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EXPLORATION OF FEMALE INFERTILITY: AN INSIGHT FROM UNANI MEDICINE

Dr. Aalia Parween*

Assistant Professor, Department of Gynecology and Obstetrics, Government Tibbi College and Hospital, Patna.

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***Corresponding Author**
Dr. Aalia Parween
Assistant Professor, Department of Gynecology and Obstetrics, Government Tibbi College and Hospital, Patna.

ABSTRACT

Infertility is a multifaceted issue that affects people of all societies as a whole, with the prevalence of 16%–37%, in the world, in which female infertility alone accounts for approximately one-third of all infertility cases. In classical Unani literature, infertility is termed as *"Uqr"* which occurs due to a defect in male *mani* (sperm) or female *mani*(ovum) or male and female reproductive organs. Female infertility may be caused by an underlying variety of disorders, such as ovulation disorders, damaged fallopian tubes, cervical disorders and hormonal imbalances. Although various conventional treatments are currently available but also have the limitation of unsatisfactory outcomes and high cost of ART procedures. Due to the negative effects of chemical drugs on reproductive health, high costs of drugs, and modern fertility treatment procedures, the tendency to use herbal medicines is increasing among people. Unani medicine is considered a suitable alternative to conventional medicines because of its phytoestrogenic, antioxidant, utero tonic, ovulation-inducing, aphrodisiac & nutritional properties. Various formulations have been mentioned in classical Unani literature for the treatment of *uqr*, possessing properties like *muqawwi rehm, moaiyane hamal, moallide mani.* In this regard, the present review provides a comprehensive overview of infertility from the standpoint of Unani medicine, elucidating its etiology, diagnostic approach, and therapeutic interventions. Through an exploration of Unani principles and practices, this paper aims to contribute to a deeper understanding of infertility and inform holistic approaches to its management.

KEYWORDS: Infertility, Herbal, Unani Medicine, Holistic healthcare, *Uqr*.

INTRODUCTION

Infertility is a complex condition that affects approximately 17.5% of the adult population or 1 out of every 6 couples. (**Kashani L**) with profound emotional, social & psychological implications. According to the unani concept Uqr (infertility) is called when conception fails to occur or when conception is problematic owing to a fault in either the male or female spouse. [**al qanoon, kamil**]. The incidence increased continuously due to various factors like social pressure, late marriage, late childbirth all of which affect the fertility & have negative consequences such as high economic burdens and marriage failure. Indeed, the root issues of infertility can be related to both sexes. Still, approximately 50 % of all infertility cases is caused by female conditions, 30-40% being related to male infertility, and the remaining 10% being unexplained. [**Tanvir J**]. It is also worth noting that in 25 percent of infertile couples both partners will have a fertility problem. Reasons such as weight, diet, smoking, other substance abuse, environmental pollutants, infections, medical conditions, medications and family medical history could affect conception in couples. [**Hoffman**]

The main cause of female infertility is related to uterus, either obstruction or injury to uterus and displacement of uterus. [**al qanoon**]

Ovulation induction is commonly used for infertility treatments to produce numerous mature ovarian follicles. Clomiphene citrate and letrozole are the drugs used to induce ovulation. To achieve fertilization at the moment of ovulation, timed intercourse or intrauterine insemination (IUI) might be employed. Advancing therapeutic options include in vitro fertilization (IVF), intrauterine insemination (IUI), and zygote intrafallopian transfer (ZIFT) have limitations such as unsatisfactory results and high procedure costs as well as ovarian hyperstimulation syndrome (OHSS), miscarriages, multiple pregnancies, and birth abnormalities; as a result, more couples are turning to alternative medicine, particularly herbal therapy. In Unani system of medicine, the treatment is to remove the cause at first step. There are number of herbal drugs mentioned in Unani literature which are useful in infertility. Unani medicine is considered a suitable alternative to conventional medicines because of its phytoestrogenic, antioxidant, utero tonic, ovulation-inducing, aphrodisiac and nutritional properties. **[kamil, Ibn sina]**. In this regard, the present review aims to provide all the necessary information regarding female infertility in the Unani system of medicine.

