WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 8, Issue 10, 344-350. Review Article ISSN 2277– 7105

ROLE OF FOENICULUM VULGARE IN PCOS - A REVIEW ARTICLE

Dr. Manisha Meena*[1], Dr. Mayukh Sharma[2], Dr. Anjana Dhakar[3], Dr. Chandan Singh[4], Dr. Laxminarayan Sharma[5] and Dr. Rajendra Prasad Purvia[6]

*[1,2,3]MD. Scholar, PG. Department of Dravyaguna, DSRRAU, Karwar, Jodhpur Rajasthan, India.

[4]Asso. Prof. and HOD, PG. Department of Dravyaguna, DSRRAU, Karwar, Jodhpur Ra-Jasthan, India.

[5]Asso. Prof., PG. Department of Dravyaguna, DSRRAU, Karwar, Jodhpur Rajasthan, India.

[6]Asst. Prof., PG. Department of Dravyaguna, DSRRAU, Karwar, Jodhpur Rajasthan, India.

Article Received on
28 June 2019,

Revised on 18 July 2019,
Accepted on 08 August 2019,

DOI: 10.20959/wjpr201910-15623

***Corresponding Author**
Dr. Manisha Meena
MD. Scholar, PG.
Department of Dravyaguna,
DSRRAU, Karwar, Jodhpur
Rajasthan, India.

ABSTRACT

PCOS is a common endocrine condition associated with hyperandrogenism, infertility and meta- bolic dysfunction. Women with PCOS may present with obesity, amenorrhea, oligomenorrhoea, in- fertility, or androgenic features. It builds the danger of insulin resistance (IR), type 2 diabetes, obe- sity, and cardiovascular disease. The etiology of the disease stays misty, and the emotional pheno- type makes an assembled analysis troublesome among doctors. PCOS affects a woman's ovaries, the reproductive organs that produce oestrogen and progesterone — hormones that regulate the men- strual cycle. The ovaries also produce a small amount of male hormones called androgens. Due to the absence or decrease in ovulation, women with PCOS have diminished degrees of the hormone progesterone. Foeniculum vulgare seeds are used as a good supplement for management of PCOS. They are rich source of phytoestrogens. Phytoestrogens content in fennel helps in reduc- ing insulin resistance and in bringing down the inflammation in PCOS. It also believed that helps in reduce the cellular imbalance which leads to metabolic disturbances in PCOS.

KEYWORDS: Ayurveda, vata dosha, Polycystic ovarian syndrome, Fennel.

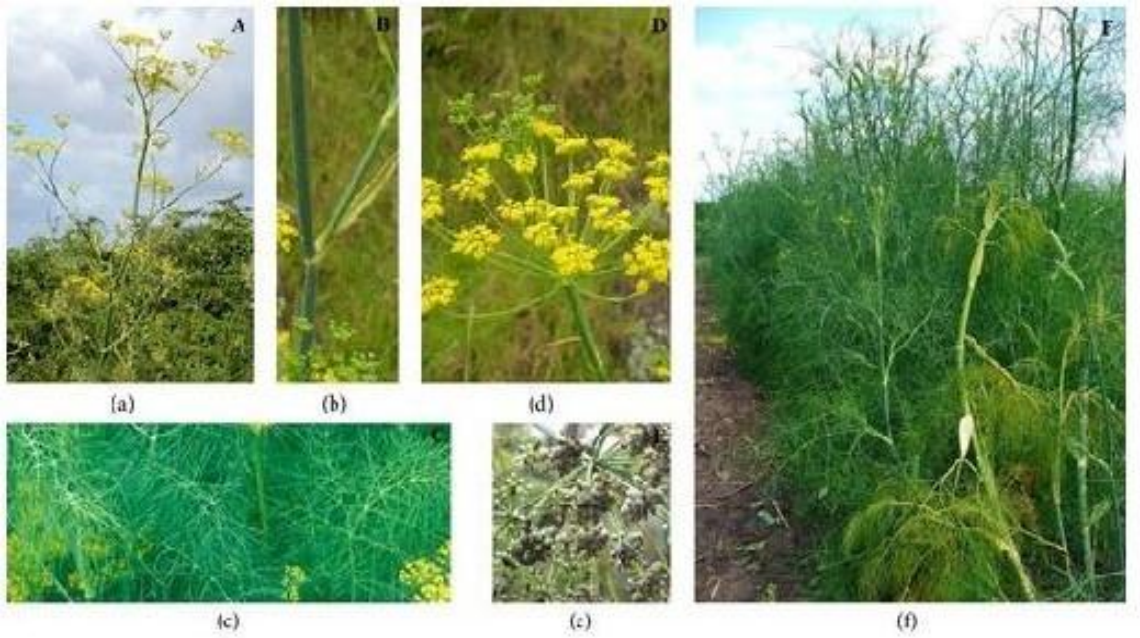
INTRODUCTION

Foeniculum vulgare is a medicinal plant belonging to the Umbelliferae (Apiaceae) family,

known and used by humans since antiquity, due to its flavor. The main constituent of fennel essential oil, anethole has been considered to be the active oestrogenic agent. It was cultivated in almost every country.[1] The different parts of this plant are used in treatment of many diseases, particularly di- gestive system. Also it is very useful in the treatment of diabetes, bronchitis, chronic cough, kidney stones, nausea and vomiting.[2] *F. vulgare* has been used as an oestrogenic agent for centuries. *F. vulgare* grows on a wide range of soil types in humid-temperate regions.

