **1. Body weight gain(BWG)g/28 days;**

Table(1) show the mean value of body weight gain (BWG/28days) of reinopathic rats fed on various diets. It could be noticed that the mean value of BWGg/28 days of control (+) group was lower than control (-) group, being  $6.20 \pm 0.68$  &  $10.78 \pm 0.27$  respectively, showing significant difference with percent of increase +73.87% as compared to control (+).All reinopathic rats fed on various diets showed significant increases in mean values as compared to control (+) group . The best BWG was recorded for group 3 (reinopathic rats fed on almond seeds) when compared to control (+) group.

### **2. Feed intake (F.I):**

Table(2) results indicates the mean value of feed intake (g/day) of reinopathic rats fed on variable diets. Data revealed that the mean value of (FI) of control (+) group was higher than control (-) group, being  $15.18 \pm 0.75$  &  $12.28 \pm 0.63$ g. respectively. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group. Rats fed on groups 3,4,5,6&7 showed nonsignificant differences between them. Numerically the best FI was recorded for group7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

### **3. Feed efficiency ratio(FER).**

Table(3) results illustrate the mean value of FER of reinopathic rats fed on different diets. Data show that the mean value of FER of control (+) group was lower than control (-) group, being  $0.015 \pm 0.002$  &  $0.031 \pm 0.003$  respectively, indicating significant difference. All reinopathic rats fed on

various diets showed significant increases in mean values as compared to control (+) group . Rats fed on groups 3,4,5,6&7 showed nonsignificant differences between them . Numerically the best FER was recorded for group3&4 (reinopathic rats fed on almond nut,sambucus herbs).

The obtained results are in line with that of Sheir,Marwa(2009). Wien et al.,(2003);Kamil et al.,(2012)found that supplementation with Almond was associated with great reduction in weight. Kim et al.,(2008) suggested that Juniperus chinesis hot water extract reduce BWG in albino rats. Shen et al.,(2005)reported that the scent of Grapefruit reduced appetite and body weight in rats.Fujioka et al.,(2006)suggested that the fresh Grapefruit had effect on body weight in obese patient .Dow et al .,(2012)found that consuming Grapefruit may promote weight loss in overweight adult. Chrubasik et al.,(2008)reported that Sambucus nigra used for weight reduction.

Table (1): Effect of Almond nut,Sambucus herbs,Juniperus seeds, Grapefruit albedo&the combination of all(as 5%) on body weight gain(BWG)par 28 days ,(FI)par day and(FER) of reinopathic rats

Groups	BWG g	percent of change of Control(+) group	FI g	Percent of change of Control(+) group	FER	Percent of change of Control(+) group
Groups1 Control (-)	10.78±0.27a	+73.87	12.28 ±0.63b	+19.10	0.031 ±0.003a	+106.66
Groups2 Control (+)	6. 20±0.68e	00.00	15.18±0.75a	00.00	0.015± 0.002c	00.00
Groups3 Almond nut 5%	7.89±0.18b	+26.93	12.25±0.66b	+19. 30	0.023± 0.005b	+53.33
Groups4 Sambucus herbs 5%	7.58±0.11c	+22.25	12.25±0.48b	+19.30	0.023± 0.005b	+53.33
Groups5 Juniperus seeds 5%	7.67±0.16bc	+23.70	12.18±0.55b	+19.76	0.022±0.004b	+46.66
Groups6 Grapefruit albedo 5%	7.00±0.43d	+12.90	12.21±0.61b	+19.57	0.0204± 0.003b	+36.00
Group 7 5% mixture	7.25±0.13d	+16.93	12.15±0.47b	+19.96	0.0213±0.006b	+42.00
	0.273		0.203		0.018	

Values denote arithmetic means  $\pm$  standard deviation of the mean. (a, b, c and d) in the same column differ significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are non significantly different.

B-Effect of Almond nut,Sambucus herbs,Juniperus seeds,Grapefruit albedo&the combination of all on organs weight of reinopathic rats.

### **1-Liver weight (g):**

Table(2) results show the mean value of liver weight (g) of reinopathic rats fed on various diets. It could be noticed that the mean value of liver( g.) of control (+) group was higher than control (-) group,being  $5.6 \pm 0.19$  &  $3.98 \pm 0.19$  respectively,showing significant difference.All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group . Numerically the best liver weight was recorded for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

### **2-Kidneys weight (g):**

Table(5) results indicate the mean value of kidneys weight (g) of reinopathic rats fed on different diets. It could be noticed that the mean value of kidneys( g.) of control (+) group was higher than control (-) group. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group . Numerically the best kidneys weight was revealed for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

### **3-Spleen weight (g):**

Table(6) results show the mean value of spleen weight (g) of reinopathic rats fed on various diets. It could be observed that the mean value of spleen( g.) of control (+) group was higher than control (-) group. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group . Rats fed on groups 7 showed nonsignificant differences when compared to group 1 (healthy rats).Numerically the best kidneys weight was recorded for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

#### **4-Lungs weight (g):**

Table(7) data show the mean value of lungs weight (g) of reinopathic rats fed on various diets. It could be revealed that the mean value of lungs (g.) of control (+) group was higher than control (-) group. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group . Rats fed on groups 3,4,5,6&7 showed nonsignificant differences between them. Numerically the better spleens weight was observed for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

#### **5-Heart weight (g):**

Table(8) results show the mean value of heart weight (g) of reinopathic rats fed on different diets. It could be indicated that the mean value of heart( g.) of control (+) group was higher than control (-) group,being  $0.89\pm 0.05$  &  $0.41\pm 0.03$  respectively. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group . Rats fed on groups 4&5 showed nonsignificant differences between them. It could be observed that rats fed on groups 3&7 showed nonsignificant difference as compared to control (-) group. Numerically the best heart weight was observed for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

Table(2):Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all (as5%) on organs weight (g)of reinopathic

