2025, Volume 2, Issues 5 PSIJK 27-31

Pure Sciences International Journal of Kerbala
Journal Homepage:https://journals.uokerbala.edu.iq/index.php/psijk

Histochemical study for Effect of *Asparagus officinalis L.* roots extract on ovarian histology in female rat with Polycystic Ovary Syndrome

Farah Jawad Al-masoudi [1 *], Ashwaq Kathum Obeid [2], Alaa Hussein Al-Safy [3]

[1] *Biomedical engineering Department / College of engineering / Kerbala University / Karbala / Iraq.*
[2,3] *Biology Department / College of Education for pure sciences / Kerbala University / Karbala / Iraq.*

P A P E R I N F O

Received: 23 September 2024
Accepted: 31 December 2024
Published: 31 March 2025

Keywords:
PCOS, asparagus officinalis L., collagen fibers, Trichrome stain, ovarian histology

A B S T R A C T

Polycystic ovarian syndrome (PCOS) is characterized by several symptoms, such as hirsutism hyperandrogenism, amenorrhea, anovulation, sterility, as well as metabolic and endocrine disorders. This study was conducted to evaluate the efficacy of an extract from the roots of *Asparagus officinalis L*. in treating female rats with induced polycystic ovarian syndrome. In this study, the impact of 400mg/kg of *asparagus officinalis L.* roots extract on the polycystic ovarian syndrome was examined over a period of 28 days in order to scrutinize the effects of asparagus officinalis L. roots extract on letrozole-induced polycystic ovary syndrome.
Thirty female albino rats were chosen. They were divided into five groups. Group 1 Control, Group 2 asparagus officinal is Extract 400 mg/ kg for 28 days, Group 3 is the PCOS inducer. Rats were given letrozole (1 mg/kg) orally for 28 days in a 0.5% Carboxy-Methylcellulose (CMC) solution. Group 4 is a treatment group in which the animals were dosed with letrozole for 28 days. After that, they were dosed with asparagus root extract for another 28 days, and Group 5 is the preventive group, which received asparagus root extract for 28 days. Then, it was dosed with letrozole for the same period. The Trichrome stain showed results low in stroma and collagen fibers of the structure ovaries in all groups, including control except the PCOS group that indicates a high presence of collagen. In addition to the number of primary, antral, and graphene follicles increased considerably. The treatment and preventative groups showed fewer cystic follicles than the PCOS group. The findings reveal decrease in collagen fibers by asparagus root extract. Therefore, it speeds up oogenesis and early cell divisions.

1. INTRODUCTION

Chronic anovulation, hyperinsulinemia [1], and elevated androgen levels are all factors in PCOS, a group of reproductive problems that primarily affect women. [2] This illness affects the metabolic and endocrine systems,[3] but its underlying etiology is still unknown. [4,5] It is the predominant cause of female anovulatory infertility. [6], an increase in ovarian volume, follicle collecting, and a lack of corpus luteum. [7,8]. Several therapeutic medicines, including metformin [9,10,11], glucocorticoids, aromatase inhibitors, and clomiphene citrate, have been recommended for the treatment of the PCOS. [12,13,14]. However, a number of negative effects, such as nausea, vaginal bleeding, and abdominal pain, are associated with these medications. [15,16]. Therefore, people prefer herbal remedies to the pharmaceuticals mentioned above for treatment of the PCOS. [17,18,19]. In reality, *asparagus officinalis L.* (AR) is a food crop that has been farmed for its therapeutic properties by a number of ancient cultures. As a result, the crop has a long and interesting history. It is also a valuable plant because of its medicinal and nutraceutical properties. [20]. *asparagus officinalis L.* has been used to treat cardiac issues, palpitations, dyspnea, and toothaches. Saponins, one of its main constituents, are essential for the anti-tumor action and lowering the risk of diseases including obesity, diarrhea, and constipation. [21]. *asparagus officinalis L.* roots have diuretic and potent cardiac sedative diuretic and powerful cardiac sedative effects are present in A. officinalis roots. [22,23]. This study was conducted to evaluate the efficacy of an extract from the roots of Asparagus officinalis L. in treating female rats with induced polycystic ovarian syndrome.

