

Protective Role of Fig (*Ficus carica*) Leaves and Ethanolic Extract on Sexual Hormones Deficiency of Postmenopausal Female Rats

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Abstract: Postmenopausal women are exposed to the risk of a big number of health conditions, as osteoporosis and heart disease. In some of these conditions, that risk may be reduced by medication, such as hormone therapy or healthy lifestyle changes. Fortunately, the safe and powerful treatments for postmenopause symptoms are given by the combination between alternative medicine and natural remedies lifestyle changes. This study aims to estimate the effect of *Ficus carica* (*Moraceae*) leaves powder and its ethanolic extract on female hormones was investigated in postmenopausal female rats. Five Sprague Dawley strain female rats at 8-9 weeks young (model of young women) represented in group (1) as negative group (young group) and fed on basal diet (BD). Twenty five Sprague Dawley strain female rats at 24 - 26 months old (model of postmenopausal women) were divided into five groups (5 rats per each) as following. (2) Postmenopausal as positive control. (3) Postmenopausal fed on BD with 5% dried fig leaves powder daily. (4) Postmenopausal fed on BD with 10% dried fig leaves powder daily. (5) Postmenopausal fed on BD with orally 100 mg/kg BW daily fig leaves extract. (6) Postmenopausal fed on BD with orally 150 mg/kg BW daily fig leaves extract for (45 days). The *Ficus carica* leaves powder and ethanolic extract are showed notable amelioration in all biochemical alteration comparing with postmenopausal (normal control) rats which including lipid profile, female hormones, calcium levels and antioxidant activity. It could be concluded that administration of *Ficus carica* powder and ethanolic extract exhibited protective role on sexual hormones deficiency of postmenopausal female rats.

Keywords: postmenopausal, Fig leaves, chemical composition, minerals, serum lipid profile, female hormones.

Introduction

It's known that fruits and vegetables are critical components of the human diet as they contain high antioxidant capacity, permitting prevention of cellular damage caused by free radicals, and also due to their fiber content. Medicinal plants are used to treating hypoglycemic or hyperglycemic conditions, which are of considerable interest for ethno-botanical community (Ochuko *et al.*, 2012). Some plants have been studied for their anti-diabetic potential and their sexual hormonal activity. *Ficus carica* leaves are rich in bioactive compounds such as vitamins and antioxidant compositions (Lijuan *et al.*, 2017).

Fig (*Ficus carica* L.) is known as one of the most important fruits cultivated in the tropical and subtropical areas of the world and the most economically important fruit in the *Moraceae* family (Rosianski *et al.*, 2016). As popular that the leaves of *Ficus Carica* contain food and nutritional values. Additionally, it's known that one of properties of *F. carica* fruit and other parts of it are used in traditional system of medicine. Significant progress has been accomplished during the last few decades regarding the biological activity and medicinal application of *F. carica*. Nowadays it is regarded as valuable nutraceutical fruit plant.

Moreover *F. carica* has excellent medicinal potentials for treatment of different diseases (Eric, 2012). It is considered as a good source of vitamins, minerals and fiber (Freiman *et al.*, 2015). The plant's leaves are bright green, single, alternate and large (up to 1 ft length). They are more or less deeply lobed with 1 - 5 sinuses, rough hairy on its top surface and soft hairy on the underside (Joseph and Raj, 2011). The leaves, fruits, and roots of *F.carica* are characterized by using them in native medicinal system in different disorders such as gastrointestinal (colic, indigestion, loss of appetite, and diarrhea), respiratory (sore throats, cough, and bronchial problems), inflammatory, and cardiovascular disorders (Penelope, 1997 and Eric, 2012). As shown, *F. carica* leaves have inflammation activity; thus, they can be studied against parasitic infection and ovidical activity (Mawa, 2013). *F. carica* leaves have anticancer effects in breast cancer and it help to prevent the development of some hormonal disorders and has anticancer effects in breast.