Classification

Infertility is divided into primary and secondary. primary infertility is "Inability to conceive within one year of exposure to pregnancy (*i.e.*- sexually active, non-contracepting, and non-lactating) among women of reproductive age. Secondary infertility refers to the inability to conceive following a previous pregnancy. Globally, most infertile couples suffer from primary infertility. [**Inhorn MC.]**

According to Unani Scholars Infertility is classified as Congenital & Acquired or Pathological. Congenital can be complete/ Untreatable & Secondary/ Treatable, while Acquired can be active and passive. **(al Qanoon)**

Pathophysiology of Reproduction

In Unani Medicine, the pathogenesis of general diseases has been attributed to three factors viz. mizaj(temperament) tarkeeb (structure) and ittesal (continuity of tissues). Abnormalities of these factors are considered as: sue mizaj (altered temperament),sue Tarkeeb (altered structure) and tafarruqe Ittesal(discontinuity in tissues) respectively. Mizaj is a specific and distinct state of an individual reflecting neuro-endocrine, genato-metabolic and somato-environmental equilibrium at the optimum functional level of adjustment. [**ibn sina].** Health is a reflection of equilibrium in four Akhlat (humours) concerning their quantity and quality, conferring Mizaj Tabai to the human body, necessary for the occurrence of normal functions. alteration in four humours of body and alteration in uterine temperament or hard texture of uterine inner layer or whole uterus undergo in hard texture due to the absorption of phlegmatic fluid in the uterus or abnormal bile causes infertility. [**Akseer Azam, Arzani A: Tibbe Akbar]**

According to Unani concept each and every organ is furnished with power, *Quwat* (faculty), through which specific physiological functions are performed by that particular organ. Ibn Rushd states that *Rahim* **(Uterus)** performs two important functions: Childbirth & Excretion of menstrual blood and *Rahim* consists of four types of *quwa* (faculties), weakness of it causes infertility:

Quwwate jaziba: It absorbs the gametes and its weakness causes infertility.

Quwwate masika: It retains the foetus with in the uterus till labour by implanting it to the uterine wall and firm closure of uterine os. Accumulation of excessive *rutubat* (fluid) in the uterus causes weakness of retention power leading to abortion.

Quwwate hafiza: It protects the fetus. *Sue mizaj barid* causes *zo'afe quwwate hafiza* which leads to infertility**.**

Quwwate dafi'a: It expels out the fetus during labour and its weakness causes dystocia.

There are three major division of *quwa* (faculties) of the body. *Al-quwa al-Tabi'yah* (Natural faculties), *Al-quwa al-Nafsaniyah* (Psychic/ mental faculties) & *Al quwa al- haywaniyah* (vital faculties). *Al-quwa al-Tabi'yah* serves the functions of nutrition, growth, and reproduction in the body, for the preservation of individual as well as species. *Quwa-e-tanasulliyah* (reproductive faculties) are one of its types which act on *ghiza* (food) for the preservation of species. It is responsible for the generation of *mani* i.e (sperm and ovum), all sexual functions and formation of the foetus in the uterus.

***Quwa-e-tanasulliyah* is of two types**

***1- Al quwa al muwallida* (Generative faculty)**

This *quwa* seperates the essence of *mani* from *imshaj badan* (body constituents) inside the testis and ovary and makes each part of it become a particular organ. Thus, this faculty controls oogenesis, ovulation and menstruation with the help of different *akhlate muharrika* (hormones).

***2- Al quwa al musawwira* (Formative faculty)**

This *quwa* gives shape to each part of *mani* (sperm and ovum) which is required by that particular species to which *mani* belongs. Thus, this faculty controls fertilization of ovum, implantation, cleavage and differentiation of embryo, formation of fetal membranes, fetal growth & development.

