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Study on Nephrotoxicity Reduction in Rats Fed on Parsley Plant and Its Products

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Abstract

Petroselinumcrispum,is used in traditional medicine for the treatment of diseases. This study was conducedto investigate the protective effect of parsley plant as a parsley leaves decoction, fresh leaves, seeds and seeds oil on Nephrotoxicity reduction in rats by gentamicin (garamycin amp). Thirty six mature albino rats weighting 150±10g were used, and divided into 6 equal groups; one group was kept as a negative control group, while the other groups were injected by gentamicin once day for 10 days. The used plants (parsley and its products) given as a percent of 20% decoction, 10% fresh leaves, 5%seeds and 5% seeds oil from the basal diet. Liver functions (GOT, GPT, total protein, albumin),kidney functions (urea, creatinin, uric acid), total cholesterol, triglycerides, lipoproteins (HDL, LDL, VLDL) andhistopathological changes of kidney, liver and spleen,wereexamined. The obtained results concluded that the feeding with the tested plant (parsley and its products) improved kidney functions, liver functions and lipid profile.

Key Words: parsley,nephrotoxicity,histopathologicalchanges, kidney functions, liver functions.

Introduction:

Kidneys are very important organs in the human body. They keeplow blood pressure in the human body, and impaired kidney functionswhichacommon attribute of aging that is often associated with high blood pressur(hypertension). Kidney-related pathologies are important contributors (either directly or indirectly) to overall human

mortality. In comparison with other organs, kidney has an unusually wide range of oxidative status, ranging from the wellperfused cortex to near-anoxic medulla **(Sheehan *et al*., 2012).**

Nephrotoxicity (from Greek: nephros,"kidney") is a poisonous effect of some substances, both toxic chemicals and medication on the kidneys.Thereare various forms of toxicity. Nephrotoxicity should not be confused with the fact that some medications have apredominantly renal excretion and need their dose adjusted for the decreased renal functions (e .g. heparin). Nephrotoxins are chemicals displaying nephrotoxicity. The nephrotoxic effect of most drugs is more profound in patients who already suffer from renal impairment. Some drugs may affect renal function in more than one way **(Galley, 2000).**

Interest in medicinal plants as a re-emerging health aid in the maintenance of personal health and well-being has been fuelled by rising costs of prescription drugs, and the bioprospecting of new plant-derived drugs **(Sharma *et al* ., 2010) .**

Parsley is amedicinal plant with various proven pharmacological properties including antioxidant, hepatoprotective, neuroprotective, antidiabetic,analgesic,spasmolytic, immunosuppressant, anti-coagulant, antiulcer,laxative,estrogenic,diuretic,hypotensive,antibacterial and antifungal activities **(Farzaei*et al*., 2013).**

Parsley (Petroselinumsativum,FamilyApiaceae) is used as a culinary, garnishing and medicinal herb in the Mediterranean region of Southern Europe, and good antioxidant activity. Parsley leaves are rich this study. In Apigenin and its glucosidal flavonoids that were to possess anti-inflammatory especially for renal hygienic room inflammation, antioxidant and anticancer activities**(Elkhamisy, 2015).**

Materials and Methods

Materials:

Casein, vitamin mixture, mineral mixture, cellulose, choline chloride, methionine, kits and Gentamicin were obtained from Memphis Company, form Pharm. Chem.Ind., Cairo, Egypt. Parsley leaves were obtained from local market in Shebin El-Kom, Menoufia, Egypt. Parsley seeds and Parsley oil were obtained from aherbal shop (Haraz), Cairo, Egypt. Mature male albino rats of Sprague – Dawley strain (36 rats) weighing 150± 10 g were obtained fromResearch Center, Giza, Egypt.