Menopausal symptoms begin for those between the ages of 40 and 58 years of age, spending at least one third of their lives after menopause. Menopause symptoms included weight gain, anxiety, memory problems, loss of muscle mass, hot flashes, night sweats, and reduced libido. These symptoms result from changes in estrogen and testosterone or sexual problems (Nastri *et al.*, 2013 and Steels *et al.*, 2018). Menopause is a natural stage in life and part of the ageing process, so it is one of the most exceptional events in a woman's life, as it brings in a number of physiological changes. These changes naturally have its influence on woman's life in permanent way. Before, during and after the onset of menopause there have been lots of hypotheses about the symptoms that appear. These symptoms form the postmenopausal syndrome, which spoil to a great extent to the woman. Lately the management of these symptoms has become an important field of research (Dalal and Agarwal, 2015). Therefore, our current study has its aim to evaluate the protective role of *Ficus carica* Leaves and ethanolic extract on sexual hormones deficiency of postmenopausal female rats.

Materials and Methods

Materials

Ficus carica leaves were picked up from the house garden, washed and dried under non-sunny place and powdered in a mechanical grinder and kept in closed container for long-terms usage.

Animals: Thirty male albino rats (weight of 200 ± 10 g) were obtained from Experimental Animal House in Food Technology Research Institute, Agric. Res. Center, Giza, Egypt.

Methods

Preparation of fig leaves extract

Therefore , the powdered leaves (1kg) was punded and removed from petroleum ether (60-700C.about 25-30 cycles) in a Soxhlet extractor. The defatted material was titled to ethanolic extraction using 95% ethanol in Soxhlet extractor. The extract was filtered through whatman No.1 filter paper.

Biological Experimental Design

Twenty five Sprague Dawley strain female rats at 24 - 26 months old (model of postmenopausal women) and five Sprague dawley strain female rats at 8-9 weeks young (model of young women) were kept in stainless steel cages under hygienic conditions f. All rats were fed for one week till the beginning of the experiment on basal diet (BD), after reading adaptation for one week; rats were divided into six groups (each 5 rats) as follow:

Group (1): Young group as negative group (-ve) fed on BD only.

Group (2): Postmenopausal as positive control (+ve) fed on BD only.

Group (3): Postmenopausal fed on BD with 5% dried fig leaves powder daily.

Group (4): Postmenopausal fed on BD with 10% dried fig leaves powder daily.

Group (5): Postmenopausal fed on BD with orally 100 mg/kg BW daily fig leaves extract.

Group (6): Postmenopausal fed on BD with orally 150 mg/kg BW daily fig leaves extract.

Daily food intake was estimated. Weekly the body weight gain was stated. At the end of the experiment, biological evaluation of the tested diets was performed by determining total food intake (FI) and body weight gain (BWG). Food efficiency ratio (FER) was account according to (**Champan *et al.*, 1959**). After a period of (45 days), blood samples were taken from internal canthus near the lachrymal glands in the eyes of rats with heparinized capillary tubes and kept in heparinized test tubes then centrifuged to separate plasma that was used in the estimation of biochemical parameters according to **Wayne, (1998)**.

Biochemical analysis

Serum lipids profile

Total cholesterol, triglycerides, low density lipoproteins, high density lipoprotein and very low density lipoproteins were carried out according to the method of **Rashel and Janine (1993) and Wamick, (2000)**.

Sexual hormonal profile

Serum follicle stimulating hormone (FSH), estradiol (E2), progesterone (P4) and testosterone levels hormones in the serum were measured according to **AOAC, (2010); Wilke and Utley (1987) and Ballester *et al.*, (2004)**. Luteinizing hormone (LH) was measured by radioimmunoassay according to **Schams and Karg, (1970)**.

Calcium and calcitonin hormone

Serum Calcium (M/L) and Calcitonin were determined, according to **Shoji, (2000)**.

Antioxidant enzymes

Glutathione-S-transferase (GST), catalase (CAT) superoxide dismutase (SOD) and NO were determined according to the method of **Ellman (1958), Aebi, (1984), Beuchamp and Fridovich, (1971) and Green *et al.*, (1981)** in consequence.

Statistical analysis

The great contrast between the two groups were figured out using Dunnet's *t*-test followed by analysis of variance (ANOVA) and $p < 0.05$ (Snedecor and Cochran, 1967).