*Corresponding Author Institutional Email:
farah.j@uokerbala.edu.iq (Farah Jawad Al-masoudi)

2. MATERIALS AND METHODS

2.1. Experimental Animals

In this experiment, thirty female adult albino rats were employed weighing 180-230 g. They were bought at the pharmacy college Karbala University and they were kept in breeding cages with meticulous care. The rats were divided equally into five groups, with six rats (n=7/group), to guarantee statistical significance and fairness. Group 1 Normal Control, Group 2 Animals were received *asparagus officinalis* roots extract 400 mg/ kg up to 28 days, Group 3 animals with induced the PCOS by letrozole up to 28 days, Group 4 is a treatment group in which the animals were dosed with letrozole up to 28 days, Afterwards, they were dosed with asparagus root extract up to another 28 days, and Group 5 is the preventive group, which received asparagus roots extract for 28 days. Then, it was dosed with letrozole for the same period.

2.2. Induction the pcos and prepare asparagus officinalis l. extract

To induce PCOS, rats were given letrozole (1 mg/kg bw) orally up to 28 days in a 0.5% Carboxy-Methylcellulose (CMC) solution. [24]. However, the roots were procured from Iraqi markets and fully dried in a laboratory before being pulverized into powder, The resultant powder was mixed with 70% ethyl alcohol for 24 hours at room temperature to produce a solid extract, after filtering, the mixture was dried for 48 hours. The 400 mg/kg concentration of the solid extract was then diluted in 1 cc of distilled water. The solutions were kept in a refrigerator until use [25].

2.3. Histological Study

After 24 hours from the last day of the experiment, rats were given a 3-5 minute chloroform-soaked cotton sedation. Ovaries were dissected, then fixed by 10% formalin for 48 hours, and processed as tissue before being employed in study.

2.4. Statistical Analysis

For the presentation of the results, standard error of the mean (SEM) is employed. ANOVA is a comparison of statistical variances between groups. P 0.05 served as the threshold for statistical significance.

3. RESULTS and DISCUSSION

The Masson's trichrome stain showed results low in stroma and collagen fibers of the structure ovaries in all groups, including the control one **Figure 1,2,4,5** except the PCOS group that indicates a presence of fibrosis. **Figure 3**. Due to the absence of corpus luteum and antral follicles, the mean number of primary follicles in the PCOS group fell in comparison to control and other groups, whereas the mean number of cystic follicles in the PCOS group increased considerably in comparison to other groups. While corpus luteum and antral follicle counts significantly increased in the treatment and prevention groups, the average number of cystic follicles sharply fell in both. Additionally, there was a rise in the quantity of ovarian follicles in the group consuming Asparagus roots extract **TABLE 1.** Letrozole, an aromatase inhibitor, was administered to female Wistar rats in the study to induce polycystic ovarian syndrome. [26]. The collagen fiber density in the control group and the other groups that received 400 mg of Asparagus root extract decreased, according to the results of histological sections stained in trichrome. In contrast, with including the asparagus group without cyst formation, the therapeutic group and the preventive group, compared with the cyst formation group, which was characterized by fibrosis around the cystic follicles and the stroma. The strong staining in the ovarian cortex is also attributed to an increase in the theca externa layer because it is composed of collagen fibers, which led to its deposition in the ovarian cortex [27].

When ovarian follicles grow and develop, the connective tissue's constituents, particularly the forms of collagen around them, go through significant modifications [28].PCOS is characterized by abnormal collagen synthesis and increased ovarian stroma volume and density [29].In this case, the ovary is characterized by an increase in androgen production in the ovary with a thickness of the tunica albuginea and the appearance of fibrous ligaments in the ovarian cortex consisting of many cystic vesicles [30]. Additionally, the extract from asparagus roots contained a variety of amino acids, vitamins, minerals, and estrogenic compounds that promoted follicle growth and maturation and decreased fibrosis. [31] Such substances as quercetin, tryptophan, and arginine, [32] which function as intermediary factors to activate the activity of hormones, also regulate the action of hormones. Granulosa cells also help ovarian follicles differentiate and expand by secreting estrogen, which controls its activity and thins the integumentary layer [20,33].