Methods:

Preparation of parsley leaves:

One hundred gram of leaves was put in 1 liter of cold water, brought to boil, simmered for 10-15 minutes (longer if plants very hard), then left to cool, steep covered for 10- 15 minutes, and then passed through atea strainer, to be ready for used **(Doumas*et al.*, 1971).**

Preparation of Nephrotocxic rats:

Impaired kidney can be induced in normal healthy meals albino rats by intra-peritoneal injection of gentamicin (aminoglycosides antibiotics) about (10mg/kg/day) for 8 days in which the nephrotoxicity,one of the advers reaction of gentamicin takes place according to the methods described by **Farombi and Ekor(2006).**

Experimental design:

Thirty six adult male albino rats were divided into two main groups: The first main group (6 rats) fed on basal diet as control negative group (C-ve). The second main group (30 rats) fed on basal diet for 15 days. After that all groups injected intraperitoneally with (aminoglycosides antibiotics) Garamycin (10 mg/kg) every 24 hr. for eight days to induce Nephrotoxicity, one of the adverse reaction takes place**(Doumas*et al.*, 1971).** This seconed main group was divided into 5 groups each group contained 6 rats as follows:

Group (1): Positive control group (untreated group).
Group (2): Treated Rats with 20% Parsley leaves decoction.
Group (3): Treated Rats with 10% Fresh Parsley leaves.
Group (4): Treated Rats with 5% Parsley seeds.
Group (5): Treated Rats with 5% Parsley oil.

Biological Evaluation:

During the experimental period (28days), the consumed diet was daily recorded (feed intake), biological evaluation of the different diets was carried out by determination of body weight gain (BWG g) and feed efficiency ratio (FER) according to**Chapman*et al.*, (1959)**.

Biochemical Analysis:

Blood sampling:

Blood samples were collected after 12 hours fasting at the end of the experiment using the abdominal aorta in which the rats were scarified under di-ethyle ether anetheized. Blood samples were received into clean dry centerfuge tubes and left to clot at room temperature, then

centerfuged for 10 minutes at 3000 rpm to separate the serum. Serum was carefully aspirate, transferred into clean cuvettubes, and stored frozen at-20ºC for analysis **(Malhotra, 2003).**All serum samples were analyzed for determination the following parameters:

Urea was determined according to the enzymatic method of **PattnandCrounch (1977),**creatinine was determined according to kinetic method of **Henry (1974),** uric acid was determined according to **(Schultz, 1984).** GOT and GPT activities were measured according to method described by **Yound(1975) andTietz(1976)**, determination of triglycerides was carried out according **to Fassati and Prencipe(1982),** cholesterol determination according to **Allen(1974),** HDL-cholesterol determined by the same method used for total cholesterol , according to **Lopez(1977),** The determination of VLDL (very low density lipoproteins) and LDL were carried out according to the method of **Lee and Nieman(*1996)*,** Determination of serum total protein according to **(Spencer and price., 1977)**and serum albumin was determined as g/dl according to **(Doumas*et al.*,1971)**which modified by **(Spencer and Price, 1977).**

HistopathologicalInvestigation:

Small specimens from kidneys, liver and spleen were collected from all experimental groups, fixed in 15% neutral buffered formalin, dehydrated in ascending concentration of ethanol (70, 80, and 90%), cleared in xylene and embedded in paraffin. Sections of (4-6) umthickness were prepared and stained with Hematoxylin and Eosin according to **(Bancroft*et al*., 1996).**

Static analysis:

The data were statistically analyzed using a computerized costat program by one way ANOVA. The results are presented as mean ± SD. Differences between treatments at ($P \leq 0.5$) were considredsignificant **(SAS, 1985).**

Results and discussion:

Biological changes:

It could be noticed that in **Table (1)** the mean values of (BWG g), (FI) and (FER) of positive control group which showed decreasing as compared to negative controlgroup.Rats fed on basal diet containing 10% parsley leaves (G4) gave the best improvement of (BWG),(FI)

and(FER) for Nephrotocxic rats. These results agree with**Rashwan(2012).**

Table (1): Effect of parsley plants (*Petroselinumcrispum*) as adecoction leaves,fresh leaves, parsley seeds and parsley oil on BWG,FI and FER of nephrotoxic rats:

Parameters / Groups	BWG (g/28day)	FI (g/day)	FER (g/day)
	Mean±SD	Mean±SD	Mean±SD
Group 1(negative control)	1.758±1.003[a]	10.5±0.002[a]	0.167±0.032[a]
Group 2(positive control)	1.055±0.102[a]	8.1±0.004[f]	0.130±0.006[a]
Group 3(20% parsley decoction)	1.496±0.341[a]	9.4±0.1[d]	0.159±0.025[a]
Group 4(10% parsley leaves)	1.625±0.026[a]	9.9±0.005[a]	0.164±0.047[a]
Group 5(5% parsley seeds)	1.557±0.501[a]	9.6±0.04[C]	0.162±0.062[a]
Group 6(5% parsley oil)	1.464±0.326[a]	9.1±0.001[e]	0.160±0.044[a]
LSD	0.886	0.0783	0.071

- Values are expressed as mean ± SD.
- Significant at $p \leq 0.05$ using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

Data presented in **table (2)** revealed that the mean value of organs weight of positive control group was higher than negative control group. Rats fed on basal diet and 5% parsley seeds (G5) gave the best results of kidney weight.Also,rats fed on basal diet and 20% parsley decoction (G3) gave the best results of weights of (heart,lungs,liverand spleen).

Table (2): Effect of parsley plants (*Petroselinumcrispum*) as adecoction leaves, fresh leaves, parsley seeds and parsley oil on organs weight of nephrotoxic rats:

	Organs weight (g/100 g. B.Wt.)				
Groups	**Liver**	**Kidney**	**Heart**	**Lungs**	**Spleen**
Group 1 (negative control)	4.6±0.52^{d}	0.65±0.02^{d}	0.55±0.1^{b}	1.1±0.04^{e}	0.44±0.43^{b}
Group 2 (positive control)	7.65±0.36^{a}	1.5±0.08^{a}	1.2±0.02^{a}	1.9±0.01^{a}	1.0±0.1^{a}
Group 3 (20% parsley decoction)	4.8±0.51^{d}	1.1±0.01^{b}	0.59±0.43^{b}	1.2±0.1^{e}	0.48±0.08^{b}
Group 4 (10% parsley leaves)	5.31±0.29^{d}	0.95±0.03^{c}	0.86±0.03^{ab}	1.33±0.1^{d}	0.5±0.11^{b}
Group 5 (5% parsley seeds)	6.01±0.11^{c}	0.69±0.04^{d}	0.63±0.02^{b}	1.53±0.06^{c}	0.63±0.1^{ab}
Group 6 (5% parsley oil)	6.7±0.13^{b}	0.74±0.06^{d}	1.0±0.03^{ab}	1.7±0.04^{b}	0.92±0.05^{ab}
LSD	0.638	0.0828	0.322	0.119	0.345

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have,similar or partially are non-significant.

Biochemical data:

Data of **table (3)** showed significant increased in serum urea, serum uric acid and serum creatinine, for positive control group as compared with negative control group (normal rats).The best results of serum urea was for group 5 (rats fed on basal diet and 5% parsley seeds) .While rats fed on basal diet and 10% parsley leaves (G4) gave the best improvement of serum creatinine and serum uric acid.These results agree with**Elkhamisy(2015).**who mentioned that Intraperitoneal injection of gentamicin (GM) in a dose80 mg/kg/day for 8 days to rats caused Nephrotoxicitymanifested by significant ($P \leq 0.05$) increases in serum levels of urea nitrogen (UN),creatinine (Cr) and alkalinphosphatase (ALP) enzyme when compared with the normal (negative) controlgroup.

Rashwan(2012)suggested thatconsumption of parsley either powder or extract only or with arginine showed a significant decrease the value of

creatinine (P≤0.05), urea (P≤0.05) and uric acid (P≤0.05) in all treated groups compared with positive control group.