Morphological Description

Fennel (*Foeniculum vulgare*) is a flowering plant species in the carrot family.[3] The word *fennel* developed from Middle English *fenel* or *fenyl*. This came from Old English *fenol* or *finol*, which in turn came from Latin *feniculum* or *foeniculum*, the diminutive of *fenum* or *faenum*, meaning "hay". *F. vulgare* is an upright, branching perennial herb (a) with soft, feathery, almost hair-like foliage growing upto 6.6 ft. (2 m) tall. This plant looks similar to dill. It is typically grown in vegetable and herb gardens (f) for its anise-flavored foliage and seeds, both of which are commonly harvested for use in cooking.



It is erect and cylindrical, bright green, and smooth as to seem polished, with multiple branched leaves cut into the finest of segments (c). The leaves are finely dissected, with the ultimate seg- ments filiform (threadlike), about 0.5 mm wide. The bright golden flowers, produced in large, flat terminal umbels, with thirteen to twenty rays, bloom in July and August(d).

Seeds ripen from September to October. This plant can reproduce from crown or root fragments but freely reproduces from seed.

Ayurvedic properties

Hindi / Sanskrit		English	
RASA	Madhura, Katu, Tikta	Taste	Sweet, Pungent, Bitter
GUNA	Laghu, Snigdha	Physical Property	Light, Unctuous
VIRYA	Ushna	Potency	Hot
VIPAKA	Madhura	Metabolic Property (After Digestion)	Sweet

Chemical Composition

The preliminary phytochemical study revealed the presence of saponins, flavonoids, cardiac glyco- sides, sterols, triterpenes, coumarins and volatile oils.[10,11] It also contains protein, fat, minerals, fibre and carbohydrate. The minerals and vitamins identified in Foeniculum vulgare were included calcium, potassium, sodium, iron, phosphorus, thiamine, riboflavin, and niacin.[12]

Ancient Verse About Mishreya

छत्रा शालेयशालीनो मिश्रेया मधुरा मिसिः । मिश्रेया तद् गुणा प्रोक्ता विशेषाद्यो निशूलनुत् ।।

अग्निमान्द्यहरी हृद्या बद्धविट् कृमीशुक्रहृत् । रूक्षोष्णा पाचनी कासवमिश्लेष्मानिला ह्रेरत् ।। (भा.प्र.)[4]

Classification

- Kingdom - Plantae
- Subkingdom - Tracheobionta
- Superdivision - Spermatophyta
- Division - Magnoliophyta
- Class - Magnoliopsida
- Subclass - Rosidae
- Order - Apiales
- Family - Apiaceae
- Genus - Foeniculum
- Species - Foeniculum vulgare

Introduction of PCOS

Polycystic ovary syndrome (PCOS) is a condition that affects a woman's hormone levels. PCOS af- fects a woman's ovaries, the reproductive organs that produce estrogen and progesterone — hor- mones that regulate the menstrual cycle. The ovaries also produce a small amount of male hor- mones called androgens. Polycystic ovarian syndrome (PCOS) is a chronic, anovulatory entity. In- dependent ultrasound and endocrine studies have suggested that PCOS is the cause in one-third of women with amenorrhea and in 90% with oligomenorrhea.[5] Most women with PCOS have elevat- ed levels of luteinizing hormone and reduced levels of follicle-stimulating hormone (FSH), coupled with elevated levels of androgens and insulin.[6] These imbalances can manifest as oligomenorrhea or amenorrhea (infrequent or lack of menstruation). Underproduction of estrogen and overproduc- tion of androgens (testosterone, dehydroepiandrosterone, and androstenedione) by the ovaries can result in a number of additional clinical features, including tiny cysts on the surface of the ovaries (polycysts) and hair and skin symptoms.[7]

Ayurveda review of disease

In Ayurveda, the cardinal sign of vyadhi is agnimandya. Consideration of Jatharagni and dhatvagni dysfunction is of prime importance in lifestyle disorders. In ayurveda PCOS is not described as a separate heading, but can be portrayed under the headings of various yonivyapadas (genital pathologies) and aartavadushti (menstrual pathologies). Pcod can be correlated with pushpagani jataharini, aartavakshaya (hypomenorrhea), nashtartava, arajaska, ksheenaartava, (oligomenorrhea), and granthibuta aartava (clotted menses).