Result and Discussion

Chemical composition of fig leaves

Table (1) shows the chemical composition of fig leaves. Such data indicated that fig leaves composition is 62.60 ± 0.70 , 4.30 ± 0.07 , 6.30 ± 0.50 , 0.91 ± 0.01 , 6.40 ± 0.15 and 19.49 ± 1.25 for moisture, ash, proteins, lipids, fiber and carbohydrates, respectively. These results are in accordance with **Joseph and Raj (2011)** who reported that *Ficus carica* leaves composition recorded (67.6%; 4.3%; 1.7%; 4.7%; 5.3%) for moisture, protein, fat, crude fiber and ash, respectively. Nutritional analysis of *Ficus carica* leaves showed that they contained (65.90% moisture, 5.30% ash, 5.90% proteins, 0.81% lipids, 4.50% fiber and 17.50% carbohydrates (**El-Shobaki et al., 2010**).

Table (1): Chemical composition of fig leaves (%)

Parameters	Moisture	Ash	Proteins	Lipids	Fiber	Carbohydrates
Composition (%)	62.60 ± 0.70	4.30 ± 0.07	6.30 ± 0.50	0.91 ± 0.01	6.40 ± 0.15	19.49 ± 1.25

Mineral composition of fig leaves

Minerals concentration of fig leaves was represented in Table (2). Data show that fig leaves contain 23.93 mg/g calcium, 7.17 mg/g magnesium, 10.23 mg/g sodium, 10.92 mg/g potassium, 1.55 mg/g iron, 0.002 mg/g zinc, 0.002 mg/g manganese and 0.01 mg/g copper. These results are in accordance with **Khan et al., (2012)** who mentioned that fig leaves contain 10.63, 11.32, 0.002, 1.35, 9.73 and 6.97 mg/g for sodium, potassium, zinc, iron, calcium and manganese, respectively. *Ficus carica* has high minerals, vitamins, dietary fibers and phenolic elements that take great part in its antioxidant capacity (**Veberic et al., 2008**).

Table (2): Mineral composition of fig leaves

Element	Ca	Mg	Na	K	Fe	Zn	Mn	Cu
Concentration (mg/g)	23.93 ± 1.23	7.17 ± 2.10	10.23 ± 1.11	10.92 ± 3.10	1.55 ± 0.23	0.002 ± 0.00	0.002 ± 0.00	0.01 ± 0.00

Effect of fig leaves powder and ethanolic extract on body weight gain (BWG), feed intake (FI) and food efficiency ratio (FER) of postmenopausal rats

The statically data in Table (3) showed that, FI recorded non significant ($p < 0.5$) decrease of postmenopausal rats control (+ve) group (14.55 ± 2.55) when compared to young rats control (-ve) group (15.32 ± 2.14). Meanwhile, results for BWG and FER

recorded significant ($p < 0.5$) decrease of control (+ve) group (66.89 ± 6.11 and 0.045 ± 0.03) respectively when compared with those of control (-ve) group (115.77 ± 8.11 and 0.075 ± 0.01). Diet supplementation with 5 and 10% fig leaves powder and oral administration of fig leaves ethanolic extract at doses 100 and 150 mg/kg b.wt to postmenopausal rats for 6 weeks significantly ($p \leq 0.5$) increased BWG and FER when compared to control (+ve) group.

Table (3): Effect of fig leaves powder and ethanolic extract on body weight gain, feed intake and food efficiency ratio (FER) of postmenopausal rats

	(-ve)	(+ve)	5% leaves Powder	10% leaves Powder	100 mg/kg extract	150 mg/kg Extract
Initial weight (g)	204.31±3.45a	200.24±4.55a	203.21±3.55a	198.21±4.05a	201.21±3.65a	208.21±2.14a
Feed intake (g/w)	15.32± 2.14a	14.55± 2.55a	15.4±2.42a	13. 5±1.3a	12.45±1.2a	12.23±2.02a
Weight gain (g)	115.77±8.11a	66.89± 6.11c	103.14±9.13b	105.14± 6.7b	90.14± 7.23b	93.14± 5.8b
FER	0.075±0.01a	0.045±0.03c	0.068±0.02 ^a	0.080± 0.01a	0.072± 0.01a	0.077± 0.01a

Each value represent the Mean ± SD. Means in the same raw with different letters are significantly different at $p \leq 0.05$.