Groups	Liver	Kidneys	Spleen	Lungs	Heart
Group 1 control - ve	3.98±0.19e	1.21±0.03g	0.51± 0.03f	1.02± 0.02d	0.41± 0.03 d
percent of change of Control(+)group	-28.93	-38.88	-46.87	-20.93	-53.93
Group 2 control + ve	5.60±0.28a	1.98±0.05a	0.96 ±0.05 a	1.29±0.06 a	0.89±0.05 a
percent of change of Control(+)group	00.00	00.00	00.00	00.00	00.00
Group 3 5 % Almond nut	5.11±0.23b	1.29±0.02e	0.72±0.03d	1.11±0.08 c	0.43 ±0.03 d
percent of change of Control(+)group	-8.75	-34.85	-26.53	-13.95	-51.68
Group 4 5% Sambucus herbs	4.84±0.14c	1.38±0.06d	0.79±0.04c	1.20±0.04b	0.49±0.03c
percent of change of Control(+)group	-13.57	-30.30	-19.39	-6.98	-44.94
Group 5 5 % Juniperus seeds	4.03±0.16 e	1.47±0.04 c	0.62±0.02e	1.19±0.03 b	0.51 ±0.3 c
percent of change of Control(+)group	-28.04	-25.76	-36.73	-7.75	-42.70
Group 6 5% Grapefruit albedo	4.25±0.13 d	1.66±0.05 b	0.82±0.02b	1.15±0.04bc	0.62±0.02 b
percent of change of Control(+)group	-28.04	-16.16	-16.33	-10.85	-30.33
Group 7 5 % mixture of all planets	3.99±0.10e	1.25±0.04f	0.52 ±0.03f	1.10±0.06c	0.41±0.02 d
percent of change of Control(+)group	-28.75	-36.87	-46.94	-14.73	-53.93
LSD	0.179	0.039	0.027	0.062	0.031

Values denote arithmetic means ± standard deviation of the mean. (a, b, c and d) in the same column differ significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are non significantly different.

C-Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo&the combination of all on serum glucose(mg/dl) of reinopathic rats.

Table(3) data reveal the mean value of serum glucose (mg/dl) of reinopathic rats fed on different diets. It could be noticed that the mean value of glucose of control (+) group was higher than control (-) group, being  $155.00 \pm 5.00$  &  $100.00 \pm 4.34$  respectively, showing significant difference . All reinopathic rats fed on different diets indicated significant decreases in mean values as compared to control (+) group . Numerically the better serum glucose was observed for group 7 (reinopathic rats fed on mixture of all plants) when compared to control (-) group.

The obtained results are in line with that of Ali, Amal (2011) found that nephritis inflicted rats by gentamicin revealed increase of glucose in serum. Lovejoy et al., (2002) reported that Almond-enriched diets do not alter insulin sensitivity in health adults or glycemia in patients with diabetes. Jenkins et al., (2006), (2008) however suggested that Almond may decrease the risk of oxidative damage to protein by decreasing the glycemic excursion. Wien et al., (2010) found that the Almond-enriched intervention group exhibited greater reduction in insulin. Li et al., (2011) reported that the Almond consumption is associated with amelioration in hyperglycemia. Kamil and Chen (2012) concluded that Almond was useful for diabetes. Gray et al., (2000) demonstrated that *Sambucus nigra* was an antidiabetic plant. Ciocoiu et al., (2009) reported that *S. nigra* represents a possible dietary adjunct for the treatment of diabetes and a potential source for the discovery of new orally active agents for future diabetes therapy. Orhan et al., (2011), (2012) reported that the treatment of diabetic rats with *Juniperus oxycedrus* decreased the blood glucose levels in liver and kidney tissues. Ju et al., (2008) suggested that the ethanolic extract of Chinese juniper berries reduced the blood glucose levels of alloxan-induced diabetic rats. Fujioka et al., (2006) suggested that insulin resistance was improved with fresh Grapefruit of obese patient.

Table(3): Effect of Almond nut, *Sambucus* herbs, *Juniperus* seeds, Grapefruit albedo & the combination of all (as 5%) on serum glucose (mg/dl) of nephropathic rats

<i>Groups</i>	<i>Glucose</i>	<i>percent of change of control(+) group</i>
Group 1 control – ve	100.00 ± 4.36b	-35.48
Group 2 control + ve	155.00 ± 5.00a	00.00
Group 3 5% Almond nut	98.30 ± 2.86b	-36.58
Group 4 5% <i>Sambucus</i> herbs	87.50 ± 0.12cd	-43.54
Group 5 5% <i>Juniperus</i> seeds	90.40 ± 2.51c	-41.68
Group 6 5% Grapefruit albedo	90.00 ± 4.36c	-41.94
Group 7 5% mixture	84.00 ± 2.65d	-45.81
LSD	5.041	

Values denote arithmetic means  $\pm$  standard deviation of the mean. Means with different letters(a, b and c) in the same

column different significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are non significantly different

***D-Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on total cholesterole (T.C.), triglycerides (T.G), high density lipoprotein cholesterol (H.D.L.c) , Low density lipoprotein cholesterol of (L.D.Lc), very low density lipoproteins cholesterol (V.L.D.Lc) & atherogenic index(A.I.) of reinopathic rats .***

***1-Total cholesterole(T.C.)mg/dl :***

Data of table(4) illustrate the mean value of serum(T.C.) (mg/dl) of reinopathic rats fed on different diets. It could be observed that the mean value of(T.C.) of control (+) group was higher than control (-) group, being  $141.00 \pm 3.46$  &  $118.00 \pm 2.65$  respectively, showing significant difference. All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group . Numerically the better serum (T.C) was showed for group 5 (reinopathic rats fed on Juniperus seeds) when compared to control (-) group.

***2-Triglycerides(T.G.)mg/dl :***

Table(4) results show the mean value of serum(T.G.) (mg/dl) of reinopathic rats fed on different diets. It could be noticed that the mean value of(T.G.) of control (+) group was higher than control (-) group, being  $152.00 \pm 7.21$  &  $130.00 \pm 4.55$  respectively, indicating significant difference . All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group . Feeding on Juniperus group revealed nonsignificant different of(T.G.) as compared to control (-) group. Numerically the best serum (T.G.) was recorded for group 7 (reinopathic rats fed on mixture of plants) when compared to control (-) group.

