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The effect of *Anethum graveolens* seeds administration on the concentrations of some hormones and histological changes in the ovaries, uterus, and lactational system during estrus and pregnancy stages in Arabi ewes

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Abstract
The study was carried out to evaluate the reproductive performance of Arabi ewes and inspect the impact of *Anethum graveolens* seeds on the concentrations of some hormones and the histological changes that occurred in the ovaries, uterus, and mammary glands during estrus and pregnancy. The number of ewes were 16, ranging in age from (1.5-2) years and varying weights (45-53) kg, with the presence of three rams ranging in age from (2-3) years and weights (65-75) kg during the mating period only. A significant effect ($P<0.01$, $P<0.05$) of *Anethum graveolens* seeds on the average concentration of estrogen hormone between the treatments. There was a significant difference ($P<0.01$) in the average progesterone concentration. A significant difference ($P<0.01$) in the average concentration of prolactin hormone. A histological examination of the uterus revealed no pathological changes in the endometrium, myometrium, or perimetrium. Also, there were no pathological changes in the ovary. A histological examination of the mammary gland shows that *Anethum graveolens* causes a small rise in the estrogen and progesterone receptors, which are connected to the mammary glands' ducts and alveoli, and results in a tiny enlargement of those glands. So, we recommend giving dill seeds to ewes to increase milk production.

Keywords: Arabi ewes, *Anethum graveolens*, pregnancy stage, histological examinations

1. Introduction
Livestock plays a crucial role in the national economy and food security. There is scientific interest in the growth and development of livestock, as it contributes to providing food and clothing for the growing population (Jones and Thobela, 2023) [15].
Modern technologies such as ultrasound examination, embryo transfer, artificial insemination, and sex determination of newborns are being developed to enhance reproduction and genetic improvement in animals (Romanov *et al.*, 2021) [24]. The capacity of ewes to conceive, give birth, and care for their lambs, as well as reproductive processes including ovulation and sex hormone release, are essential to sheep production. Improving farm animals' reproductive efficiency is crucial, particularly in nations where agriculture and animal husbandry account for a significant portion of the GDP (Al-Rsitmawi *et al*, 2019) [4]. *Anethum graveolens* seeds, an herb grown in many parts of the world, is used for various medical purposes including reproductive problems and milk production. The Seeds are a rich source of flavonoids, phenols, saponins, tannins, and terpenes (Jana and Shekhawat, 2010) [14]. *Anethum graveolens* seeds affect estrus and promote the secretion of progesterone, according to Monsefi *et al*, (2014) [21]. *Anethum graveolens* seeds contain flavonoids such as vicenin, myristicin, and kaempferol. Of these compounds, vicenin and kaempferol possess phytoestrogenic properties. Phytoestrogens are non-steroidal compounds that mimic the effects of natural estrogens like 17β-estradiol. They bind to alpha and beta estrogen receptors, exerting biological effects that influence cell growth, and differentiation, and help maintain

the overall balance of the reproductive system and other organs (Ulus *et al.*, 2023) [27]. In addition, according to Mahima *et al.*, (2013) and Cui *et al.*, (2014) [17, 11], these compounds also promote uterine contraction, stimulate the immune system, activate blood circulation, increase uterine contraction, and expel the placenta in postpartum animals. This study aims to know the effect of dill seeds on hormones, ovarian tissues, uterus, and mammary glands in Arabi ewes at different physiological stages.

Materials and method

1. Ethics approval

This experiment was approved by the University of Basrah-College of Veterinary Medicine Animal Use Ethics Committee under protocol number 35\37\2024.

2. Animals: Sixteen Arabi ewes were randomly divided into four treatments as follows: Treatment 1 (T_1): 5 g of *Anethum graveolens* seeds were given via gelatin capsules in the mouth of the ewes/day for 25 days. Group 2 (T_2) was given 10 g of *Anethum graveolens* seeds via gelatin capsules in the mouth of the ewes/day for 25 days and one month after parturition. Group 3 (T_3): Applying vaginal sponges impregnated with 20 mg of Medroxyprogesterone acetate (MAP) and covered with antiseptic cream were placed, and a sterile glass rod and speculum were used to insert the sponges into the vagina of the animals for 14 days and then injected intramuscularly with 500 IU of PMSG (Chrono-gest) one female. Group 4 (T_4): Control group without treatment. Ewes were housed in partially enclosed pens and were all fed the same diet consisting of green fodder and concentrate at a rate of 3% of each animal's body weight per day, with feed weight adjusted every two weeks (Abduljaleel *et al.*, 2025) [1]. The concentrate consisted of thirty-seven percent barley, thirty-five percent wheat bran, twenty percent yellow corn, five percent soybean meal, two percent limestone, and one percent table salt. Animals were also given access to straw as roughage and water and salt were available at all times throughout the experiment. Before the experiment began, animals had a two-week acclimatization period to adapt to the concentrate feed and reduce the risk of bloat. *Anethum graveolens* seeds were given daily initially for 25 days and then 30 days after the ewes were born. In the early morning and before feeding, the animals were given *Anethum graveolens* seeds.