Table (3): Effect of parsley plants (*Petroselinumcrispum*) as adecoction leaves, fresh leaves, parsley seedsand parsley oil on kidney function (on serum urea, creatinine and uric acid) of nephrotoxic rats:

Parameters / Groups	Urea(mg/dl)	Uric acid (mg/dl)	Creatinine (mg/dl)
	Mean±SD	Mean±SD	Mean±SD
Group 1(negative control)	15.6±3.0[a]	1.3±0.02[d]	0.54±0.1[c]
Group 2(positive control)	22.14±2.63[a]	3.5±0.14[a]	1.4±0.2[a]
Group 3 (20%parsley decoction)	20.74±2.56[a]	2.9±0.02[b]	1.0±0.172[b]
Group 4(10% parsley leaves)	17.4±3.0[a]	1.0±0.04[e]	0.5±0.2[c]
Group 5(5% parsley seeds)	15.9±2.42[a]	2.01±0.1[c]	0.81±0.2[bc]
Group 6(5% parsley oil)	18.9±2.45[a]	1.1±0.25[de]	0.63±0.1[c]
LSD	4.78	0.223	0.299

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

The results of **table (4)** and **table(5)** showed the mean values of serum (GPT), serum(GOT), serum total protein and serum albumin.In**table (4)**the results indicated a significant increase of serum (GPT and GOT)for positive control group as compared to negative control group.The best results of serum (GPT) was for group(4) (10%parsley leaves), also the best results of (GOT) was for group (6) (5% parsley seeds).While the results of **table (5)** showed a significant decreased of serum total protein and serum albumin. Group (6) (5% parsley oil) showed the best results of total protein .Also, group (3) (20% parsley decoction) showed the best results of serum albumin. These results for GPT and GOT are in line with parsley leaves decoction extract significantly decreased aspartate aminotransferase (AST) and alanine aminotransferase (ALT) recorded by **Bennani-Kabchi*etal.*,(1999)**. Also, serum alanine aminotransferase level was significantly reduced by treatment of parsley oil recorded by Tanaka**et *al.*,(2009)**. Parsley seed oil has been reported to stimulate hepatic regeneration in a rat modelrecoededby**Gershbein(1977)**. The improvement in liver functions due to parsley leaves that contain

flavonoids such as glycosides of apigenin, luteolin (e.g. apiin, luteolin-7-apiosyl-glucoside, apigenin-7-glucoside, luteolin-7-diglucoside and volatile oils such as myristicin (up to 85%), apiol, 1,3,8-p-menthatriene, 1-methyl-4-isopropenylbenzene, methyl disulfide, monoterpenes (e.g. a- and b-pinene, b-myrcene, b-ocimene, b-phellandrene, p-terpinene, a-terpineol) and sesquiterpenes (e.g. a-copaene, carotol, caryophyllene) which have antioxidant effect recorded by **Farzaei (2013).**

These results agree with that parsley seeds oil increase total serum proteins, and albumin. In general, the useful effect of parsley in improving liver functions can be attributed to its ability as antioxidant, to: 1-regulate the triggering of hepatic drug-metabolizing enzymes by the formation of glutathione-conjugate. 2-ameliorate the antioxidant enzymes (catalase, cupper/zinc superoxide dismutase (Cu/Zn SOD), glutathione peroxidase (GPx), glutathione reductase (GR) and Glutathione S transferase (GST) activity in liver which is beneficial for the hepatic detoxification recorded by**Choi and Hwang(2004).** 3-reducing oxidative stress (decreased reactive oxygen species and lipid peroxidation) and lowering inflammatory cytokines (decreased tumor necrosis factor- and interleukin 1β) and protein expression (cyclooxygenase-2, inducible nitric oxide synthase, cytosolic phospholipase A2 and caspase-3)recorded by**Lee*et al*.,(2012).**