***3-High density lipoprotein cholesterol(H.D.Lc)mg/dl:***

Table(4) data indicate the mean value of serum (HDLc) (mg/dl) of reinopathic rats fed on different diets. It could be observed that the mean

value of (HDLc) of control (+) group was lower than control (-) group, being  $74.30 \pm 5.14$  &  $88.30 \pm 2.86$  respectively, showing significant difference. All reinopathic rats fed on different diets revealed significant increases in mean values as compared to control (+) group. Numerically the best serum (HDLc) was observed for group 6 & 7 (reinopathic rats fed on Grapefruit albedo & mixture of plants) when compared to control (-) group.

#### **4-Low density lipoprotein cholesterol(L.D.Lc)mg/dl:**

Data in table(4) illustrate the mean value of serum(LDLc) (mg/dl) of reinopathic rats fed on different diets. It could be observed that the mean value of(LDLc) of control (+) group was higher than control (-) group, being  $36.30 \pm 4.07$  &  $3.70 \pm 0.08$  respectively, showing significant difference. All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group. Rats fed on group 3 (Almond nut) revealed nonsignificant differences as compared to control (-) group, and recorded the best serum (LDLc).

#### **5- Very low density lipoprotein cholesterol(V.L.D.Lc)mg/dl:**

Data of table(4) indicate the mean value of serum (VLDLc) (mg/dl) of reinopathic rats fed on different diets. It could be observed that the mean value of (VLDLc) of control (+) group was higher than control (-) group, being  $30.40 \pm 3.98$  &  $26.00 \pm 2.57$  respectively, showing significant difference. All reinopathic rats fed on different diets showed significant decreases in mean values as compared to control (+) group. Rats fed on group 7. The best treatment was recorded for group 7 Atherogenic Index(A.I.)ratio.

Data of table(4) revealed that the mean value of serum(A.I.) (mg/dl) of reinopathic rats fed on different diets. It could be noticed that the mean value of(A.I.) of control (+) group was higher than control (-) group, being  $0.892 \pm 0.09$  &  $0.34 \pm 0.01$  respectively, showing significant difference. All reinopathic rats fed on various diets showed significant decreases in mean values as compared to control (+) group. Rats fed on group 7. Numerically the best treatment was recorded for group 7 considering serum (A.I.).

The obtained results are in line with that of Ali, Amal (2011) who found that nephritis inflicted rats by gentamicin caused increase of T.L. , T.G. , LDLc , VLDLc & decrease of HDLc in serum. Wien et al., (2003) reported that supplementation with Almond was associated with great reduction in T.C., T. G., LDLc , VLDLc & increase in HDLc with type 2 diabetics. Li et al.,(2011) found that Almond consumption is associated with hypolipidemia. Rajaram et al ., (2010) showed that consumption of Almond nut lower blood lipids and risk of CHD. Spiller et al.,(1992),(1998) found that there was a rapid reduction in low density LDLc, TC without change in HDL in humans when consumption Almond nut. Jenkins et al.,(2002) found that the Almond decreased the level of blood lipids(LDLc) and (LDLc: HDLc) reduce coronary heart disease risk factor for the hiperlipidemic subjects. Lovejoy et al .,(2008) found that Almond-enrich diet had beneficial effects on serum lipids in healthy adults. Jaceldo et al .,(2011) repoted that Almond had cholesterol lowering effect. Ciocoiu et al.,(2009) found that the polyphnols of Sambucus nigra reduce the lipid peroxides, neutralize the lipidi peroxil radicals and inhibit the LDL oxidation. Murkovic et al., (2004) reported that Sambucus spray -dried extract at a low dose exerts a minor effect on serum lipids and antioxidative capacity higher ,but nutritionally relevant doses might significantly reduce post prandial serum lipids. Ju et al.,(2008) suggested that the aqueous extract of Chinese juniperus had a potential hypolipidemic effect. Kim et al.,(2008) reported that Juniperus chinesis hot water extract reduce blood lipids levels of alino rats.Orhan et al.,(2011) found that the treatment of diabetic rats with Juniperus oxycedrus decrease both the levels of lipid peroxidation in liver & kidney tissues. Rincon et al .,(2005) suggested that Grapfruits peels had the highest ascorbic acid and carotenoid content ,good source of dietary fiber and phenolic compound whose use could be useful in the formulation of fuctional foods and suitable to reduce risk of some disease such as cardiovascular and some associated to lipid oxidation. Vinson et al.,(2002) reported that the juice of grapefruit was able to significantly inhibit atherosclerosis and lowerd cholesterol & triglycerids.

Table(4): Effect of Almond nut, Sambucus herbs, Juniperusseeds, Grapefruit albedo & the combination of all on total cholesterol (T.C.), triglycerides(T.G), high density lipoprotein cholesterol (H.D.L.c) , Low density lipoprotein cholesterol of (L.D.Lc), very low density lipoproteins cholesterol (V.L.D.Lc) & atherogenic index(A.I) of reinopathic rats

Groups	Total Cholesterol (mg/dl)	Triglycerides (mg/dl)	HDLc.(mg/dl)	LDLc.(mg/dl)	LDLc. (mg/dl)	A.I
Group 1 control – ve	118.00± 2.65c	130.00±4.55c	88.30±2.86 ab	3.70± 0.08ef	26.00±3.57b	0.34± 0.01cd
percent of change of Control(+) group	- 16.31	-14.47	+18.84	-89.81	- 14.47	-61.88
Group 2 control + ve	141.00±3.46a	152.00±7.21a	74.30±5.14c	36.3±4.07a	30.40±3.98 a	0.892±0.09 a
percent of change of Control(+) group	00.00	00.00	00.00	00.00	00.00	00.00
Group 3 5% Almond nut	119.00 ±5.19c	147.00±2.64 b	87.80± 2.55 ab	1.80±0.07f	29.40 ±1.51 a	0.36±0.02cd
percent of change of Control(+) group	- 15.60	- 3.29	+18.16	-96.42	-3.28	-59.64
Group 4 5% Sambucus herbs	118.60 ±3.14c	116.50±3.04d	85.30±2.07b	9.5±0.78bc	23.30 ±2.07 c	0.38±0.01 c
percent of change of Control(+) group	- 16.31	-23.36	+14.80	-73.83	-23.35	-57.40
Group 5 5 % Juniperus seeds	109.00±4.35d	131.00±3.46 c	75.00±3.46c	7.80±0.10cd	26.20 ±1.59 b	0.45±0.02b
percent of change of Control(+) group	-22.70	-13.82	+0.942	-78.51	-31.81	-49.55
Group 6 5% Grapefruit albedo	130.50±3.91b	145.60 ±5.11b	90.00±4.36a	11.38±0.53b	29.12 ±1.65 a	0.45±0.03b
percent of change of Control(+) group	- 7.45	-4.21	+21.13	-68.65	-4.27	-49.55
Group 7 5 % mixture of all planets	118.00 ±2.52c	113.00± 2.57d	90.00±4.13a	5.40±0.08de	22.60 ±2.51c	0.31±0.01d
percent of change of Control(+) group	- 16.31	-25.66	+21.13	-85.12	-25.65	-62.25
LSD	3.517	4.792	3.672	2.675	2.086	0.314

Values denote arithmetic means  $\pm$  standard deviation of the mean. Means with different letters (a,b and c) in the same column different significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are nonsignificantdifferent.