Effect of fig leaves powder and ethanolic extract on serum lipid profile of postmenopausal rats

As demonstrated in Table (4), postmenopausal rats control (+ve) group had great ($p < 0.5$) increase in serum levels of total cholesterol (TC), triglycerides (TG), low density lipoprotein (LDL-c), very low density lipoprotein (VLDL-c) while, there was a significant decrease in serum level of high density lipoprotein (HDL-c) when compared with those of control (-ve) group. Diet supplementation with 5 and 10% fig leaves powder and oral administration of fig leaves ethanolic extract at doses 100 and 150 mg/kg b.wt to postmenopausal rats for 6 weeks significantly ($p < 0.5$) decreased the elevated serum levels of TC, TG, LDL-c and VLDL- c and increased serum levels of HDL-c when compared with control (+ve) group. It could be noticed that fig leaves, especially the ethanolic extract was more effective in improving the serum lipid profile of postmenopausal rats, in a dose dependant manner.

This is obviously offered in the literature, that FC leaf extracts have hypoglycemic and hypolipidemic activities in both of rats and humans (Perez *et al.*, 1999 and Perez *et al.*, 2003). Dominguez *et al.* reported that FC leaves remarkably decreased plasma TGs in rats with insulin dependent discussions (Dominguez *et al.*, 1996). Perez *et al.* (2003) found that aqueous FC leaf extract induced a decline in TC and lowered the TC/ HDL-c ratio. In a dose of 100 mg/kg, FC significantly decreased plasma TG levels, while 50 mg/kg had no effect. However, both doses significantly increased plasma HDL-C levels in HFD-fed rats (Joerin *et al.*, 2013) aqueous fig leaf extracts can alter blood lipids and cholesterol fractions in animals (Asadi *et al.*, 2006; Canal *et al.*, 2000 and Fatemi *et al.*, 2007). As displayed, by using HCI the aqueous decoction of figs` leaves was treated, centrifuged, and also was treated with sodium

hydroxide (NaOH). Moreover it was extracted with chloroform. It was found that the administration of the organic phase to rats ,having streptozotocin-induced diabetes led to decreasing in the levels of whole cholesterol /HDL cholesterol ratio and that in case of comparing to control group, together with a reduction of the hyperglycaemia (Canal *et al.*, 2000).

Table (4): Effect of fig leaves powder and ethanolic extract on serum total cholesterol (TC), triglycerides (TG), high density lipoprotein (HDL-c), low density lipoprotein (LDL-c) and very low density lipoprotein (VLDL-c) of postmenopausal rats

Groups	(-ve)	(+ve)	5% leaves Powder	10% leaves Powder	100 mg/kg extract	150 mg/kg Extract
TC (mg/dl)	50.06±1.28c	55.57±1.03a	52.54±0.29bc	51.78±0.86b	49.72±0.3c	50.68±0.52c
TG (mg/dl)	52.21±1.68b	63.49±1.03d	51.18±0.78b	52.70±0.44b	50.18±0.78c	48.70±0.44c
HDL (mg/dl)	15.56±1.12a	12.02±0.66d	14.24±0.78b	13.65±0.33bc	14.34±0.78b	15.04±0.35b
LDL (mg/dl)	22.06±1.12e	32.85±0.79a	28.07±1.06d	27.59±0.28b	26.07±1.06d	25.59±0.28b
VLDLC (mg/dl)	10.70±0.33b	12.44±0.22a	10.23±0.16b	10.54±0.09b	10.03±0.16b	9.74±0.09c

Each value represent the Mean ± SD. Means in the same raw with different letters are significantly different at p≤0.05.