Etiology

In Unani literature infertility occurs due to congenital defects of uterus & ovaries like small sized uterus, closure of external os, small ovaries, etc Besides this Metritis, Inversion of uterus, Salpingitis, Amenorrhea, Polymenorrhea, Vaginal discharge, Anaemia, Syphilis, Gonorrhea can also leads to infertility. Sometimes due to increased phlegm in the body there

is change in temperament (increase coldness) which leads to weakness of power of retention of uterus due to which pregnancy cannot occur. [**ibn hubal**]

Female infertility may be caused by an underlying variety of disorders, such as ovulation disorders, damaged fallopian tubes (tubal infertility), cervical disorders, and hormonal imbalances. These hormonal conditions include polycystic ovary syndrome (PCOS), endometriosis, chocolate cyst, premature ovarian failure (POF), hypothalamic dysfunction, and hyperprolactinemia. Pathological defects like cervical polyp, hypoplasia of the uterus, submucous fibroid/polyp or endometrial polyp, inflammatory tubal block, and also the Immunological factor that is the presence of anti-sperm antibodies in the cervical mucus also cause infertility. **(RCOG)**

The most important risk factors are smoking, heavy use of alcohol, chemotherapy or radiation therapy, long-term use of high-dosage nonsteroidal anti-inflammatory drugs (NSAIDs), antipsychotic medications, consumption of recreational drugs such as marijuana and cocaine, obesity, increasing age, and sexually transmitted infections (STIs**).**

There can be secondary causes such as scars and adhesions in the reproductive system, endometrial tuberculosis, pelvic endometriosis, tight/tender hymen, intracervical fibrous obstruction, vaginal and cervical stenosis, post MTP corneal block and tubectomy. [**Family Health International**]

Diagnosis of infertility

Infertility almost always leads to decreased levels of personal well-being & for many individuals, it causes significantly more severe consequences. The consequences of infertility in women are classified into two general categories. The first category is related to physical disorders caused by infertility, and the second category includes psychosocial disorders. (**Fidler A]**

It is essential to rule out whether failure of conception is due to male or female sterility. The primary aim is to find the exact cause, which requires a complete history and clinical manifestation.

The physical symptoms of this disease include menstrual disorders, skin changes, changes in sex drive and desire, excessive hair growth (dark hair growth on the lips, chest, and chin) & weight gain. Psychosocial disorders caused by this disease include interpersonal relationship

problems, decreased self-esteem, feelings of shame, social isolation, risk of harm to mental health, depression, anxiety, despair, guilt, and worthlessness **(Abrao et al., 2013, RCOG).**

***Usoole Ilaj* (Principle of treatment):** Try to find the exact cause & eliminate the cause of infertility. If cause is excess of Hararat, then the color of menstrual blood is orange and black. In case of excessive Baroodat, menstrual bleeding will excessive and light in color, other cause is dryness of uterus and on examination uterus will be dry on touch. Zakriya Razi said that, if the women desire to intercourse, then there are more chances to conceive.

Tanqia badan for *istifraghe madda* followed by *tabdil mizaj* in *sue mizaj maddi.* Use of *mudirre haiz advia* having mufattih sudad property to induce ovulation & menstruation & lastly use of various tadabeer (regimenal therapy) with *muwallide mani*, *muqawwi rahim* & *mu'ine haml advia* is used for conception.

DISCUSSION AND OBSERVATION

Infertility may have a significant impact on a couple's life, thus it is critical to optimise their reproductive health. In most areas of the world, women's wellbeing appears to be more seriously affected by infertility than men's. As a result, it is critical to educate couples and society about infertility and its treatment. [**Lee, Dr. John, Natural Progesterone]**

Where treatment is available, uncomfortable, painful or life-threatening medical interventions are there. **[Fidler A, Bernstein, Family Health International.]** As a result of the necessity for alternative treatment, the Unani system has a variety of single and compound medications that are considered suitable & can be employed in infertility because of its phytoestrogenic, antioxidant, utero tonic, ovulation inducing, aphrodisiac & nutritional properties.