3. Blood sample

Blood samples were taken from all ewes before pregnancy, every month during pregnancy, and one month after birth. The blood samples were taken via the jugular vein using a 10 ml sterile medical syringe. The blood was then placed in a test tube containing gel in a centrifuge at a speed of (3000 rpm). Afterward, the serum was extracted using a sterile medical syringe placed in a sterile test tube, and stored in a freezer until all the required samples were collected. The tests for estimating hormones (estrogen, progesterone, prolactin) were conducted on collected samples.

4. Histological examinations

Samples were taken from the ovaries, uterus, and udder after cutting them with a scalpel into suitable sizes placing them in laboratory bottles containing 10% formalin, and keeping them for 24 hours. Afterward, they were transferred to the laboratory to conduct a cross-sectional study of the tissues to determine the effect of *Anethum graveolens* seeds and compare them with the control group using the Microtome tissue cutting device\ China. Just the way of (Luna, 1986). (Mohsin *et al.*, 2025) [16, 19].

5. Statistics analysis

Data were analyzed using a one-way ANOVA model of SPSS version 20 (SPSS 2008). Differences between means were compared using Tukey's multiple-comparison post hoc test. All data were presented as means Mean± SD and the differences were considered significant at $P < 0.01$&$P < 0.05$.

Results

Table 1 shows that there were significant differences at the level (P <0.01, P <0.05) of the average concentration of estrogen hormone between the treatments, as the second treatment that gave 10 g of dill seeds after 21 days of giving dill seeds and in the first and fourth months of pregnancy outperformed the other treatments, while the first treatment gave the highest concentration of estrogen hormone in the second and fourth month of pregnancy, while the third treatment recorded a significant superiority in the third month of pregnancy, and no significant differences were recorded in the period before giving dill seeds and in the fifth month of pregnancy and after birth for all treatments.

Table 1: The effect of administrating *Anethum graveolens* seeds powder on the average concentration of estrogen in Arabi ewes (pg./ml) during different physiological stages. (Mean± SD)

Treatments	without administration of dill seeds	after 21 days of administration dill seeds	1st month of pregnancy	2nd month of pregnancy	3rd month of pregnancy	4th month of pregnancy	5th month of pregnancy	after parturition
T_1	42.41 ±1.35	73.87 b ±1.35	43.11 b ±5.74	38.39 A ±1.09	27.38 c ±0.91	47.01 A ±1.06	78.82 ±1.45	38.82 ±1.53
T_2	42.80 ±2.16	75.11 A ±2.33	48.37 A ±0.81	37.55 b ±0.75	26.42 c ±2.03	47.77 A ±1.95	78.93 ±1.52	38.87 ±1.42
T_3	41.74 ±0.81	42.94 c ±1.95	40.52 c ±0.24	37.59 b ±1.31	43.22 A ±0.72	43.77 b ±0.65	78.80 ±2.17	38.07 ±1.97
T_4	41.26 ±0.58	43.58 c ±0.81	42.11 b ±0.65	39.68 A ±0.85	37.58 b ±1.68	42.29 b ±1.19	74.84 ±3.40	38.25 ±1.90
Significant level	N. S	*	*	**	**	**	N. S	N. S

Different letters within the same column mean significant differences at the level of *($p \leq 0.05$), ** ($p \leq 0.01$)

N.S There are no significant differences between the experimental treatments

The first group (T_1) administrating 5g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the second group (T_2) administrating 10g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the third group (T_3) applying vaginal sponges for 14 days and then injection with PMSG hormone (500 IU/single dose), the fourth group (T_4) was control group without any treatment.

Table 2 shows the effect of dill seeds on the average concentration of progesterone hormone. The results showed an increase in progesterone concentration during the months of pregnancy, as the second treatment outperformed the hormone concentration during the first, second, third, and fourth months of pregnancy significantly (P<0.01) over all other treatments. In addition, the table confirms the presence of significant differences (P<0.01) during 21 days of giving dill seeds and before that, as the first treatment outperformed during this period.