Effect of fig leaves powder and ethanolic extract on follicle stimulating hormone (FSH), luteinizing hormone (LH), estradiol (E2), progesterone and testosterone of postmenopausal rats

Results represented in Table (5) pointed that postmenopausal rats control (+ve) group recorded remarkable ($p < 0.5$) decrease in FSH, LH, E2 and progesterone levels (2.52 ± 0.07 , 1.33 ± 0.07 , 11.74 ± 0.79 and 0.19 ± 0.02 mg/dl) respectively, while recorded significant ($p < 0.5$) increase in testosterone level (0.27 ± 0.04 mg/dl) when compared with those of young rats control (-ve) group which recorded 4.59 ± 0.16 , 3.21 ± 0.25 , 25.05 ± 0.80 and 0.87 ± 0.06 mg/dl for FSH, LH, E2 and progesterone, respectively and recorded substantial ($p < 0.5$) decrease in testosterone level (0.12 ± 0.02 mg/dl). Diet supplementation with 5 and 10% fig leaves powder and oral administration of fig leaves ethanolic extract at doses 100 and 150 mg/kg b.wt to postmenopausal rats for 6 weeks significantly ($p < 0.5$) greatly FSH, LH, E2 and progesterone levels while significantly ($p < 0.5$) decreased testosterone level if it is compared with control (+ve) group. It could be noticed that fig leaves, especially the ethanolic extract was more effective in enhancing the sexual hormones levels of postmenopausal rats, in a dose dependant manner. Cauley *et al.*, (2013) demonstrates that estradiol (E2), and progesterone hormone raises bone mineral density and reduces the risk of fracture in healthy postmenopausal women. If we pay attention to the effects of hormones medication on other important disease outcomes in a global model we have found that there was no net worth even in women considered to be at high risk of fracture.

Table (5): Effect of fig leaves powder and ethanolic extract on follicle stimulating hormone (FSH), luteinizing hormone (LH), estradiol (E2), progesterone and testosterone of postmenopausal rats

Groups	(-ve)	(+ve)	5% leaves Powder	10% leaves Powder	100 mg/kg extract	150 mg/kg extract
FSH (mg/dl)	4.59±0.16a	2.52±0.07c	3.98±0.10b	3.67±0.53b	3.95±0.53b	4.03±0.52b
LH (mg/dl)	3.21±0.25a	1.33±0.07c	2.82±0.09b	2.77±0.04b	2.93±0.04b	3.07±0.04b
Estradiol (mg/dl)	25.05±0.80a	11.74±0.79f	20.76±0.85b	19.72±0.89c	20.2±0.19b	21.32±0.49ab
Progesterone (mg/dl)	0.87±0.06a	0.19±0.02f	0.69±0.05c	0.58±0.04cd	0.80±0.03a	0.82±0.024a
Testosterone(mg/dl)	0.12±0.02e	0.27±0.04a	0.19±0.02d	0.18±0.01cd	0.15±0.01c	0.16±0.01c

Each value represent the Mean ± SD. Means in the same raw with different letters are significantly different at $p \leq 0.05$.

Effect of fig leaves powder and ethanolic extract on calcium and calcitonin of postmenopausal rats

Results in Table (6) showed that postmenopausal rats control (+ve) group recorded significant ($p < 0.5$) decrease in the calcium and calcitonin levels (6.27 ± 0.09 and $1.86 \pm 0.08 \text{ mg/dl}$) respectively when compared with those of young rats control (-ve) group which recorded 10.35 ± 0.16 and $5.12 \pm 0.14 \text{ mg/dl}$ for calcium and calcitonin, respectively. Diet supplementation with 5 and 10% fig leaves powder and oral administration of fig leaves ethanolic extract at doses 100 and 150 mg/kg b.wt to postmenopausal rats for 6 weeks greatly ($p < 0.5$) increased the calcium and calcitonin levels in the rats when compared with control (+ve) group, especially on rat groups orally administrated fig leaves ethanolic extract, in a dose dependant manner. Compared to the control young in rats, have been discovered that they contain higher levels of trabecular bone volume, serum estradiol, and serum osteocalcin (Stéphane, *et al.*, 2017) this explains the increased level of calcium in experimental groups which treated with *F. carica* leaves in our study. Clearly, the role of mineral stimulating calcium and phosphorous absorption in rich high sources of *F. carica* which needed for bone mineral density.