These results agree with those from the preceding studies [34,35,36]. The results of histopathological measurements in the group of animals treated with letrozole in which polycystic ovaries were induced showed a significant decrease ($P<0.05$) in the numbers of ovarian follicles and corpus luteum and a significant increase ($P<0.05$) in the number of cystic follicles. It is an aromatase inhibitor, which negatively affects hormone levels, thus leading to interruption of ovulation and infertility of the ovary [37]. The table also offered a significant increase ($P<0.05$) in the total number of ovarian follicles and the corpus luteum and a significant decrease ($P<0.05$) in the number of cystic follicles for

the groups treated with asparagus ovarian,The reason for this increase is due to the properties of the asparagus root extract from the effective and biologically active compounds, as quercetin promotes the growth of ovarian follicles [38], and arginine and aspartic acid participate in the formation and maturation of eggs due to the stimulatory ability in the response of the pituitary gland that releases gonadal hormones [39,40]. Conclutoin asparagus showed helpful effects in letrozole induced pcos in female wistar rats. Its effect was comparable to that of clomiphene citrate, most widely used treatment for ovulation induction in pcos condition. These results suggest that asparagus roots may be a potential natural supplement for promoting the health of female reproductive systems. It is a relevant article and participate in genuine remedies for problems in this sector generally.

TABLE 1. The influence of *asparagus officinalis L.* on ovarian follicle numbers in adult female rats.

Parameters	control	Asperges	PCOS	Treatment	preventive
Primodial F.	5.3 ±0.21^{b}	6.5 ±0.22^{a}	1.84 ±0.26^{e}	4.6 ±0.20^{c}	3.67 ±0.21^{d}
Primary F.	4.33 ±0.21^{b}	5.5 ±0.22^{a}	1.33 ±0.21^{e}	3.66 ±0.21^{c}	2.67 ±0.21^{d}
Secondary F.	3.3 ±0.21^{b}	4.6 ±0.21^{a}	0.67 ±0.21^{e}	2.8 ±0.17^{bc}	1.67 ±0.21^{d}
Graphain F.	2.5 ±0.22^{b}	3.5 ±0.22^{a}	0.50 ±0.22^{e}	1.83 ±0.17^{c}	1.17 ±0.17^{d}
Corpus L	4.5 ±0.22^{b}	5.66 ±0.21^{a}	0.33 ±0.21^{e}	3.83 ±0.17^{c}	2.83 ±0.17^{d}
Cysts F.	0 ±0.00^{d}	0 ±0.00^{d}	5.83 ±0.31^{a}	1.66 ±0.33^{c}	3.50 ±0.34^{b}

The values are displayed as mean ±SD, values in the same column with different letters, statistically significant (P <0.05)

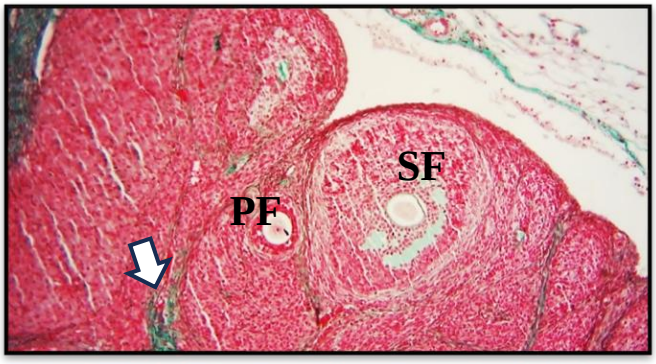

Figure 1. Histological section in ovaries in control group Shows less of stroma (arrow)secondary follicle (SF), Primary follicle (PF) (masson trichrome stain X10).

Figure 2. Histological section in ovaries in asparagus group Shows graafian follicle (GF), corpus luteum (CL) (masson trichrome stain X10).