Table (4): Effect of parsley plants (*Petroselinuncrispum*) as a decoction leaves, fresh leaves, parsley seedsand parsley oil on (GPTand GOT) (U/L) of nephrotoxic rats:

Parameters / Groups	GPT(U/L) Mean ±SD	GOT(U/L) Mean ±SD
Group 1(negative control)	12.68±1.83^{c}	17.68±2.68^{d}
Group 2(positive control)	22.68±3.07^{a}	35.8±2.033^{a}
Group 3(20% parsley decoction)	15.64±0.013^{bc}	20.68±1.9^{cd}
Group 4(10% parsley leaves)	14.17±0.001^{bc}	29.6±2.53^{b}
Group 5(5% parsley seeds)	16.52±0.501^{b}	24.17±2.33^{c}
Group 6(5% parsley oil)	15.51±0.089^{bc}	18.6±3.35^{d}
LSD	2.621	4.475

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

Table (5): Effect of parsley plants (*Petroselinumcrispum*) as a decoction leaves, fresh leaves, parsley seedsand parsley oil on serum total protein and serum albumin of nephrotoxic rats:

Parameters / Groups	Albumin(mg/dl) Mean ±SD	Total protein (mg/dl) Mean ±SD
Group 1(negative control)	3.37±0.08[a]	7.1±0.061[a]
Group 2(positive control)	0.73±0.26[c]	5.3±0.331[d]
Group 3(20% parsley decoction)	2.32±0.27[b]	5.7±0.172[c]
Group 4(10% parsley leaves)	0.97±0.17[c]	6.9±0.083[a]
Group 5(5% parsley seeds)	1.91±0.17[b]	6.04±0.015[b]
Group 6(5% parsley oil)	2.01±0.28[b]	7.01±0.215[a]
LSD	0.386	0.321

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

It is clear that from data of **table (6)** and **table (7)**, the mean values of serum T.C, T.G, LDL-c and VLDL-c for positive control group were significantly higher than negative control group. While the mean value of HDL-c showed a significant decreasing for positive control group as compared to negative control group. The best result of (T.C) was for group (5) (5%parsley seeds). Rats fed on basal diet and (10%parsley leaves) (G4) showed the best treatment of (T.G) and VLDL-c, while rats fed on basal diet and 5% parsley oil (G6) showed the best treatment of HDL-c and LDL-c. The obtained results were in accordance with that reported by**ELKherbawy*et al*.,(2011)** reported that groups fed on diets with parsley and coriander at the three different levels demonstrated significantly (P≤0.05) higher values of HDL-c but lower of other lipids (LDL-c, VLDL, TG and LDL-c/HDL-c) compared to the hyper-cholesterolemic rats fed on hyper-cholesterolemic diet without addition. There were significant differences between serum lipids in rats fed on the three levels of coriander and parsley. Increasing supplementation level exhibited lower mean values of TC, TG, VLDL- c, LDL-c and LDL/HDL ratio and higher values of HDL-c.**Yousuf*et al* .,(2014)** recorded thatthe results showed an adverse effect of cadmium on mice oxidative balance, while parsley showed an effective antioxidant effect which was revealed through lipid profile protection, MDA concentrations decrease and CAT activity increase.

Table (6): Effectof parsley plants (*Petroselinumcrispum*) as a decoction leaves, fresh leaves, parsley seedsand parsley oil on serum triglyceride (T.G) and serum total cholesterol (T.C) of nephrotoxic rats:

Parameters / Groups	Total cholesterol (mg/dl)	Triglycerides(mg/dl)
	Mean ±SD	Mean ±SD
Group 1(negative control)	90.4±1.107^{f}	45.5±0.102^{e}
Group 2(positive control)	119.4±2.07^{a}	64.6±0.735^{a}
Group 3(20% parsley decoction)	95.0±0.331^{d}	59.7±0.541^{b}
Group 4(10% parsley leaves)	101.5±0.251^{b}	45.0±0.005^{e}
Group 5(5% parsley seeds)	92.5±0.802^{e}	49.17±0.403^{d}
Group 6(5% parsley oil)	98.1±0.065^{c}	52.2±0.001^{c}
LSD	1.827	0.728