***E-Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on kidney function of reinopathic rats.***

***1-Serum creatinine (mg/dl):***

Data of table(5) indicated the mean value of serum creatinine (mg/dl) of reinopathic rats fed on various diets. It could be observed that the mean value of creatinine of control (+) group was higher than control (-) group, being  $1.20 \pm 0.03$  &  $0.50 \pm 0.03$  respectively, showing significant difference . All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group . Groups 3&7 indicated nonosignificant differences when compared to control (-) group and revealed the best treatment.

***2-Serum urea (mg/dl):***

Data of table(5) illusterate the mean value of serum urea (mg/dl) of reinopathic rats fed on various diets. It could be noticed that the mean value of urea of control (+) group was higher than control (-) group, being  $110.00 \pm 4.58$  &  $20.00 \pm 1.76$  mg/dl respectively, indicating significant difference . All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group . The best treatment was recorded for group 7(mixture of all plants) when compared to control (+) group.

***3-Serum uric acid(U. A.) (mg/dl):***

Table(5) results show the mean value of serum(U. A) (mg/dl) of reinopathic rats fed on various diets. It could be observed that the mean value of uric acid of control (+) group was higher than control (-) group, being  $7.70 \pm 0.03$  &  $1.70 \pm 0.03$  mg/dl respectively, indicating significant difference . All reinopathic rats fed on various diets revealed significant decreases in mean values as compared to control (+) group .

The best treatment was recorded for group 7(mixture of all plants) when compared to control (+) group.

It seems possible that the used plants could correct the changes in kidneys function due to injection of rats with gentamicin .

Table(5): Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on kidney function of reinopathic rats

Groups	Serum creatinine (mg/dl)	percent of change of control(+)group	Serum urea (mg/dl)	percent of change of control(+)group	Serum uric acid(mg/dl)	percent of change of control(+)group
Group 1 control – ve	0.50± 0.03e	-58.33	20.00± 1.76e	-81.81	1.70±0.03e	-77.92
Group 2 control + ve	1.20 ±0.08a	00.00	110.00 ±4.58a	00.00	7.70±0.60a	00.00
Group 3 5% Almond nut	0.55± 0.04d	-54.16	39.00±1. 73c	-64.54	4.90±0.36b	-36.36
Group 4 5% Sambucus herbs	0.68 ±0.03b	-43.33	1.30 ±2.01c	-62.45	4.80±0.39b	-37.66
Group 5 5% Juniperus seeds	0.70 ±0.02b	-41.66	56.30± 1.54b	-48.81	4.3±0.26c	-44.15
Group 6 5% Grapefruit albedo	0.60 ±0.02c	-50	55.30 ±1.13 b	-49.72	4.00±0.24 c	-48.05
Group 7 5% mixture of all planets	0.55 ±0.03d	-54.16	33.20±1. 06d	-69.81	2.50±0.04 d	-67.53
LSD	0.041		2.521		0.404	

Values denote arithmetic means ± standard deviation of the mean. Means with different letters (a,b and c) in the same column different significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are nonsignificantdifferent.

**4-Electrolytes (m.eq/l):**

**A-Serum sodium(Na) &potassium(k)(m.eq/l)**

Table (6) results show the mean value of serum (Na)& (k)(m.eq/l) of reinopathic rats fed on various diets. It could be observed that the mean values of Na & k of control (+) group were lower than control (-) group,being( 36.20±2.45.03 & 199.00 ±7.94)&(2.80±0.26&12.40±0.35) m.eq/l respectively,indicating significant differences . Rats fed on various

diets revealed significant increases in mean values as compared to control (+) group . The best treatment was recorded for group 7(mixture of all plants) when compared to control (-) group.

It seems possible that the used plants could correct the changes in serum electrolytes Na & K due to injection of rats with gentamicin .

#### ***B-Urine sodium(Na) &potassium(k)(m.eq/l)***

Table (6) results indicate the mean value of urin (Na)& (k)(m.eq/l) of reinopathic rats fed on various diets. It could be noticed that the mean values of Na & k of control (+) group were higher than control (-) group, being( 245.00±15.09& 95.00 ±3.46)&(96.30±5.48 &44.10±2.7) m.eq/l respectively, indicating significant differences . Rats fed on various diets showed significant decreases in mean values as compared to control (+) group . The best treatment was recorded for group 7(mixture of all plants)for both Na & k when compared to control (-) group.

It seems possible that the used plants could correct the changes in urine electrolytes Na & K due to injection of rats with gentamicin .

Such results are in agreement with that recorded by EL – Moselhy , Shimaa (2007), Sheir , Marwa (2009)&Ali , Amal (2011),who reported that creatinine, urea& uric acid level was decreased by treatment with herbal combination of some plants.

Anon (2012a),found that Almond oil had diuretic effect in human body.

Anon (2012b) ,reported that the decoction of the inner bark of Sambucus is used freely as a diuretic in the treatment of acute nephritis. Anon (2012c),found that Sambucus used for nephritis –edema with 12 -25g drug material from entire plant in decoction. Dzharaullaeva et al .,(2009) found that the main biologically active substances are flavonoids (1.61%) in Juniperus oxycedrus and possess the diuretic effect. Tumen et al.,(2012) reported that Juniperus sp. is mainly used as diuretic in Turkish folk.

Goldfarb et al., (2001) suggested that grapefruit juice ingestion was associated with an increase in mean oxalate excretion and citrate excretion.