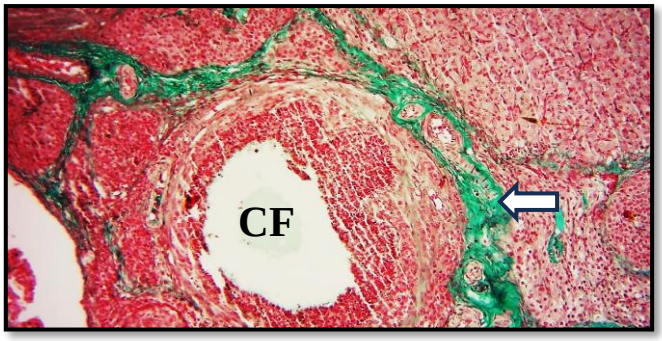

Figure 3. Histological section in ovaries in PCOS group Shows aggregation of stroma plenty (collagen fibers) (arrow), Cysts follicle (CF) (masson trichrome stain X10).

Figure 4. Histological section in ovaries in treated group with asparagus Shows less of stroma (collagen fibers) (arrow), graafian follicle (GF), Primary follicle (PF) (masson trichrome stain X10).

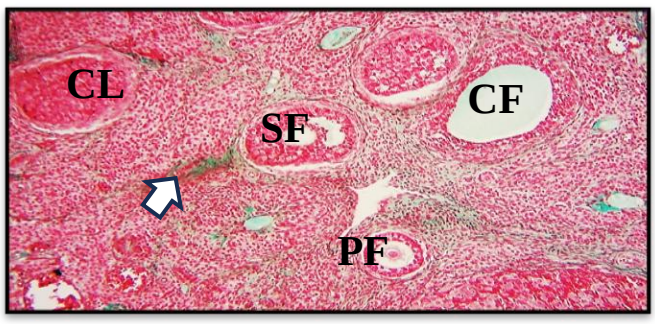

Figure 5. Histological section in ovaries in preventive group Shows less of stroma (collagen fibers) (arrow), secondary follicle (SF), Primary follicle (PF), corpus luteum (CL) , Cysts follicle (CF) (masson trichrome stain X10).