For this, various effective plants with positive effects on female fertility were studied which shows that due to the presence of various compounds such as polyphenolic compounds (isoflavones and flavonoids) and other compounds with many biological activities, these plants are beneficial in reproductive health of women & with regulating the female endocrine pathways, and improving symptoms of menopause, treat female reproductive disorders such as as PCOS, endometriosis, POF, hypothalamic dysfunction, hyperprolactinemia, PID & menopausal symptoms. The results of the study also showed role of micronutrients such as B vitamins, vitamin D, and fatty acids [saturated fatty acids, monounsaturated fatty acids (MUFS), polyunsaturated fatty acids (PUFAs), docosapentaenoic acid, eicosapentaenoic acid,

linoleic acid, omega-3, and omega-6] in the treatment of female infertility alone and in combination with other treatments. **(Silva et al., 2019).**

List of important single & compound drugs mentioned in Unani literature: (Haziq, Al akseer)

The single drugs like Musli Safed (*Chlorophytum borivilianu),* Hulba/Fenugreek (*Trigonella foenum graecum*)Murmuki (*Commiphora myrrh),* Mushk (*Moschcus moschiferus),* Jundebedastr (*Castoreum),* Kakla Sigaar (*Elletoria cardomomum),* *Anisoon*/Aniseed (*Pimpinella anisum* Linn), Halela zard (*Terminalia chebula),* Gule dhawa (*Woodfordia fruticose),* Shatavari (*Asparagus racemosus),* Asgand (*Withania somnifera),* Joz bua (Jaifal) (*Myristica fragrans),* Zafraan (*Crocus sativus) etc.* Having mainly the property of Aphrodisiac, antioxidant, Anti-inflammatory, antimicrobial, uterine tonic, Exhilarant, tonic to vital organ, emmenagogue, antispasmodic, Cardiotonic & Nerve tonic.

The compound drugs such as Itrifal Sagheer, Majoon Hamal Ambari Alwi khan, Majoon Supari pak, Majoon muhafiz Janeen, Habbe Hamal, Usara Bartang etc are used as Aphrodisiac stimulants, uterine tonic, Anti-inflammatory, antioxidant, & Ovulation-induction.

Pharmacological Studies

Preclinical and clinical studies provide evidence that herbal medicines may have beneficial effects for the regulation of ovulation, menstruation, improved metabolic hormone profile and improved fertility outcomes in infertile women.

***Punica granatum (Pomegranate*):** According to animal studies on PCOS rats, pomegranate extract, which includes phytoestrogens, can manage and treat PCOS symptoms. This plant extract promotes mucus production by increasing uterine blood flow (vasodilation) and uterine wall thickness. This increase in mucosal secretions facilitates implantation through anti-inflammatory mechanisms. [**Hossein, K.**]

In a randomised controlled triple-blind parallel experiment including 23 women with PCOS, pomegranate fruit extract reduced blood levels of sex hormones (testosterone reduction) and their lipid profile. **[Esmaeilinezhad, Z]**

Withania somnifera (Ashwagandha)

Saiyed et al. (2016) reported that blood LH levels reduced, FSH levels increased, and preantral and antral follicles and corpus luteum decreased in a 22-day study on letrozole-induced polycystic ovarian syndrome in rats. **[Saiyed, A.]**

According to Bhattarai et al. (2010), Ashwagandha extract boosted gonadotropin hormone production and, eventually, improved oogenesis via GABA mimetic characteristics, which was believed to be owing to enhancing the HPG axis and increasing serum oestrogen balance. **[Bhattarai, J. P.,]**