Trinchieri et al.,(2002) showed that grapefruit juice increased urinary excretion of citrate and calcium, magnesium in healthy subjects. Honow et al.,(2003)reported that both grapefruit and apple juices reduced the risk of calcium oxalate stone formation.

Table(6): Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all(as5%) on serum and urine sodium Na and k(m.eq/l) of reinopathic rats

Groups	serum				Urine			
	Na	percent of change of Control(+) group	K	percent of change of Control(+) group	Na	percent of change of Control(+) group	K	percent of change of Control(+) group
Group 1 control – ve	199.00 ±7.94a	+342.85	12.40 ± 0.53b	+342.86	95.00± 3.46c	-62.59	44.10 ± 2.71d	-54.20
Group 2 control + ve	36.00± 2.45f	00.00	2.80± 0.26f	00.00	254.00 ± 15.09a	00.00	96.30± 5.48a	00.00
Group 3 5% Almond nut	176.00± 5.29c	+185.71	8.00± 0.37c	+185.71	95.00 ± 3.46c	-62.59	54.00± 4.36c	-43.92
Group 4 5% Sambucus herbs	157.00± 6.08 d	+46.42	4.10±0. 26 e	+46.43	97.00 ±3.61c	-61.81	54.60±4. 51 c	-43.30
Group 5 5% Juniperus seeds	145.30± 5.02e	+85.71	5.20±0. 45d	+85.71	106.00 ± 4.36b	-58.26	63.70±3. 25b	-33.85
Group 6 65% Grapefruit albedo	154.30 ±5.14b	+60.71	4.50 ±0.75e	+60.71	94.00 ± 5.29c	-62.99	54.00 ±3.61c	-43.92
Group 7 5% mixture	181.00 ± 3.41b	+571.42	18.80 ± 0.15a	+571.42	94.00 ± 3.49c	-62.99	42.60 ± 2.51d	-55.76
LSD	4.454		0.689		8.367		3.198	

Values denote arithmetic means ± standard deviation of the mean. Means with different letters (a, b, c and d) in the same column different significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are nonsignificantdifferent.

***F-Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on liver function of reinopathic rats.***

***1-Serum glutamic oxaloacetate transaminase (GOT) or (AST) enzyme (U/L):***

Data of table(7) illustrate the mean value of serum (GOT) (U/L) of reinopathic rats fed on various diets. It could be noticed that the mean value of (GOT)of control (+) group was higher than control (-) group,being  $60.00 \pm 5.00$  &  $16.00 \pm 2.51$  respectively,showing significant difference . All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group. Mixture of all plants(group7) revealed the best treatment when compared to control (+) group considering (GOT) activity.

***2-Serum glutamic pyruvate transaminase(GPT) or(ALT)enzyme (U/L):***

Data of table(7) show the mean value of serum (GPT) (U/L) of reinopathic rats fed on different diets. It could be observed that the mean value of (GPT)of control (+) group was higher than control (-) group,being  $11.20 \pm 1.05$  &  $4.00 \pm 0.61$  respectively,showing significant difference . All reinopathic rats fed on various diets revealed significant decreases in mean values as compared to control (+) group. Group( 7) which was the best treatment considering the GPT activity showed nonosignificant difference,in comparison with group (1) of healthy rats.

***3-Serum alkaline phosphatase(ALP) enzyme (U/L):***

Data of table(7) illustrate the mean value of serum (ALP) (U/L) of reinopathic rats fed on various diets. It could be noticed that the mean value of (ALP)of control (+) group was higher than control (-) group,being  $249.20 \pm 10.15$  &  $87.00 \pm 2.13$  respectively,indicated significant difference . All reinopathic rats fed on various diets revealed significant decreases in mean values as compared to control (+) group.Numerically the mixture of all pants diet recorded the better treatment of serum ALP.

**4-Serum (GOT)/(GPT)or (AST)/(ALT) ratio (U/L):**

Data of table(7) indicate the mean value of serum(GOT)/ (GPT)ratio (U/L) of reinopathic rats fed on various diets. It could be noticed that the mean value of (GOT)/(GPT)ratio of control (+) group was higher than control (-) group, being  $5.40 \pm 0.25$  &  $4.00 \pm 0.34$  respectively, showing significant . All reinopathic rats fed on various diets revealed significant decreases in mean values as compared to control (+) group. The best treatment considering the GOT/ GPT ratio was recorded for group “7” in comparison with group (2).

Table(7): Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo & the combination of all on liver function of reinopathic rats.

Groups	GOT or AST(U/L)	GPTor ALT(U/L)	ALP(U/L)	AST/ALT(U/L)*
Group 1 control – ve	16.00±2.51 d	4.00±0.61e	87.00±2.13de	4.00±0.34e
percent of change of Control(+)group	-73.33	-64.28	-65.06	-25.92
Group 2 control + ve	60.00±5.00a	11.20±1.05a	249.00±10.15a	5.40±0.25a
percent of change of Control(+)group	00.00	00.00	00.00	00.00
Group 3 5% Almond nut	24.00±2.75c	5.00±0.45d	82.00±2.65ef	4.80±0.17c
percent of change of Control(+)group	-60	-55.35	-67.06	-11.11
Group 4 5% Sambucus herbs	29.00±3.61c	6.00±0.26c	116.00±5.29c	4.80±0.17c
percent of change of Control(+)group	-51.66	-48.42	-53.41	-11.11
Group 5 5 % Juniperus seeds	45.00±3.55b	9.00±0.28b	79.00±2.57c	5.00±0.26bc
percent of change of Control(+)group	-25	-19.64	-64.04	-7.40
Group 6 5% Grapefruit albedo	25,00±1.73c	4.80±0.45d	90.00±4.19d	5.20±0.23ab
percent of change of Control(+)group	-58.33	-57.14	-75.90	-3.70
Group 7 5 % mixture of all planets	18.00±1.00d	4.00± 0.34e	78.00±2.64f	4.50±0.26d
percent of change of Control(+)group	-70	-64.28	-68.67	-16.66
LSD	4.910	0.596	6.095	0.260

(U/L)\* means unit per liter Values denote arithmetic means  $\pm$  standard deviation of the mean. Means with different letters (a and b) in the same column differ significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are nonsignificantdifferent.