Table 2: The effect of administrating *Anethum graveolens* seeds powder on the average concentration of progesterone hormone in Arabi ewes (ng/ml) during different physiological stages. (Mean± SD)

Treatments	without administration of dill seeds	after 21 days of administration dill seeds	1st month of pregnancy	2nd month of pregnancy	3rd month of pregnancy	4th month of pregnancy	5th month of pregnancy	after parturition
T_1	1.82 A ± 0.11	2.56 A ± 0.22	3.38 b ± 0.16	3.89 b ± 0.09	4.52 b ± 0.27	5.50 b ± 0.18	4.26 ± 0.20	1.57 ± 0.03
T_2	1.57 d ± 0.09	2.40 b ± 0.25	3.43 A ± 0.11	4.40 A ± 0.21	5.26 A ± 0.10	6.24 A ± 0.10	4.26 ± 0.21	1.62 ± 0.03
T_3	1.72 c ± 0.04	1.82 c ± 0.11	1.92 d ± 0.06	3.34 d ± 0.15	4.43 c ± 0.18	4.00 c ± 0.58	4.17 ± 0.06	1.53 ± 0.06
T_4	1.77 b ± 0.05	1.73 d ±.0.57	2.29 c ± 0.28	3.53 c ± 0.29	4.45 c ± 0.29	3.94 d ± 0.36	4.34 ± 0.16	1.75 ± 0.20
Significant level	**	**	**	**	**	**	N. S	N. S

Different letters within the same column mean significant differences at the level of *(p≤ 0.05) ** (p ≤ 0.01)

N.S There are no significant differences between the experimental treatments

The first group (T_1) administrating 5g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the second group (T_2) administrating 10g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the third group (T_3) applying vaginal sponges for 14 days and then injection with PMSG hormone (500 IU/single dose), the fourth group (T_4) was control group without any treatment.

Table 3 shows the average concentration of prolactin hormone, where the level of prolactin hormone increased significantly (P<0.01) in the first, second, third, and fifth months of pregnancy and the month after birth in the second treatment in which 10 g of dill seeds were given compared to the other treatments. The first treatment gave the highest significant superiority at the level (P<0.01) of the hormone in 21 days of giving dill seeds as well as the fourth month of pregnancy.

Table 3: The effect of administrating *Anethum graveolens* seeds powder on the average concentration of prolactin hormone in Arabi ewes (ng/ml) during different physiological stages. (Mean± SD)

treatments	without administration of dill seeds	after 21 days of administration dill seeds	1st month of pregnancy	2nd month of pregnancy	3rd month of pregnancy	5th month of pregnancy	5th month of pregnancy	after parturition
T_1	4.13 ±0.76	5.64 A ±0.48	8.24 b ±0.11	10.39 b ±0.25	15.33 b ±0.73	52.75 A ±1.28	166.89 b ±9.35	127.94 b ±1.41
T_2	4.07 ±0.21	4.86 d ±0.48	10.17 A ±0.54	18.56 A ±0.49	25.68 b ±1.38	45.09 b ±3.28	226.88 A ±2.73	189.52 A ±48.22
T_3	3.62 ±0.47	5.05 c ±0.24	7.38 c ±0.20	7.62 C ±0.19	8.57 c ±0.66	10.60 c ±0.20	106.18 d ±5.80	125.56 b ±2.19
T_4	4.37 ±0.34	5.20 b ±0.05	7.33 d ±0.20	7.7 3 c ±0.16	8.35 c ±0.14	10.34 c ±0.24	144.36 c ±4.86	122.43 b ±6.43
Significant level	N. S	*	**	**	**	**	**	**

Different letters within the same column mean significant differences at the level of *(p ≤ 0.05) ** (p ≤ 0.01)

N.S There are no significant differences between the experimental treatments: The first group (T_1) administrating 5g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the second group (T_2) administrating 10g of *Anethum graveolens* seeds powder via gelatin capsules to the mouth of ewes /day, the third group (T_3) applying vaginal sponges for 14 days and then injection with PMSG hormone (500 IU/single dose), the fourth group (T_4) was control group without any treatment.

Histopathologic Examinations

Changes of Ovary: According to histological results, ewes treated with *Anethum graveolens* 5 and 10 mg and intravaginal sponges' groups showed increases in the number of normal follicles compared to control. Furthermore, it was detected that 10 mg of *Anethum graveolens* did not result in pathological remodeling. In Figure 1, secondary follicles have an isolated oocyte encircled by the cumulus oophorus and some concentric layers surrounding the Oocyte and Zona pellucid and two or more cuboidal granulosa cells. Not all follicles in the treated ovary had alterations in their ova at the same time, as each follicle was in a distinct stage of development. This was followed by not all follicles changing at the same time.