4.REFERENCES

1. Hassan, M. F., Jawad, M. A., & Al-yasiry, R. Z. Does Insulin Resistance (IR) Have an Impact on The Reproductive and Fertility Potential in Polycystic Ovary Syndrome (PCOS) Women?. Maaen Journal for Medical Sciences, 2(1), (2023). 3.
2. Ali, M. M., Ghazi, W., & Abboud, A. H. Prevalence of anovulation in subfertile women in Kerbala 2012, a descriptive cross-sectional study. Al-Kufa University Journal for Biology, 6(2):(2014).
3. Talib, Z. R., Hassan, A. H., Jawad, H. J., & AbdulWahid, H. H. (2023). EVALUATION CHANGES OF GHERLIN AND LEPTIN ON POLYCYSTIC OVARY SYNDROME IN IRAQ. Ann. For. Res, 66(1), (2023): 1322-1331..
4. Zehravi, M., Maqbool, M., & Ara, I. Polycystic ovary syndrome and infertility: an update. International journal of adolescent medicine and health, 34.2,(2022): 1-9.
5. Al-Tu'ma, F., HadiFarhan, N., & Al-Safi, W. G. Association between fat mass and obesity Geners9939609 polymorphism with PCOS women in Iraqi population. Ijppr. Human, 5.1(2015): 62-72.
6. Nirav, O. R. "Current Management on PCOS (Polysystic Ovary syndrome)." Stein-LeventhalSyndrome, Investigation in Gynecology Research and womens Health (2017): 46-28.
7. Kadhim, S. M., Al-Fartusie, F. S., & Klichkhanov, N. K. Evaluation of Adiponectin and Hepcidin with some Biochemical Parameters in Sera of Women with Polycystic Ovary Syndrome. Al-Mustansiriyah Journal of Science, 34.1(2023):52-57.
8. Marbut, M. M., Awwad, N. Y., Yousif, M. N., & Ahmed, M. S. Hormonal assessment in women with polycystic ovary syndrome in Tikrit city. Journal of Madenat Alelem University College, 11(1),(2019):1-9.
9. Hussein, M. R., Ouda, M. H., Abdulwahid, H. H., & Abo Al-Maali, H. M. Association of genetic polymorphism of LKB/STK11 with therapeutic response of metformin in women with polycystic ovary syndrome. Eur J Mol Clin Med, 7(3),(2021): 539-552.
10. Hussein, M. R., Ouda, M. H., HM, A. A. M., & Abdulwahid, H. H. EFFECT OF GENETIC POLYMORPHISM OF LKB/STK11 WITH THERAPEUTIC RESPONSE TO METFORMIN IN POLYCYSTIC OVARY SYNDROME WOMEN IN KERBALA PROVINCE. Biochemical & Cellular Archives, 20(2).(2020).
11. Mohammad Al-Khafaje, M. Comparison between The Efficacy of Combined Metformin–Letrazole with Metformin–Clomiphene Citrate in Polycystic Ovarian Syndrome. Kerbala Journal of Medicine, 9(2),(2016), 2462-2469.
12. Al-Hasnawi, N. K., Hadi, D., Alnasrawi, T. H., & Althabet, Z. A. Study the effect of Kisspeptin 1 on polycystic ovarian syndrome PCOS and obesity in Iraqi women patients. In AIP Conference Proceedings (Vol. 2787, No. 1). AIP Publishing.(2023).
13. AL-Ma'aroof, S. F. M., Ahmed, M. M., & Mansor, N. H. Studying the effect of ovulation stimulation by using clomiphene citrate on serum level of tumor necrosis factor alpha and interleukin-1ß in sub-fertile women in Holy Kerbala Province. J Contemp Med Sci| Vol, 2(6),(2016): 59-62.
14. Manna, M. J., Jabur, M. S., Alsabah, A. S., & Baqir, L. S. A Review on new drugs for treatment of Polycystic Ovarian Syndrome. Karbala Journal of Pharmaceutical Sciences, 1(21):(2023).
15. Mohammad Al-Khafaje, M. Comparison between The Efficacy of Combined Metformin–Letrazole with Metformin–Clomiphene Citrate in Polycystic Ovarian Syndrome. Kerbala Journal of Medicine, 9(2),(2016), 2462-2469.
16. Pachiappan, S., Matheswaran, S., Saravanan, P. P., & Muthusamy, G. Medicinal plants for polycystic ovary syndrome: A review of phytomedicine research. Int J Herb Med, 5(2), (2017):78-80.
17. Hamza, A. H., AlBishri, W. M., & Alfaris, M. H. Effect of Vitex agnus-castus plant extract on polycystic ovary syndrome complications in experimental rat model. Asian Pacific Journal of Reproduction, 8(2), (2019):63-69.
18. Al-masoudi, F. J., & Jawad, A. K. Promising histological and functional effects of asparagus officinalis L. roots extract on letrozole induced polycystic ovary syndrome in female rat. Journal of Survey in Fisheries Sciences, 10(3S),(2023):4786-4792.
19. Alkalby, J., & Hamzah, F.Ameliorative effect of fenugreek on sex hormones in polycystic ovary syndrome female rats induced by letrozole. Kufa Journal For Veterinary Medical Sciences, 8(2), (2017):24-32.
20. Calcaterra, V., Verduci, E., Cena, H., Magenes, V. C., Todisco, C. F., Tenuta, E., ... & Zuccotti, G. Polycystic ovary syndrome in insulin-resistant adolescents with obesity: the role of nutrition therapy and food supplements as a strategy to protect fertility. Nutrients, 13(6), (2021):1848.
21. Mahood, R. A. H. Effects of Pimpinella anisum oil extract on some biochemical parameters in mice experimentally induced for human polycystic ovary syndrome. Journal of Biotechnology Research Center, 6(2), (2012): 67-73.
22. Lee, J. W., Lee, J. H., Yu, I. H., Gorinstein, S., Bae, J. H., & Ku, Y. G. Bioactive compounds, antioxidant and binding activities and spear yield of Asparagus officinalis L. Plant foods for human nutrition, 69, (2014): 175-181.
23. Abedi, H. A., Jahromi, H. K., Sadeghi, N., Amjadi, S. P., & Jahromi, Z. K. Evaluating the effect of aqueous extract of the roots of native edible asparagus in Iran (Asparagus officinalis L) on the concentration of liver factors in male rats treated with cadmium chloride. Journal of Fundamental and Applied Sciences, 8(4), (2016): 2008-2022.
24. Motoki, S., Tang, T., Taguchi, T., Kato, A., Ikeura, H., & Maeda, T. Distribution of rutin and protodioscin in different tissue parts of asparagus (Asparagus officinalis L.). HortScience, 54(11), (2019):1921-1924.
25. Wang, M. X., Yin, Q., & Xu, X.A rat model of polycystic ovary syndrome with insulin resistance induced by letrozole combined with high fat diet. Medical science monitor: international medical journal of experimental and clinical research, 26, (2020): e922136-1.
26. Hosseinkhani, A., Asadi, N., Pasalar, M., & Zarshenas, M. M. Traditional Persian medicine and management of metabolic dysfunction in polycystic ovary syndrome. Journal of traditional and complementary medicine, 8(1), (2018), 17-23.
27. Jashni, H. K., Jahromi, H. K., Ranjbary, A. G., Jahromi, Z. K., & Kherameh, Z. K. Effects of aqueous extract from Asparagus officinalis L. roots on hypothalamic-pituitary-gonadal axis hormone levels and the number of ovarian follicles in adult rats. International Journal of Reproductive BioMedicine, 14(2), (2016): 75.
28. Tamadon, A., Hu, W., Cui, P., Ma, T., Tong, X., Zhang, F., ... & Feng, Y. How to choose the suitable animal model of polycystic ovary syndrome?. Traditional Medicine and Modern Medicine, 1(02), (2018):95-113.
29. Vlieghe, H., Leonel, E. C., Asiabi, P., & Amorim, C. A. The characterization and therapeutic applications of ovarian theca cells: An update. Life sciences, 317, (2023), 121479.
30. Auersperg, N., Maines-Bandiera, S. L., Dyck, H. G., & Kruk, P. A. Characterization of cultured human ovarian surface epithelial cells: phenotypic plasticity and premalignant changes. Laboratory investigation; a journal of technical methods and pathology, 71(4),(1994): 510-518.