### **5-Serum and urine total protein(mg/dl):**

#### **a-Serum total protein(T.P.):**

Data of table(8) show the mean value of serum(T.P.) (mg/dl) of reinopathic rats fed on various diets. It could be observed that the mean value of (T.P.) of control (+) group was lower than control (-) group, being  $5.60 \pm 0.36$  &  $11.30 \pm 0.26$  respectively, indicating significant . All reinopathic rats fed on different diets showed significant increases in mean values as compared to control (+) group. The best treatment considering the serum T.P. in sehwan was recorded for group (7) in comparison with group (2) .

#### **b-Urine total protein(T.P.):**

Data of table(8) indicate the mean value of urine(T.P.) (mg/dl) of reinopathic rats fed on various diets. It could be noticed that the mean value of (T.P.) of control (+) group was higher than control (-) group, being  $4.90 \pm 0.52$  &  $3.20 \pm 0.13$  respectively, indicating significant difference . All reinopathic rats fed on different diets revealed significant decreases in mean values as compared to control (+) group. Numerically the best treatment considering the urine T.P. was recorded for group (5).

These results seemed to agree with that found by El- Moselhy , Shimaa (2007)and Ali, Amal (2011) rising plants and herbes. Jenkins et al .,(2006) suggested that Almond may decrease the risk of oxidative damage to protein by decreasing glycemc excursion and decreased risk CHD . Zhu et al.,(2008)reported that the extraction of S.chinensis by 75% alcohol showed very significant protective effects on mice acute hepatic injury induced by CCl4. Orhan et al.,(2012)reported that Juniperus berries decreased liver enzymes ,ALP of diabetic rats. Dakovic et al.,(1999) found that the liver protein enzyme content is significantly decreased after the multiple oral Grapefruit juice ingestion of male mice .

Table(8): Effect of Almond nut, Sambucus herbs, Juniperus seeds, Grapefruit albedo &the combination of all (as5%) on serum protein(mg/dl) of reinopathic rats

Groups	T.P (serum)	Percent of change of control(+)group	T.P Urine	Percent of change of control(+)group
Group 1 control – ve	11.30 ±0.26a	101.79	3.20 ±0.13cd	-34.69
Group 2 control + ve	5.60± 0.36e	00.00	4.90± 0.52a	00.00
Group 3 5% Almond nut	10.60±0.53b	89.29	3.50±0.34bc	-28.57
Group 4 5% Sambucus herbs	9.80±0.24 c	75.00	2.90±0.17 de	-40.81
Group 5 5% Juniperus seeds	7.00±0.35d	25	2.80±0.18e	-42.85
Group 6 5% Grapefruit albedo	9.90 ±0.36e	76.79	3.00 ±0.43de	-38.77
Group 7 5% mixture	11.20 ± 0.29a	100.00	3.70 ± 0.26b	-24.48
LSD	0.358		0.315	

Values denote arithmetic means ± standard deviation of the mean. Means with different letters (a, b, c and d) in the same column different significantly at  $p \leq 0.05$  using one way ANOVA test, while those with similar letters are nonsignificant different.

### **HISTOPATHOLOGICAL RESULTS.**

#### ***Kidneys***

Microscopically, kidneys of rat from (control – group) revealed the normal histological structure of renal parenchyma (Photo.1). While mean, kidneys of rat from (control + group) showed vacuolations of epithelial lining renal tubules, presence of protein cast in the lumen of renal tubules (Photo..2), Atrophy of some glomerular tufts (Photo..3) and peritubular inflammatory cells infiltration (Photo.4) .However, kidneys of rat from Almond nut 5% showed no changes except slight congestion of capillary tufts (Photo..5). Moreover, kidneys of rat from Sambucus herbs 5% revealed vacuolations of epithelial lining some renal tubules (Photo.6). Most examined sections from Juniperus seeds 5% showed no histopathological changes (Photo..7,8), whereas, some sections from this group showed

distension of bowmen's space (Photo..9) Some examined sections from Grapefruit albedo 5% and mixture of all plants 5% revealed no histopathological changes (Photo.. 11, 12).

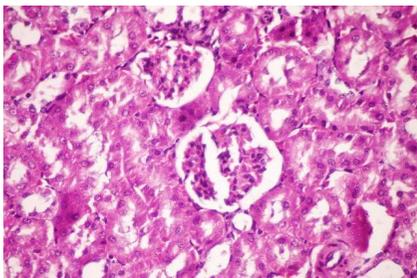


Photo (1): kidney of rats from (control – group) showing the normal histological structure of renal parenchyma (H and E X 400)

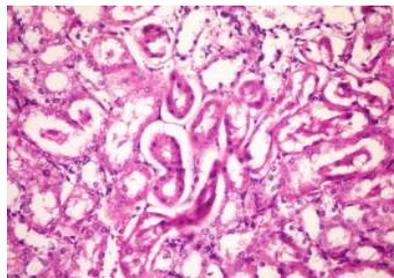


Photo (2): Kidney of rat from group showing vacuolations of epithelial lining renal tubules and presence of protein cast in the lumen of renal tubules (H and E X 400).

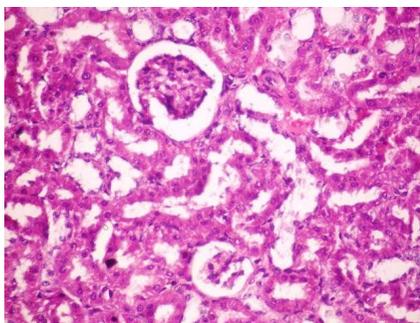


Photo (3): kidney of rats from (control + group) showing atrophy of some glomerular tufts (H and E X 400).

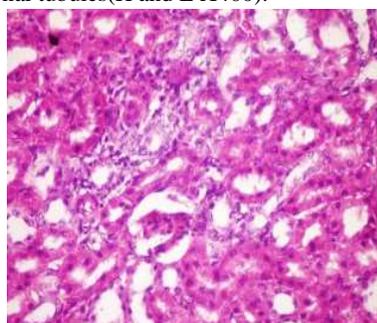


Photo (4): kidney of rats from (control + group) showing peritubular inflammatory cells infiltration (H and E X 400).