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

Table (7) : Effect of parsley plants (*Petroselinumcrispum*) as adecoction leaves, fresh leaves, parsley seeds and parsley oil on serum high density lipoprotein cholesterol (HDL-c) , serum low density lipoprotein cholesterol (LDL-c) , serum very low density lipoprotein cholesterol (VLDL-c) , of nephrotoxic rats:

Parameters / Groups	HDLc. (mg/dl)	LDLc. (mg/dl)	VLDLc. (mg/dl)
	Mean±SD	Mean±SD	Mean±SD
Group 1(negative control)	44.6±1.02^{a}	35.9±0.072^{f}	14.2±0.503^{f}
Group 2(positive control)	26.7±2.3^{e}	86.6±0.175^{a}	30.4±0.621^{a}
Group 3(20% parsley decoction)	28.7±0.007^{d}	73.3±0.002^{b}	25.2±0.042^{b}
Group 4(10% parsley leaves)	39.6±0.104^{b}	63.0±0.851^{c}	17.3±0.155^{e}
Group 5(5%parsley seeds))	32.9±0.231^{c}	58.3±0.477^{d}	18.9±0.661^{d}
Group 6(5% parsley oil)	42.9±0.057^{a}	40.3±0.901^{e}	20.2±0.003^{c}
LSD	1.837	0.974	0.762

- Values are expressed as mean ± SD.
- Significant at p≤0.05 using one way ANOVA test.
- Values which have different letters differ significantly, while those with have, similar or partially are non-significant.

Histopathological results:

Kidneys:

From the histopathologicalresults,it could be noticed that kidneys of rat which fed on basal diet only as negative control group showed the normal histopathological structure of renal parenchyma photo (1). Also group (4 and 5) showed normal renal structure (photos 3 and 5). Kidneys of rat from group (2) showed congestion of renal blood vessel and focal mononuclear interstitial inflammatory cells infiltration photo (2). Kidneys of rat from group (3) showed slight vacuolation of epithelial lining renal tubules and endothelial lining glomerular tuft photo (4). While in group (6) showed oesinophilicprotienaceous renal cast photo (6).

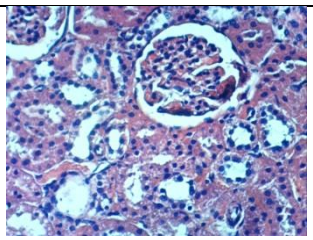


Photo (1): Kidneys of rat from group (1) (H & E X 400).

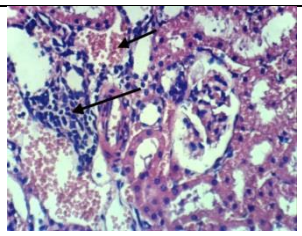


Photo (2): Kidneys of rat from group (2) (H & E X 400).

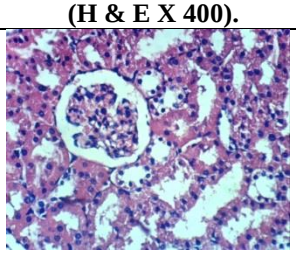


Photo (3): Kidneys of rat from group (4) (H & E X 400).

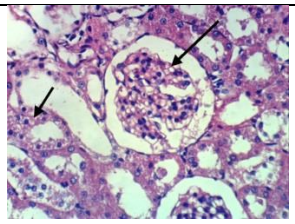


Photo (4): Kidneys of rat from group (3) (H & E X 400).

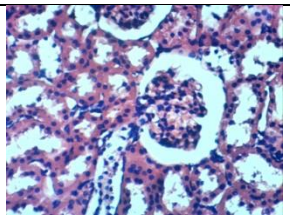


Photo (5): Kidneys of rat from group (5) (H & E X 400).