Stages of their development

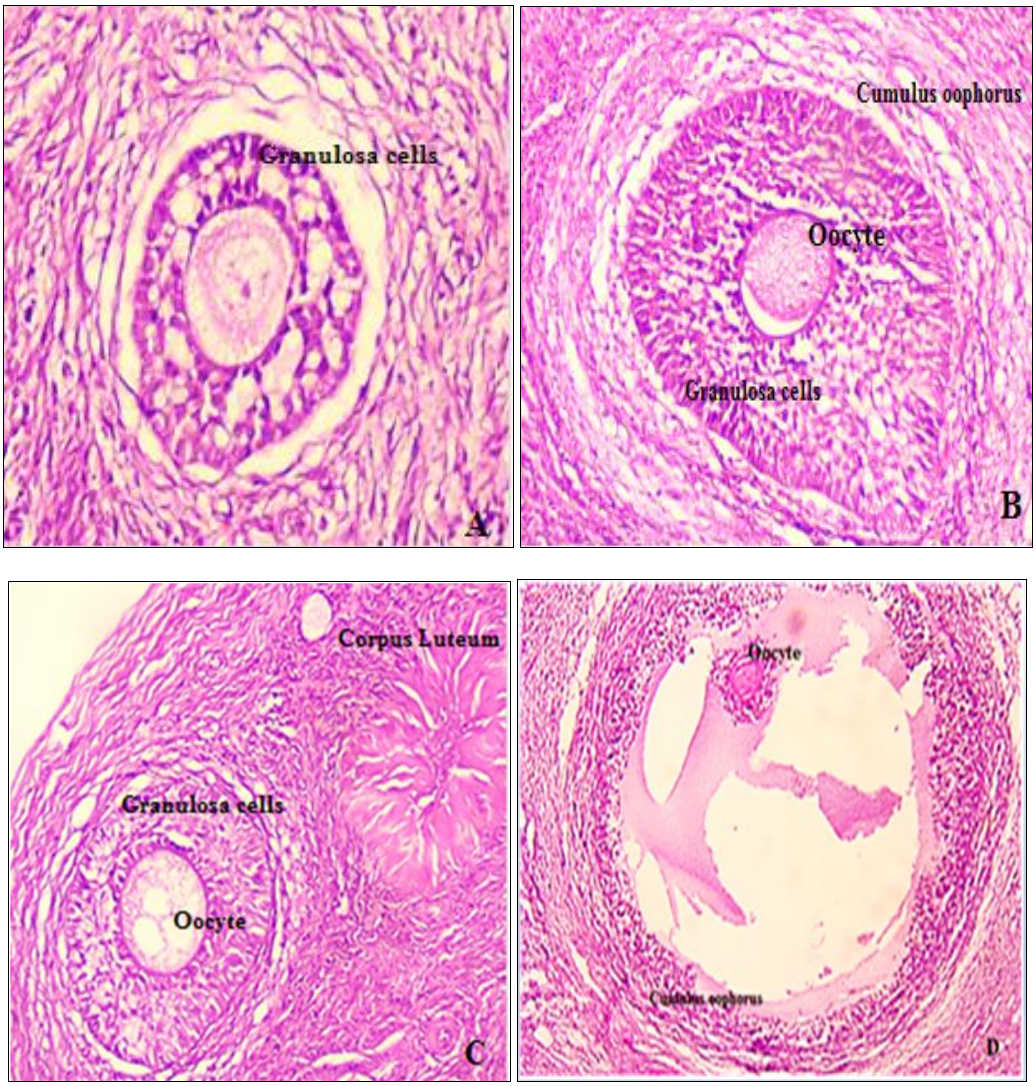

Fig 1: Histological section of ovary

(A) Ovarian sections from the control group show that secondary follicles are not present in the oocyte and that there is an absence of the cumulus oophorus.

Ovarian sections from the intra-vaginal sponges group show that the oocyte and zona pellucida are present in secondary follicles, which are encircled by two or more cuboidal granulosa cell layers that may be seen in the antrum and show a varied number of concentric layers (B).

(C) Ovarian sections from ewes treated with *Anethum graveolens* (5) show secondary follicles with the presence of the oocyte and zona pellucida. The corpus luteum is present, and small developing antra were identified; these follicles were recorded as early antral follicles.

Ovarian sections from ewes treated with *Anethum graveolens* (10) show late antral follicles exhibiting a well-formed antral cavity with an almost isolated oocyte surrounded by the cumulus oophorus (D) (H & E, 400×).