31. Clément, F., Monniaux, D., Thalabard, J. C., & Claude, D. Contribution of a mathematical modelling approach to the understanding of the ovarian function. Comptes rendus. Biologies, 325(4), (2002): 473-485.
32. Papachroni, K. K., Piperi, C., Levidou, G., Korkolopoulou, P., Pawelczyk, L., Diamanti-Kandarakis, E., & Papavassiliou, A. G. Lysyl oxidase interacts with AGE signalling to modulate collagen synthesis in polycystic ovarian tissue. Journal of cellular and molecular medicine, 14(10), (2010): 2460-2469.
33. Guo, Q., Wang, N., Liu, H., Li, Z., Lu, L., & Wang, C. The bioactive compounds and biological functions of Asparagus officinalis L.–A review. Journal of Functional Foods, 65, (2020):103727.
34. Cuiling, L., Wei, Y., Zhaoyuan, H., & Yixun, L. Granulosa cell proliferation differentiation and its role in follicular development. Chinese Science Bulletin, 50,(2005): 2665-2671.
35. Alam, M. H., & Miyano, T. Interaction between growing oocytes and granulosa cells in vitro. Reproductive medicine and biology, 19(1), (2020): 13-23.
36. Badawi, A. M., Ebrahim, N. A., Ahmed, S. B., Hassan, A. A., & Khaled, D. M. The possible protective effect of Bougainvillea spectabilis leaves extract on estradiol valerate-induced polycystic ovary syndrome in rats (biochemical and histological study). European Journal of Anatomy, 22(6), (2018): 461-9.
37. Sapmaz, T., Sevgin, K., Topkaraoglu, S., Tekayev, M., Gumuskaya, F., Efendic, F., ... & Irkorucu, O. Propolis protects ovarian follicular reserve and maintains the ovary against polycystic ovary syndrome (PCOS) by attenuating degeneration of zona pellucida and fibrous tissue. Biochemical and Biophysical Research Communications, 636, (2022), 97-103.
38. Ullah, A., Jahan, S., Razak, S., Pirzada, M., Ullah, H., Almajwal, A., ... & Afsar, T. Protective effects of GABA against metabolic and reproductive disturbances in letrozole induced polycystic ovarian syndrome in rats. Journal of Ovarian Research, 10, (2017), 1-8.
39. Pourhoseini, S. A., Mahmoudinia, M., Najafi, M. N., & Kamyabi, F. The effect of phytoestrogens (Cimicifuga racemosa) in combination with clomiphene in ovulation induction in women with polycystic ovarian syndrome: A clinical trial study. Avicenna Journal of Phytomedicine, 12(1), (2022): 8.
40. Krishna, M. B., Joseph, A., Thomas, P. L., Dsilva, B., Pillai, S. M., & Laloraya, M. (2018). Impaired arginine metabolism coupled to a defective redox conduit contributes to low plasma nitric oxide in polycystic ovary syndrome. Cellular Physiology and Biochemistry, 43(5),(2018): 1880-1892.