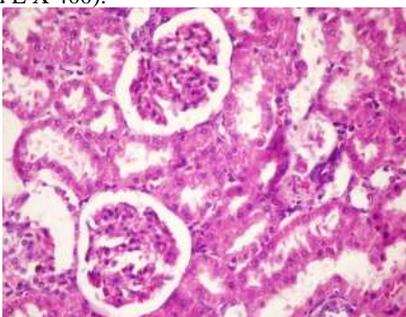


Photo (5): kidney of rats from Almond nut 5% showing slight congestion of capillary tufts (H and E x 400).

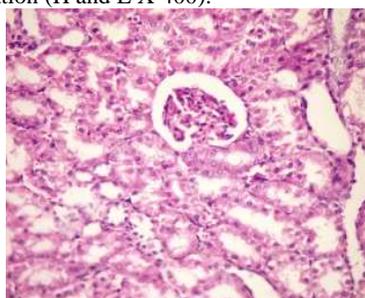


Photo (6): kidney of rats from Sambucus herbs 5% showing vacuolations of epithelial lining some renal tubules (H and E X 400).

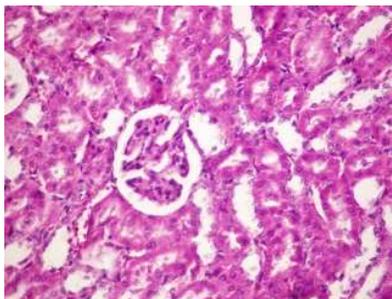


Photo (7): kidney of rats from group 22 showing no histopathological changes (H and E X 400)

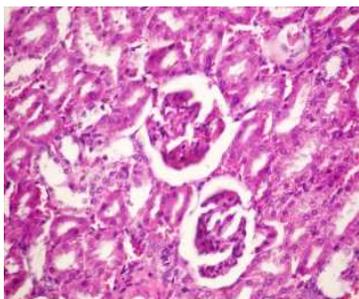


Photo (8): kidney of rats from group 22 showing no histopathological changes (H and E X 400)

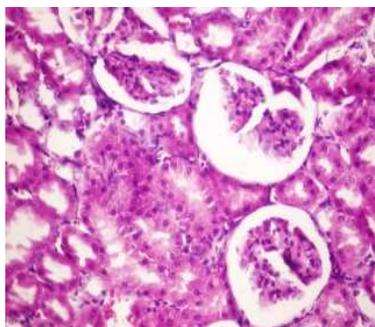


Photo (9): kidney of rats from Juniperus seeds 5% showing distension of Bowman's space (H and E X 400)

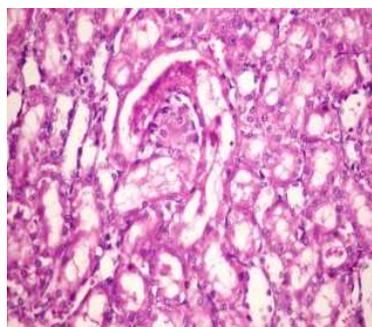


Photo (10): kidney of rats from Grapefruit albedo 5% showing eosinophilic protein cast in the lumen of renal tubules. (H and E X 400)

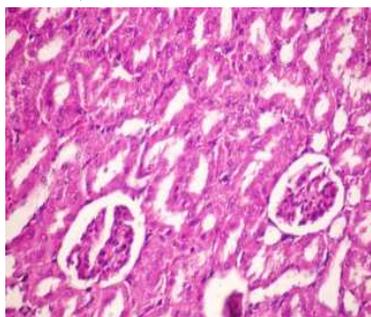


Photo (11): kidney of rats from Grapefruit albedo 5% showing no histopathological changes (H and EX 400)

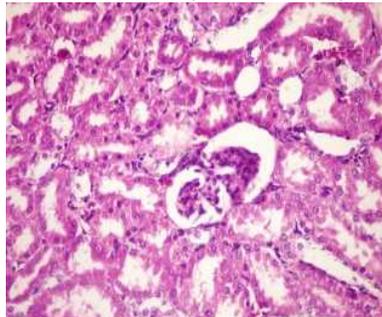


Photo (12): kidney of rats from mixture of all plants 5% showing no histopathological changes (H and E X 400).

### **Liver**

Microscopically, liver of rat from (control -group) revealed the normal histological structure of hepatic lobule (Photo.1). While mean, liver of rat

from (control + group) showed cytoplasmic vacuolization of hepatocytes (Photo. 2, 3). However, liver of rat from Almond nut 5%

revealed local hepatic necrosis associated with inflammatory cells infiltration (Photo. 4) and kupffer cells activation (Photo.5). No histopathological changes were noticed in liver of rat from Sambucus herbs 5% (Photo.6). Examined sections from Juniperus seeds 5% revealed kupffer cells activation and dilatation of hepatic sinusoids (Photo. 7, 8). However, liver of rat Grapefruit albedo 5% showed

dilatation and congestion of hepatic sinusoids (Photo. 9,10) and slight vacuolations of hepatocytes (Fig.12). Moreover, liver of rat from mixture of all Plants5% revealed no changes except hydropic degeneration of some hepatocytes (Photo.11).

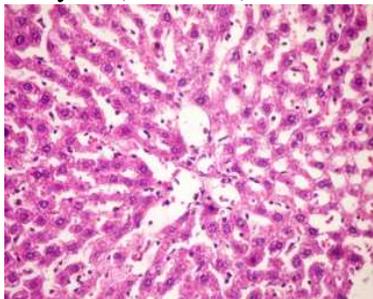


Photo (1): liver of rats from (control - group) showing the normal histological structure of hepatic lobule (H and E X 400).

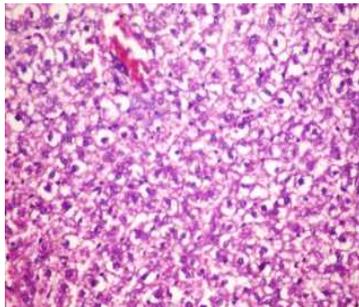


Photo (2): liver of rats from (control + group) showing cytoplasmic vacuolization of hepatocytes (H and E X 400) .

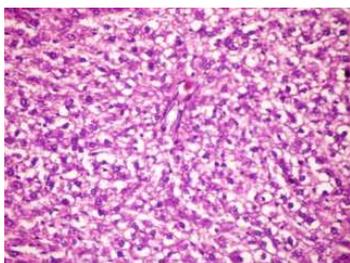


Photo (3): liver of rats from (control +group)showing cytoplasmic vacuolization of hepatocytes (H and E X 400).