Changes of Uterus: The uterus of a pregnant sheep consists of the inner layer (mucosa), middle layer (myometrium), and outer layer (serosa), collectively forming the uterine wall. Within the myometrium, there is a dense circular layer and a thin, outer longitudinal layer. In sheep, two types of endometrial epithelium exist: stratified and pseudostratified. The uterine (endometrial) glands are simple, branching glands that line the lamina propria, coiled. A histological examination of the uterus, following standard staining (Fig. 2), showed no pathological changes in the endometrium, myometrium, or perimetrium in the experimental groups that received *Anethum graveolens* 5 and 10 and Intravaginal Sponges. Histological examination of the uterus showed no pathological changes in the endometrium, uterine muscle, or uterine circumference in the experimental groups receiving *Anethum graveolens* at doses of 5 and 10 g, as well as in the ewes treated with vaginal sponges. Although there were no significant changes in the ovarian tissue, these treatments caused slight uterine enlargement. Furthermore, the ovarian follicles, granulosa cells, oocytes, corpus luteum, connective tissue, and medullary blood vessels were normal and showed no significant abnormalities. The diameters of the endometrium and myometrium, as well as the total thickness of the uterine wall, showed significant decreases in the treated group, according to the research. At both doses of 5 and 10 mg, the group receiving *Anethum graveolens* showed a significant increase in the length of the uterine gland compared to the control group. It was observed that the accumulation of stem cells, the proliferation of glands, and the differentiation of epithelial cells were not affected by the presence of embryos. The uteruses of non-pregnant animals could still be identified.