Cinnamomum: Cinnamomum controlled the HPG axis and increased GnRH secretion, perhaps by boosting norepinephrine and NO production via compounds like delta-Cadinene. [**Parvizi, N.]** Cinnamon promotes glucose absorption by activating the glycogen synthase enzyme and decreasing glycogen synthase kinase 3 (GSK3) activity. Cinnamon also activates the insulin receptor kinase enzyme and inhibits insulin receptor dephosphorylation. All of these activities have been shown to diminish insulin resistance. **[Rashidlamir, A]**

Vitex Agnus-castus **(Verbenaceae**): This plant extract also stimulates the release of the corpus luteum following ovulation, which results in the production of progesterone, which regulates the female reproductive cycle **(Askari, 2017).** Blood levels of oestrogen and progesterone increased in the Verbenaceae extract group compared to the control group in an animal study; however, LH and prolactin, as sexual function, interfering hormones, decreased. [**Yakubu, M. T**]

Nigella sativa (Black seed)

Long-term use of the extract of *N. sativa* due to the presence of phytoestrogens can reduce testosterone levels, exerting negative feedback on LH. On the other hand, LH is probably produced to a lesser extent following a decrease in androgens, reducing the dominant effect of LH on FSH. In addition, *Nigella sativa* extract may reduce LH dominance over FSH by inhibiting nitric oxide and leptin-releasing neurons that are directly involved in the synthesis of LH from the anterior pituitary gland, thereby increasing ovulation in women with PCOS **(Eini et al., 2020).**

Foeniculum Vulgare **(Fennel)**

A double-blinded placebo-controlled trial showed that a cream containing fennel extract improved hirsutism in a dose-dependent manner compared to the placebo group. Fennel contains effective compounds that can modulate steroidogenesis pathways, including anol (demethylated anethole), which acts similarly to catecholamines and induces the secretion of prolactin. **{Javidnia et al. (2003)}**

Phoenix Dactylifera **(Date palm)**

The estrogenic compounds of this plant extract can be used to treat uterine disorders as they have been shown to reduce endometrial tissue degeneration, necrotic patches, and hyperplasia in endometrial glands **(El-Mansi et al., 2019).**

Glycyrrhiza glabra (Licorice-Liquorice): Due to the presence of various flavonoids with anticancer properties, the extract of this plant reduces the incidence of endometrial adenocarcinoma by inducing apoptotic pathways and inhibiting inflammatory pathways. Therefore, licorice can be used to improve female reproductive function and to treat female reproductive system disorders secondary to the presence of phytoestrogens and flavonoids with beneficial biological effects. **(Niwa et al., 2007).**

Matricaria chamomilla (Chamomile): In a study on the growth and maturation of isolated mouse ovarian follicles in a three-dimensional culture system, chamomile extract increased progesterone, 17-estradiol, and dehydroepiandrosterone levels in the culture medium, decreased ROS, follicular diameter, and antrum formation, and prolonged oocyte survival. **[Gholami, F]**

Joazbuwa/ Nutmeg ***(Myristica fragrans):*** A study, reported that methanolic extract of Nutmeg seed showed good antioxidant activity by methods of 1,1-diphenyl- 2-picrylhydrazyl (DPPH) and ferric reducing antioxidant power (FRAP) due to high content of tannin, flavonoid and terpenoids**. [Assa JR]**

CONCLUSION

Infertility has increased massively in the past decade & this is due to the result of a combination of environmental, social, psychological, and nutritional factors. The treatments are rather invasive, inhumane, disappointing & extremely expensive, with no guarantee of a pregnancy and with potential side effects. Unani, on the other hand, looks at the individual

constitutional types, enhances the body systems that participate in the process of fertilization in totality, and hence serves as a better alternative and complement to modern Western medicine for reaching fertilization. Because it focuses on rebalancing individuals and not just treating diseases. In addition, they tend to promote the systemic health and well-being of the individual.