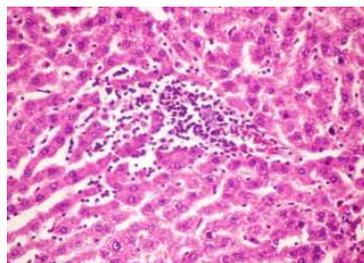


Photo (4): liver of rats from Almond nut 5%showing local hepatic mecnosis associated with hnflammatory cells infiltration(H and E X 400)

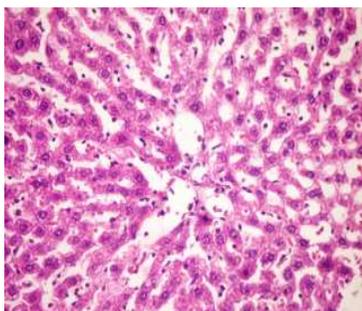


Photo (5): liver of rats from Almond nut 5% showing kupffer cell activation (H and E X 400).

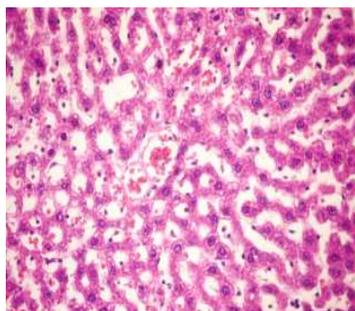


Photo (6): liver of rats from Sambucus herbs 5% showing no histopathological changes (H and E X 400).

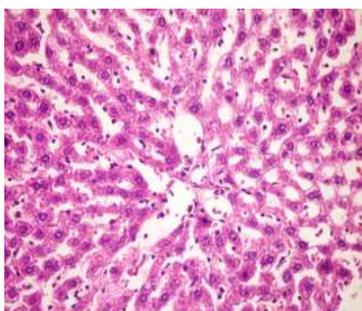


Photo (7): liver of rats from Juniperus seeds 5% showing kupffer cells activation and dilatation of hepatic sinusoids (H and E X 400).

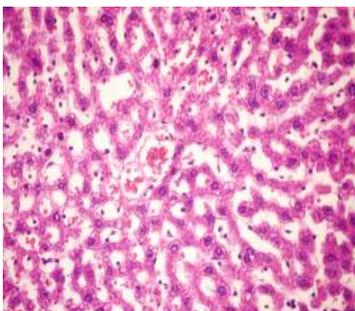


Photo (8): liver of rats from Juniperus seeds 5% showing kupffer cells activation and dilatation of hepatic sinusoids (H and E X 400).

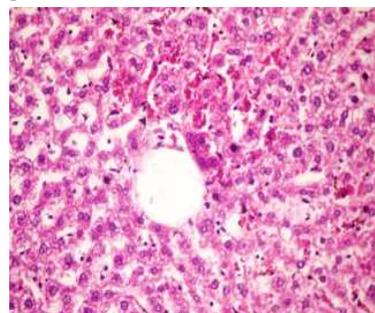


Photo (9): liver of rats from Grapefruit albedo 5% kupffer cells activation and dilatation of hepatic sinusoids (H and E X 400).

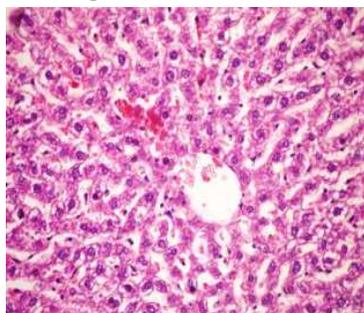


Photo (10): liver of rats from Grapefruit albedo 5% showing slight vacuolations of hepatocytes and congestion of hepatic sinusoids (H and E X 400).

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## دراسات تغذوية على نباتات

### واعده لعلاج مرضى الكلى فى ذكور الفئران البيضاء

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الملخص العربى

تم اختيار ٤٠ مريض من المترددين على قسم الباطنه - مستشفى قصر العينى (مستشفى حكومى) فى القاهرة للدراسة الحالية بحيث بناء على قياس مؤشر كتلة الجسم BMI كانوا من ذوى الوزن الزائد والسمنة. وكانت الإناث والذكور فى الدراسة بعمر ٤٥ - أقل من ٥٥ عاما ، ٦٥ - عاما. ولقد تم قياس الوزن والطول لحساب مؤشر كتلة الجسم - كما تم جمع بيانات الدراسة عن طريق المقابلة الشخصية لاستيفاء استبيان يحتوى على عدة استمارات. كما تم استخدام طريقة تسجيل مأخوذ الطعام فى الـ ٢٤ ساعة السابفة وذلك لتحديد محتوى الطعام المتناول من العناصر الغذائية كما تم تحليل السيرم لتحديد العوامل الكيماوية الحيوية وأيضا إجراء تحليل الدم للحصول على الصورة الكاملة.

ومن النتائج اتضح أن مرضى البول السكرى سائد أكثر لدى الإناث على الذكور ويزداد تفشيته بزيادة العمر. وعند عمر ٥٥ - ٦٥ عاما كان ٥٠ - ٧٠% من العينة مصابين بارتفاع ضغط الدم - وفى هذه المجموعة العمرية وجد أن ٥٠% من الذكور لديهم نقص فى نشاط الغدة الدرقية مما قد يكون سببا للسمنة وقد صاحب هذا نقص فى مستوى T.S.H. ومع زيادة العمر زادت نسبة المصابين بزيادة الوزن ، السمنة المرضية والسمنة الغذائية على حساب السمنة من الدرجة II. وقد لوحظ أن AMC ، AC ، TSF تزداد أيضا مع تطور وتعمق السمنة.

وقد اتضح أن مأخوذ السعرات الكلية والبروتين والدهن والكربوهيدرات كان أكبر كثيرا من توصيات DRI. كما دلت العوامل الكيماوية الحيوية (ماعدا حامض اليوريك) ومن الجائز أيضا HDL على تدهور صحة أفراد العينة. هذا التدهور أيده أيضا التحليل لصورة الدم الكاملة.