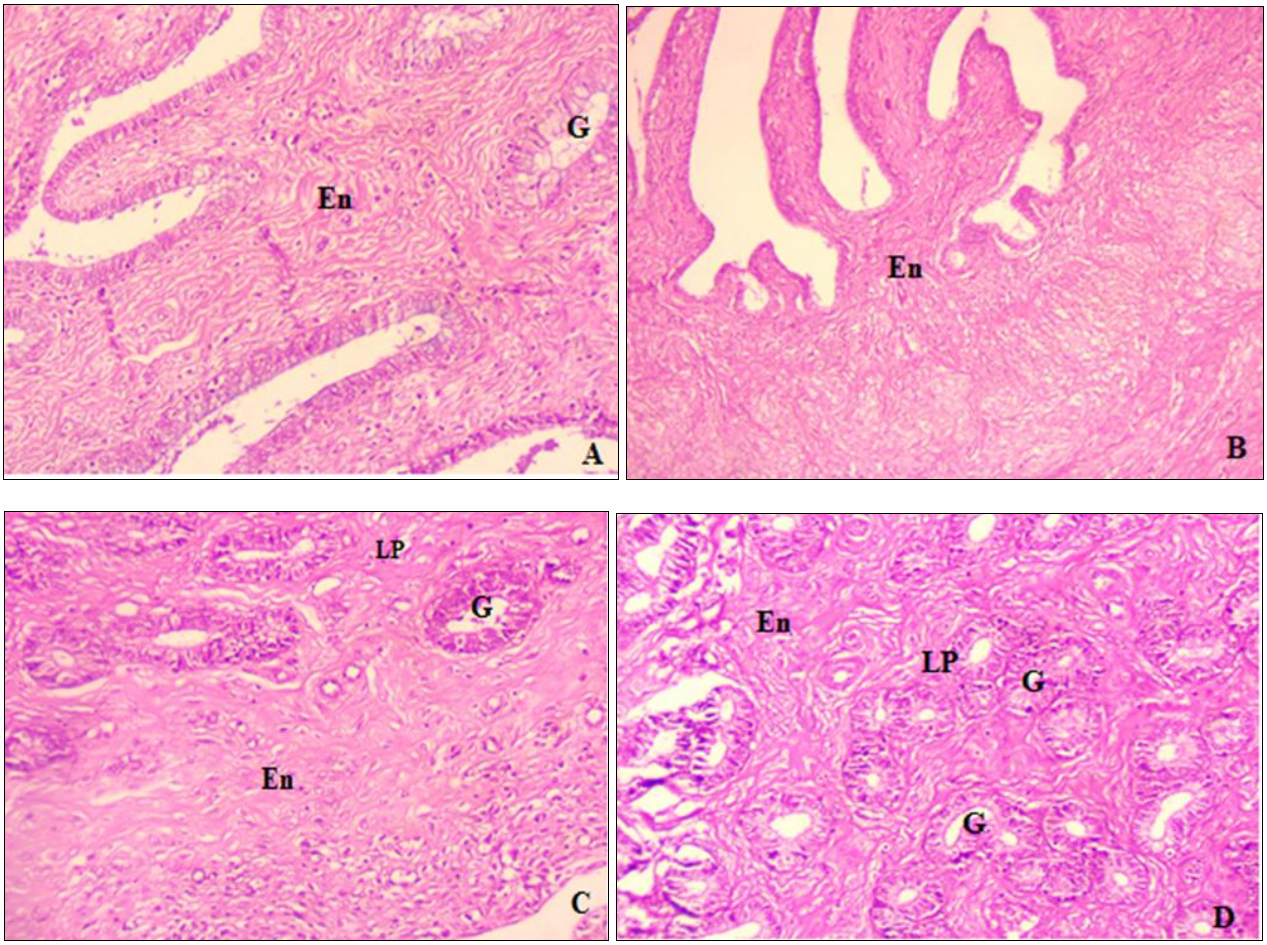

Fig 2: Uterine histology

Notice the mucosal surface of the broad endometrium (En) is thrown into longitudinal folds and faces the uterine lumen (L). Additionally, note the comparatively thin myometrium (My) and the glands (G) in control, the Intravaginal Sponges group, and *Anethum graveolens* 5 and 10, which are located in the enlarged lamina propria (LP).

Mammary development during lactation Ovine

- Samples an evident glandular lobulation due to relatively thin connective walls.
- The mammary alveoli, because of reciprocal compression, appear of polygonal shape. They have non-homogenous aspect because some of them contain large alveoli filled with secretion, and other adjacent ones contain small alveoli with almost drained lumen.
- This alternation of the functional stage is basis of a continuous and constant milk secretion assurance [8, 9].
- The size, shape and aspect of mammary alveoli cells also depend on the secretory cycle [10].
- Thus, the secretory cells, from evicted alveoli, are prismatic, with colorless intercellular limits and large euchromatic nucleus with sizable nucleoulus.
- The sub-nuclear cytoplasma is intense basophilic and forms small rounded prominences to apical pole. In rest of cytoplasma there are numerous small and clear vacuoles, which became smaller and smaller towards the apical pole determining the mentioned apical prominences.

The tubule alveolar glands are the lactating mammary glands found in ewes. The gland's several histological lobes are kept apart from one another via interlobular connective tissue. Each alveolus is surrounded by a fine strand of fibrous connective tissue (see Figure 3). The lobes are divided into multiple lobules by a strand of connective tissue, which originates from interlobular connective tissue. The parenchyma of the mammary gland consists of connective tissue bundles, a network of ducts, and alveoli. The alveolus, which is the basic element of secretion, has myoepithelial cells between the basement membrane and the epithelium lining the duct system. This system begins at the alveoli via a small intralobular duct lined by simple cuboidal cells. The intralobular duct, which is surrounded by connective tissue and lined by two layers of cuboidal cells, is drained by the intralobular duct. Large lactiferous ducts (collection ducts) exist. Where numerous interlobular ducts are empty, this is shown in Figure (3, section C). The lactiferous sinus is where the lobe's excretory duct opens. The collecting duct is lined by a pair of cuboidal cell layers. After receiving milk from the lactiferous ducts, the lactiferous sinus is a large pouch with an uneven outflow. Circular smooth muscle fibers encircle it, and it is bordered by two layers of cuboidal cells and a lamina propria rich in elastic fibers, as depicted in Figure 3. Conversely, the intravaginal sponge group did not differ significantly from *Anethum graveolens* 5 and 10.