Qureshi *et al.*, (2010) concluded that, serum calcitonin levels were non-greatly decreased in postmenopausal women as calcitonin is the only hormone which binds to the osteoclast membrane and has direct anti- restorative effect in bones. Ammar *et al.* (2015) suggested that *F. carica* leaves can significantly increase of calcium; in addition to that *F. carica* leaves is system to examine the mechanism of action of botanical agents in the body.

Table (6): Effect of fig leaves powder and ethanolic extract on calcium and calcitonin of postmenopausal rats

Groups	(-ve)	(+ve)	5% leaves Powder	10% leaves Powder	100 mg/kg extract	150 mg/kg Extract
Ca (mg/dl)	10.35±0.16a	6.27±0.09f	7.81±0.06d	7.6±0.5d	8.1±0.9c	8.9±0.13b
Calcitonin (mg/dl)	5.12±0.14a	1.86±0.08e	2.48±0.44d	2.79±0.09c	3.1±0.3b	3.9±0.7b

Each value represent the Mean ± SD. Means in the same raw with different letters are significantly different at $p \leq 0.05$.

Effect of fig leaves powder and ethanolic extract on glutathione transferase (GST), catalase, superoxid dismutase (SOD) and Nitric oxide (NO) of postmenopausal rats

Results represented in Table (7) showed that the activity of GST, CAT and SOD significantly ($p < 0.5$) increased while, NO significantly ($p < 0.5$) decreased in postmenopausal rats control (+ve) group when compared with those of young rats control (-ve) group. Diet supplementation with 5 and 10% fig leaves powder and oral administration of fig leaves ethanolic extract at doses 100 and 150 mg/kg b.wt to postmenopausal rats for 6 weeks substantial way ($p < 0.5$) increased the GST, CAT and SOD activities while, decreased greatly ($p < 0.5$) the NO levels in case comparing with control (+ve) group. It could be noticed that fig leaves, especially the ethanolic extract was more effective in enhancing the antioxidant enzymes activities of postmenopausal rats, in a dose dependant manner.

According to Previous studies by **Saoudi and El Feki (2012)** who stated comparing with the control group, the methanol-intoxicated animals exhibited a substantial decrease in SOD, CAT, and GPx levels. It generally accepted that those changes were significantly returned to treatment using FE. As well the fact that FE treatment reduced elevated LPO and increased levels of SOD, CAT, No and GPx indicated that FE may prevent the peroxidation of lipids by methanol.

Analysis of antioxidants in fig revealed that it contains significant amounts of the antioxidant vitamins; vitamin A and vitamin C. There is linear correlation between the total content of phenolics and the antioxidant capacity (**Cai et al., 2004; kumaran and karunakaran, 2006**). It was pointed that *F. carica* leaves have the strongest antioxidant potential relative to pulps and peels of this herb, explained by the highest amounts of phenolic compounds occurring in leaves (**Al-Snafi, 2017**) that have the ability to roam free radicals, chelate prooxidant metal-ions, and inhibit some enzymes (**Al-Snafi, 2016a and Al-Snafi 2016b**). Leaves demonstrated the best antioxidant and anti-proliferative activity in comparison to bark and wood. One of the main issues in our knowledge that leaves were shown to possess the highest anti-radical activity and inhibition of peroxidation, with IC50 values of 64 and 1.48 µg/ml, respectively. The leaves had highest anti-proliferative activity with IC50 value of 3.92 µg/ml (**Conforti et al., 2012**).