Despite several Unani drugs mentioned, clinical trials have been conducted only on a few medicines with a lack of common standards and appropriate methods for evaluating Unani Medicine to ensure the safety, efficacy & quality control. This indicates the importance and necessity of developing a standard operating procedure for the standardization of drugs and formulations. Currently, only few drugs have been proven scientifically their efficacy, which justifies up to some extent, yet now. After further pharmacological, phytochemical, and toxicological investigations, new and efficacious drugs can be developed. Hence, there is a need for systematic clinical trials to enhance global acceptance & more studies are required to validate the role of other unani medicines in Uqr (Infertility) on scientific parameters.

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REFERENCES

1. Kashani L., Akhondzadeh S. Female Infertility and Herbal Medicine. Journal of Medicinal Plants, 16, No. 61: Winter 2017.
2. Ibn Sina, Al Qanoon Fil Tib In: Kantoori GH(Ed), Idare Kitab-us-Shifa, New Delhi, India, 2010; 1065(70): 1445-1447.
3. Majoosi ABA, Kamilus Sana In:Kantoori GH(Ed), Vol 1 & 2, Idare Kitab-us-Shifa, New Delhi, India, 2010; 538(40): 498-499.
4. Tanvir J.Tubal factor in infertility.J Postgrad Med Inst, 2004; 18: 225-260.
5. Hoffman, Schorge, Bradshaw, Halvorson, Schaffer, Corton. Williams Gynecology, 3rd Edition, Mc grow Hill education, 427.
6. Inhorn MC. Global infertility and the globalization of new reproductive technologies: illustrations from Egypt. *Soc Sci Med.*, 2003; *56*: 1837-51.

7. Kabeeruddin M. Kulliyate Qanoon (Urdu translation). Lahore: Shaikh Mohd Basheer and Sons, 2006; 71: 73.
8. Arzani A: Tibbe Akbar. New Delhi: Idara Kitabul shifa; YNM.
9. Ibn-e-Hubal Baghdadi. Kitab-al-Mukhtarat Fil Tibb, Vol II & Vol IV New Delhi: CCRUM, 2007; II: 50-51.
10. Khan HA, Al Akseer In: Kabeeruddin M(Eds), In: (1st edn), Idare Kitab-us-Shifa, New Delhi India, 2011; 819-21.
11. Arzani A: Tibbe Akbar. New Delhi: Idara Kitabul shifa; YNM.
12. Family Health International. Preserving fertility. Network, 2003; 23(2): 3-23.
13. Royal college of Obstetricians and Gynecologist. Fertility: Assessment and treatment for people with fertility problems. NICE Clinical Guidelines. 2nded. London: RCOG; 2013: 71. [www.rcog.org.uk]
14. Fidler A, Bernstein J. Infertility: from a personal to a public health problem. Public Health Rep., 1999; 114: 494-511.
15. Tabri AR. Firdausul Hikmat (Urdu translation by Shah MA). New Delhi: Idarae Kiatabul Shifa, 2010; 112-3, 125-6, 254,257, 259, 261, 471.
16. Abrao, M. S., Muzii, L., & Marana, R. Anatomical causes of female infertility and their management. *International Journal of Gynecology & Obstetrics*, 2013; *123:* S18–S24. https://doi.org/10.1016/j.ijgo.2013.09.008
17. Qamri AMH. Ghana Mana. New Delhi: CCRUM, 2008; 412-414.
18. Lee, Dr. John, Natural Progesterone, The multiple Roles of A Remarkable Hormone, (Jon Carpenter, 2001; 56-89.
19. Silva, T., Jesus, M., Cagigal, C., & Silva, C. Food with influence in the sexual and reproductive health. *Current Pharmaceutical Biotechnology*, 2019; *20*(2): 114–122. https://doi.org/10.2174/13892 0101966618 09251 40400
20. Khan HA.Haziq.Karachi:Madina Publishing Company, 1983; 462-464.
21. Hossein, K., Leila, K., Ebrahim, T., Nazanin, S., Farzad, P., Elham, R., Mohammad, P., & Zahra, H. The effect of pomegranate juice extract on hormonal changes of female Wistar rats caused by polycystic ovarian syndrome. Biomedical and Pharmacology Journal, 2015; 8(2): 971–977.
22. Esmaeilinezhad, Z., Babajafari, S., Sohrabi, Z., Eskandari, M. H., Amooee, S., & Barati-Boldaji, R. Effect of synbiotic pomegranate juice on glycemic, sex hormone profile and anthropometric indices in PCOS: A randomized, triple blind, controlled trial. Nutrition, Metabolism and Cardiovascular Diseases, 2019; 29(2): 201–208.