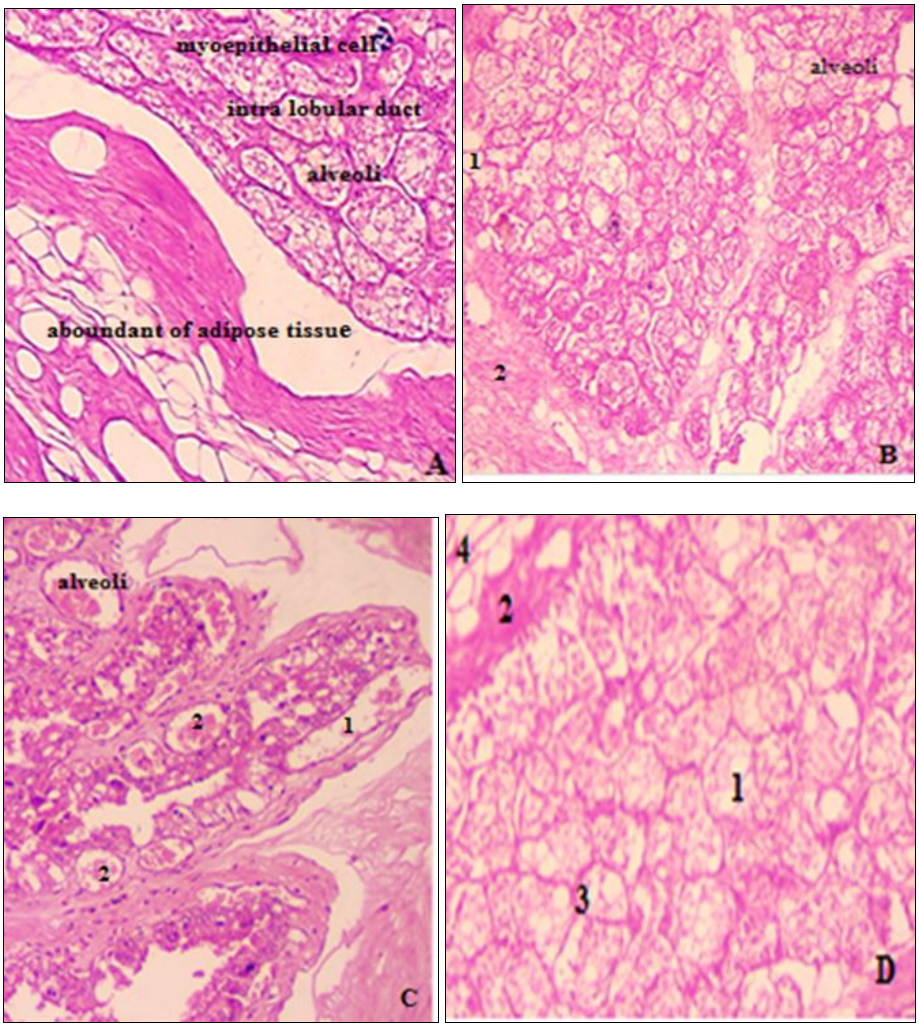

Fig 3: Histological sections of mammary tissue from control ewes (A) Showing alveoli containing milk secretions, intralobular duct, and myoepithelial cells.

(B) Lactating mammary gland of ewes showing
1- Small glandular lobules, 2-Abundant connective tissue, alveoli containing milk secretion (intra-vaginal sponges), H&E, ×200.
(C) Lactating gland of ewes showing: 1- Lactiferous duct (collecting duct), 2- alveoli (*Anethum graveolens* 5), H&E stain, ×200.
(D) Lactating gland of ewes showing 1-Alveoli, 2-Interlobular connective tissue, 3- Myoepithelial cells, 4-Abundant adipose tissue (*Anethum graveolens* 10), H&E, ×200.

Discussion

This study highlights the effect of giving dill seeds to Arabi sheep, focusing on its effect on the concentration of some hormones and histological changes in the ovary, uterus, and mammary glands during estrus and pregnancy. There were significant differences at the level (P <0.01, P <0.05) of the average concentration of estrogen hormone between the treatments. The study agreed with Alwan *et al.* (2010) and Shweta *et al.* (2017) [7, 25] who confirmed the increase in estradiol levels in ewes throughout pregnancy. Bazar *et al.* (2012) [9] assumed that the expression of estrogen receptors in tissues increases with the progression of pregnancy. This study is consistent with Al-Rsitmawi (2019) [4] who reported an increase in estrogen levels when feeding female lambs with different levels of plants containing isoflavones, which can activate enzymes that catalyze estradiol synthesis by increasing the activity of aromatase enzyme secreted from the inner layer of ovarian follicles (Wojcik-Gladysz *et al.*, 2006) [20]. Moreover, due to their phenolic ring structure, which is similar to that of estrogen, plant hormones - especially phytoestrogens - may also have an effect on estrogen receptors in the pituitary gland and hypothalamus (Brich *et al.*, 2013) [10].
During the last period of pregnancy, especially in the fifth month, we notice an increase in the level of the estrogen hormone, which is attributed to the decrease in the level of the progesterone hormone secreted by the corpus luteum and the placenta (Ishaq *et al.*, 2011) [13].
There was a significant difference (P<0.01) in the average progesterone concentration during the months of pregnancy (first, second, third, and fourth) over the other treatments. According to the researchers, dill seeds support the corpus luteum and increase the yellow granular cells in the smooth endoplasmic reticulum (SER), which is associated with increased progesterone production. *Anethum graveolens* seeds also prevent ovulation in the next cycle and prolong the sympathetic phase of the estrous cycle. Moreover, by stimulating the progesterone-producing cells in the corpus luteum, these seeds have a direct effect on the ovary, raising progesterone levels (Monsefi *et al.*, 2014) [21].
Phytoestrogens have effects on the central nervous system, which controls reproduction, and endocrine glands. They increase the concentration of estradiol in the blood, which causes positive feedback and the onset of the LH wave and its increase, which leads to an increase in the concentration of progesterone (Al-Moussawi., 2019) [3].