Table (7): Effect of fig leaves powder and ethanolic extract on glutathione transferase (GST), catalase, superoxid dismutase (SOD) and Nitric oxide (NO) of postmenopausal rats

Groups	(-ve)	(+ve)	5% leaves Powder	10% leaves Powder	100 mg/kg extract	150 mg/kg extract
GST (µ/l)	271.31±33.27 ^a	77.85±8.40 ^d	188.35±22.17 ^c	211.31±23.81 ^b	240.21±23.7 ^{ab}	278.15±31.71 ^a
Catalase (µ/l)	385.21±55.14 ^a	115.55±10.14 ^f	230.7±32.11 ^d	291.6±31.61 ^b	277.11±30.9 ^c	380.11±39.11 ^a
SOD (µ/l)	70.13±5.22 ^a	21.25±3.47 ^d	63.14±7.16 ^a	68.33±6.35 ^a	71.31±9.23 ^a	73.14±7.81 ^a
NO (µmol/l)	2.17±0.33 ^d	13.99±1.44 ^a	4.33±1.11 ^c	3.22±1.03 ^c	3.11±1.05 ^c	2.01±1.21 ^d

Each value represent the Mean ± SD. Means in the same raw with different letters are significantly different at p≤0.05.

In conclusion, the *Ficus carica* leaves powder and ethanolic extract are showed notable amelioration in all biochemical alteration comparing with postmenopausal rats which including lipid profile, female hormones, calcium levels and antioxidant activity. Administration of *Ficus carica* powder and its ethanolic extract exhibited protective role on sexual hormones deficiency of postmenopausal female rats.

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الدور الوقائي لأوراق التين ومستخلصها الإيثانولي لنقص الهرمونات الجنسية لدى إناث الفئران بعد سن اليأس

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الملخص

تتعرض النساء بعد سن اليأس إلى مخاطر متزايدة لعدد من الحالات الصحية ، مثل هشاشة العظام وأمراض القلب. وتعتبر الأدوية مثل العلاج بالهرمونات مع تغيير نمط الحياة إلى النمط الصحي من أهم الأسباب التي قد تقلل من خطر الإصابة بهذه الحالات. لحسن الحظ ، يمكن الجمع بين الطب البديل والعلاج الطبي مع تغييرات نمط الحياة لتوفير علاج آمن وفعال لأعراض ما بعد سن اليأس. استهدفت الدراسة تقدير تأثير مسحوق أوراق التين ومستخلصه الإيثانولي على الهرمونات الأنثوية لدى إناث الفئران بعد سن اليأس. تم تقسيم الفئران إلى ست مجموعات، المجموعة الأولى عبارة عن خمس فئران إناث في عمر 8-9 أسابيع (كنموذج للشباب) وتمثل المجموعة الضابطة السالبة. بينما تم تقسيم خمسة وعشرون من إناث الفئران في عمر 24 - 26 شهرا (كنموذج لسن اليأس) إلى خمس مجموعات (كل منها 5 فئران) على النحو التالي: الأولى تمثل المجموعة الضابطة السالبة وتغذت على الوجبة الأساسية فقط. والثانية تغذت على الوجبة الأساسية مضاف إليها 5 % من أوراق التين المجفف يوميا . لمدة 45 يوماً والثالثة تغذت على الوجبة الأساسية مضاف إليها 10 % من مسحوق أوراق التين المجفف. أما الرابعة تغذت على الوجبة الأساسية مع إعطائها 100 ملجم/كجم من وزن الجسم مستخلص أوراق تين يوميا عن طريق الفم. أما الخامسة تغذت على الوجبة الأساسية مع إعطائها 150 ملجم/كجم من وزن الجسم مستخلص أوراق تين يوميا عن طريق الفم. أظهرت النتائج أن تغذية الفئران مسحوق أوراق التين ومستخلصه الإيثانولي أدت إلى تحسن ملحوظ في جميع التغيرات البيوكيميائية مقارنة بالمجموعة الضابطة الموجبة (إناث الفئران بعد سن اليأس والتي تشمل صورة دهون الدم والهرمونات الأنثوية ومستويات الكالسيوم والنشاط المضاد للأكسدة. لذا يمكن الاستنتاج أن تناول مسحوق أوراق التين ومستخلصه الإيثانولي يعالج/يقي بشكل ملحوظ نقص مستوى الهرمونات الجنسية لدى إناث الفئران بعد سن اليأس.

الكلمات المفتاحية: سن اليأس - أوراق التين، التركيب الكيميائي، المعادن، صورة دهون الدم، الهرمونات الأنثوية