23. Saiyed, A., Jahan, N., Makbul, S. A. A., Ansari, M., Bano, H., & Habib, S. H. Effect of combination of Withania somnifera Dunal and Tribulus terrestris Linn on letrozole induced polycystic ovarian syndrome in rats. Integrative Medicine Research, 2016; 5(4): 293–30.
24. Bhattarai, J. P., Ah Park, S., & Han, S. K. The methanolic extract of Withania somnifera ACTS on GABAA receptors in gonadotropin releasing hormone (GnRH) neurons in mice. Phytotherapy Research, 2010; 24(8): 1147–1150.
25. Parvizi, N., & Ellendorff, F. Further evidence on dual effects of norepinephrine on LH secretion. Neuroendocrinology, 1982; 35(1): 48–55.
26. Rashidlamir, A., Alizadeh, A., Ebrahimiatri, A., & Dastani, M. The effect of four-week period of aerobic exercise with cinnamon consumption on lipoprotein indicates and blood sugar in diabetic female patients (type 2). *SSU_Journals*, 2013; *20*(5): 605–614.
27. Askari, K. Effect of hydroalcoholic extract of Vitex agnus-castus fruit on fertility and estrous cycle in letrozole-induced polycystic ovary (PCOS) in rat. *Razi Journal of Medical Sciences*, 2017; *24*(156): 42–48.
28. Yakubu, M. T., & Akanji, M. A. Effect of aqueous extract of Massularia acuminata stem on sexual behaviour of male Wistar rats. Evidence-Based Complementary and Alternative Medicine, 2011.
29. Eini, F., Joharchi, K., Kutenaei, M. A., & Mousavi, P. Improvement in the epigenetic modification and development competence in PCOS mice oocytes by hydro-alcoholic extract of Nigella sativa during in-vitro maturation: An experimental study. *International Journal of Reproductive BioMedicine*, 2020; *18*(9): 733. https://doi.org/10.18502/ ijrm. v13i9.7668
30. Javidnia, K., Dastgheib, L., Samani, S. M., & Nasiri, A. Antihirsutism activity of fennel (fruits of Foeniculum vulgare) extract–a double-blind placebo-controlled study. *Phytomedicine*, 2003; *10*(6–7): 455–458. https://doi.org/10.1078/09447 11033 22331386
31. El-Mansi, A. A., ElSayyad, H. I., Elshershaby, E. M., & Al-Ashry, N. E. Dietary supplementation of barley and/or dates attenuate hypercholesterolemic-induced endometrial dysfunction in Wistar albino rats via alleviation of apoptotic pathways and enhancing oxidative capacity. *Journal of Food Biochemistry*, 2019; *43*(11): e13001. https://doi.org/10.1111/jfbc.13001
32. Gholami, F., Samani, L. N., Kashanian, M., Naseri, M., Hosseini, A. F., & Nejad, S. A. H. Onset of labor in post-term pregnancy by chamomile. Iranian Red Crescent Medical Journal, 2016; 18(11).

33. Assa JR, Widjanarko SB, Kusnadi J, Berhimpon S. Antioxidant potential of flesh seed and mace of Nutmeg (Myristica fragrans Houtt). Int J ChemTech Res., 2014; 6: 2460-8.