A significant difference ($P<0.01$) in the average concentration of prolactin hormone. These results were consistent with those (Al-Moussawi, 2019) [3], who discovered that the high concentration of prolactin hormone at the end of pregnancy due to the low level of progesterone hormone and the result of the high weights of the animals was positively reflected in the general growth of the body and its organs, including the endocrine glands, which led to an increase in the secretion of prolactin hormone. The increase in the average levels of prolactin hormone and its significant superiority for the second treatment from the first month until after birth is due to the seeds containing nutrients that enter into the composition of the prolactin hormone (Al-Taie, 2012) [6]. This study is consistent with (Muller *et al.*, 2003) [22] who confirmed that prolactin concentration values increase with the progression of the months of pregnancy.

Dill seeds (*Anethum graveolensl*) include flavonoids, phenolic compounds such as trans-anethole, and essential oil that is high in carvone and limonene. It is thought that Dill has galactagogic qualities. Galactagogues are compounds or particulars thought to aid in the initiation, maintenance, or growth of motherly milk production. (Alhaji., 2010**)** [10].

The histological study of the uterus revealed no pathological changes in the endometrium, uterine muscle, or uterine circumference in the experimental groups that received *Anethum graveolens* herb at doses of 5 and 10 g, as well as the ewes that were treated with vaginal sponges.

It was noted that the surface epithelium was diffuse and flocculent in non-pregnant animals as found by Monsefi *et al.*, (2006) [20]. Vicenin and kaempferol are two other flavonoids found in dill. Some components are non-polar or hydrophobic, while others are polar or hydrophilic. Additional phytoestrogenic compounds found in dill include limonene, trans-anethole, and kaempferol. Kaempferol prevents estrogen from binding to serum alpha-fetoprotein (AFP). Flavonoids are progesterone adrenergic receptors that interact to modulate the production and activity of these receptors, as well as the availability of estrogen to cells that respond to it. According to Baker *et al.*, (1998) [8], kaempferol dissolves in water, diethyl ether, and ethyl acetate fractions. These findings suggest that dill could be used as an anti-fertility drug or to regulate irregular periods.

It was shown that *Anethum graveolens* may stimulate estrogen synthesis by supporting the corpus luteum and the growth of luteinizing granulosa cells in the smooth endoplasmic reticulum (SER). The microscopic examination results of each sample, which showed clear glandular lobules, served as the basis for this research. This is because the connecting barriers are very weak. This conclusion is based on a microscopic examination of the samples, which revealed distinct glandular lobules due to the presence of weak connective tissue walls. Because some of them contain large secretory vesicles and others nearby contain smaller, almost empty vesicles, they are heterogeneous. Functional and stable milk secretion (Martinette *et al.*, 1993) [18]. In addition, the secretory cycle also affects the dimensions, shape, and appearance of mammary alveolar cells (Robinson *et al.*, 1999) [23[]. This may be due to an increase in estrogen and progesterone receptors, which bind to the mammary gland ducts and follicles, caused by *Anethum graveolens*, leading to a slight increase in their size. Therefore, the effect of this herb on the proliferation of follicular buds in the mammary gland and the production of lobules was examined in the present study. According to Weiss (2001) and Duke (2002) [28, 12], *Anethum graveolens* enhances milk production.

Conclusion

The study investigated the impact of dill seeds on hormones, ovarian tissue, uterus, and mammary glands. The results revealed that dill seeds promoted corpus luteum survival and resulted in the enlargement of granulosa lutein cells smooth endoplasmic reticulum (SER), which involved increased progesterone secretion. An increased level of prolactin hormone so dill may be considered lactiferous herp. A histological examination of the uterus revealed no pathological changes in the endometrium, myometrium, or perimetrium also, there were no pathological changes in the ovary. A histological examination of the mammary gland shows that *Anethum graveolens* causes a small rise in the estrogen and progesterone receptors, which are connected to the mammary glands' ducts and alveoli, and results in a tiny enlargement of those glands. So we recommend giving dill seeds to ewes to increase milk production.

Conflict of Interests

The authors declared that no conflict of interest exists.

Acknowledgement

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