Arabic Abstract

متلازمة المبيض متعدد الكيسات (PCOS) لها عدة أعراض مثل كثرة الشعر، فرط الأندروجين، انقطاع الطمث، انعدام الاباضة والعقم بالإضافة إلى الاضطرابات الأيضية واضطربات الغدد الصم. تهدف الدراسة الحالية تقييم فعالية مستخلص من جذور نبات الهليون في علاج إناث الفئران المستحث بها متلازمة تكيس المبايض. في هذه البحث، تم دراسة تأثير 400 ملغم / كغم من مستخلص جذور نبات الهليون على متلازمة تكيس المبايض لمدة 28 يومًا من أجل فحص تأثيرات مستخلص جذور نبات الهليون على متلازمة تكيس المبايض المستحثة بالليتروزول. قسمت ثلاثين أنثى من فئران الالبينو إلى خمس مجموعات،المجموعة الأولى 1 هي مجموعة التحكم ، المجموعة الثانية 2 جرعت بمستخلص جذور الهليون 400 مجم/كجم لمدة 28 يوم، المجموعة الثالثة 3 هي المجموعة المستحث فيها متلازمة تكيس المبايض ولتحفيز متلازمة تكيس المبايض، تم إعطاء الفئران ليتروزول (1 مجم/كجم) عن طريق الفم لمدة 28 يومًا في محلول 0.5٪ كربوكسي ميثيل سلولوز (CMC)، المجموعة الرابعة 4 هي مجموعة علاجية تم تجريع الحيوانات بالليتريزول لمدة 28 يوم بعدها جرعت لمستخلص جذور الهليون لمدة 28 يوم اخرى اما المجموعة الخامسة 5 هي المجموعة الوقائية مستخلص جذور الهليون لمدة 28 وبعدها تم التجريع بالليتريزول لنفس المدة . أظهرت نتائج ملون التميز الثلاثية الألوان قلة في ألياف السدى والكولاجين في التركيب النسجي للمبايض في جميع المجموعات، بما في ذلك المجموعة الضابطة باستثناء مجموعة متلازمة تكيس المبايض التي تشير إلى وجود نسبة عالية من الكولاجين، بالإضافة إلى زيادة عدد الجريبات الأولية ،الثانوية (الغارية) والحويصلة جراف بشكل كبير. أظهرت المجموعة العلاجية والوقائية عددًا أقل من الجريبات المتكيسة مقارنة بمجموعة متلازمة تكيس المبايض كما تظهر النتائج انخفاضًا في ألياف الكولاجين في المجموعة التي جرعت بمستخلص جذور الهليون حيث انه يعمل على تسريع عملية تكوين البويضات والانقسامات المبكرة للخلايا.