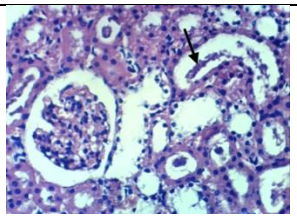


Photo (6): Kidneys of rat from group (6) (H & E X 400).

Liver:

Liver of rats in group (1) in photo (7) showed normal structure, while in group (2) photo (8) showed vacuolar degeneration of hepatocytes and portal infiltration with inflammatory cells. Liver of rats in group (3) showedKupffer cells activation and vacuolar degeneration of hepatocytesphoto (9). Liver of rats in group(4) showed slight cytoplasmic vacuolization of hepatocytes photo (10). Liver of rats in group (5) showedslight dilatation of hepatic sinusoids photo (11). Liver of rats in group (6) showedslighthydropic degeneration of hepatocytes photo (12).

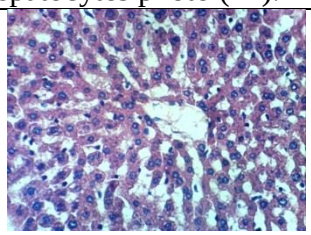


Photo (7): Liver of rat from group (1) (H & E X 400).

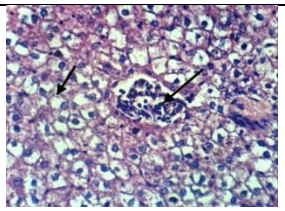


Photo (8): Liver of rat from group (2) (H & E X 400).

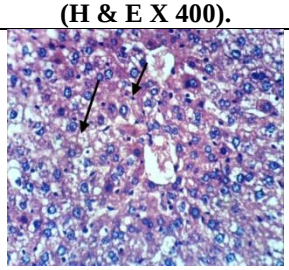


Photo (9): Liver of rat from group (3) (H & E X 400).

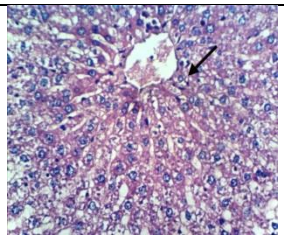


Photo (10): Liver of rat from group (4) (H & E X 400).

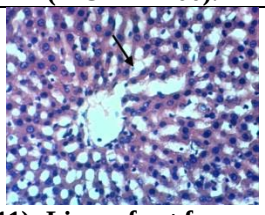


Photo (11): Liver of rat from group (5) (H & E X 400).

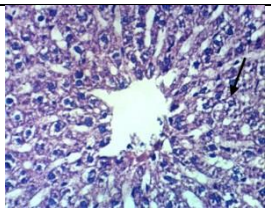
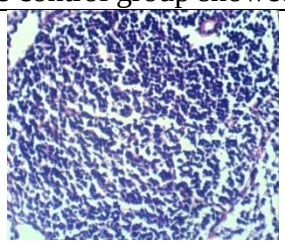
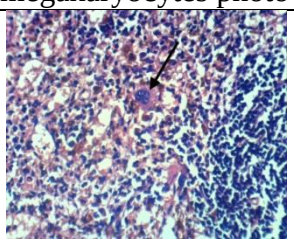


Photo (12): Liver of rat from group (6) (H & E X 400).

Spleen:

Microscopilly, spleen of rats in groups (1, 3, 4, 5 and 6) showed normal structure of spleen photos (13, 15, 16, 17 and 18), while spleen of rats in group (2) which injected with gentamicine and fed on basal diet as positive control group showedetramedullar megakaryocytes photo (14).

<table>
<tr>
<td> 
Photo (13): Spleen of rat from group (1) (H & E X 400).</td>
<td> 
Photo (14): Spleen of rat from group (2) (H & E X 400).</td>
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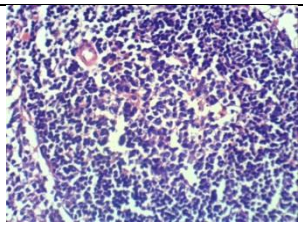
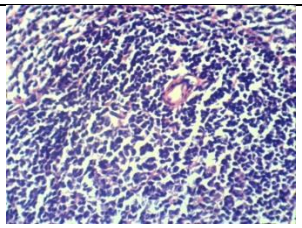
<td> 
Photo (15): Spleen of rat from group (3) (H & E X 400).</td>
<td> 
Photo (16): Spleen of rat from group (4) (H & E X 400).</td>
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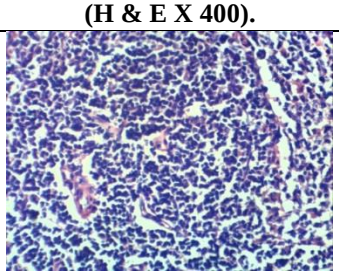
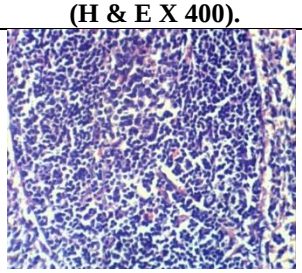
<td> 
Photo (17): Spleen of rat from group (5) (H & E X 400).</td>
<td> 
Photo (18): Spleen of rat from group (6) (H & E X 400).</td>
</tr>
</table>

Conclusion:

From the obtained results, it could be concluded that parsley plants have a good effect on kidney functions, parsley plant [fresh leaves, fresh leaves decoction, seeds and seeds oil] had the anti-toxicity effect, intake of fresh parsley leaves and its decoction may by beneficial for patients who suffer from high lipid profile [Anti-obesity activity].

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دراسة علي تقليل تسمم الكلي في الفئران المغذاة علي البقدونس ومنتجاتة

ماجدة كامل الشاعر ،منار محمود عبد العزيز السواق
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المستخلص العربي

استخدم البقدونس في الطب التقليدى لعلاج كثير من الأمراض . وقد أجريت هذة الدراسة الحالية لمعرفة التأثير الوقائي لنبات البقدونس و منتجاتة في صورة مغلي ورق البقدونس و الأوراق الطازجة والبذور وزيت البذور علي تقليل سمية الكلي في الفئران مقابل اصابتها بعقار الجنتاميسينلاحداث سمية الكلي . تم استخدام ٣٦ فأر أبيض بالغ يتراوح وزن كل منهم من١٥٠±١٠ جم وتم تقسيمهم الي ٦ مجموعات متساوية احداهما كمجموعة ضابطة سالبة أما المجموعات الأخري فتم اصابتها عن طريق حقنها بعقار الجنتاميسين يوميا لمدة ١٠ أيام . وأضيف النبات المستخدم (البقدونس) بالنسب التالية ٢٠% مغلي , ١٠% ورق طازج , ٥%بذور , ٥%زيت البذور من الوجبة الأساسية . وتم قياس انزيمات الكبد (انزيم الأسبرتات أمينو ترانسفيراز , انزيم آلانين أمينو ترانسفيراز , البروتين الكلي , الألبيومين)ووظائف الكلي (اليوريا , الكرياتينين ,وحمض البوليك) والكوليسترول الكلي والجليسريدات الثلاثية واللبيوبروتين مرتفع الكثافة واللبيوبروتين منخفض الكثافة واللبيوبروتين منخفض الكثافة جدا. وكذلك اجراء فحص الهستوباثولوجي لكل من الكلي والكبد والطحال . وقد أظهرت نتائج هذة الدراسة أن تناول نبات البقدونس ومنتجاتة ينتج عنه تحسن في وظائف الكلي والكبد .

الكلمات المفتاحية : البقدونس ,تسمم الكلي , التغيرات الهستوباثولوجية , وظائف الكلي , وظائف الكبد , الدهون الكلية.