Vata and Kapha doshas as well as vishama aahar and vihara leads to reduced digestive fire and causes production of Ama (undigested food). This ama production causes improper enzymatic reac- tions leading to incomplete metabolism and hormonal imbalance. This hormonal imbalance causes hyperinsulinemia and hyperandrogenism ultimately leading to anovulation and amenorrhea/ oligomenorrhoea and ovarian abnormalities like polycystic ovaries.[8]

The reality behind the adjustment of each stage is because of pitta recreated in the impact of the hormones on the different phases of the ovarian and menstrual cycles.

If pitta predominates it manifests as hair loss, acne, painful menses, clots and heart problems. Kapha predominance manifests as increased weight, subfertility, hirsutism, diabetic

tendencies and cold- ness. predominance of vata is manifested as painful menses, scanty or less menstrual blood and se- vere menstrual irregularity.[9]

Work of Foeniculum vulgare on PCOS

Foeniculum vulgare seeds are used as a good supplement for management of PCOS. They are rich source of phytoestrogens. The anti-fertility effect of Foeniculim vulgare seed extract was studied. The compound anol or anethole, the major active compound of fennel oil, is considered to be an active estrogenic agent due to its structural resemblance to diethylstilbesterol, a synthetic estrogen. The extract was found to increase nucleic acids and protein concentration as well as the organ weights in both tissues. Phytoestrogens content in fennel helps in reducing insulin resistance and in bringing down the inflammation in PCOS. It also believed that helps in reduce the cellular imbal- ance which leads to metabolic disturbances in PCOS. The estrogenic effects of oral fennel extract for 10 days on the weight of female genital organs (the mammary glands, oviduct, endometrium, myometrium, cervix, and vagina) have been shown.[13] Fennel due to phytoestrogen compounds and according to traditional believes has the potential for management of polycystic ovary (PCO) treat- ment. Fennel extract reduced the serum estrogen level and thickness of uterine epithelial cells and increased the serum progesterone level and endometrial thickness of PCOS.[14]

CONCLUSION

PCOS is a leading cause of infertility in women. Another highlighting cause for PCOS is obesity. The likely treatment routine to be followed in the board of Artava Kshaya w.s.r. PCOS has been planned with reasonable clinical confirmations. The correct execution of such regimens in Ayurveda after a gathering of progressively clinical information can unquestionably contribute to the prove based methodology of conventional prescription. Foeniculum vulgare seeds are used as a good sup- plement for management of PCOS. They are rich source of phytoestrogens. Phytoestrogens content in fennel helps in reducing insulin resistance and in bringing down the inflammation in PCOS. It also believed that helps in reduce the cellular imbalance which leads to metabolic disturbances in PCOS.

REFERENCES

1. Muckensturm B, Foechterlen D, Reduron JP, Danton P, Hildenbrand M. Phytochemical and chemotaxonomic studies of *Foeniculum vulgare*. *Biochemical Systematics and Ecology*, 1997; 25(4): 353–358.

2. Wesam Kooti, Maryam Moradi, Sara Ali-Akbari, Naim Sharafi-Ahvazi, Majid Asadi-Samani, Damoon Ashtary Larky. Therapeutic and pharmacological potential of Foeniculum vulgare Mill: A review. J Herb Med Pharmacol, 2015; 4(1): 1-9.
3. *(*"Classification for Kingdom *Plantae* Down to Genus *Foeniculum Mill.*". US Department of Agriculture, Natural Resources Conservation Service. 2015. Retrieved 24 March 2015.)
4. The bhavprakash nighantu with elaborated Hindi commentary of Padamshri Prof Krishna chan- dra chunekar and edited by Dr. Ganga Sahay pandey: edition 2010; page number - 36-37 and verse number- 89-92.
5. Hull MGR: Polycystic ovarian disease: Clinical aspects and prevalence. *In* Research and Clinical Forums, ID Cooke, B Lunenfeld (eds). Kent, Royal Wells Medical Press, 1989; 21–33.
6. Haqq L, McFarlane J, Dieberg G, Smart N. Effect of lifestyle intervention on the reproductive en- docrine profile in women with polycystic ovarian syndrome: a systematic review and meta-analy- sis. *Endocr Connect*, 2014; 3: 36–46.
7. Salley KES, Wickham EP, Cheang KI, Essah PA, Kargane NW, Nestler JE. Glucose intolerance in polycystic ovary syndrome: a position statement of the Androgen Excess Society. *J Clin En- docrinol Metab*, 2007; 92: 4546–4556.
8. Raju NK, Diagnostic and Therapeutic approach to Polycystic Ovary syndrome to Ayurveda. Ayurvedaline.
9. Ade JS, Madgundi AK, Deore SS. Polycystic Ovary syndrome: An Ayurvedic perspective W.S.R. kriya Sharir- Review article. International Journal of Applied Ayurvedic Research, 2014; 1(8): 1-5.
10. Tanira, MOM et al. Pharmacological and toxicological investigations on Foeniculum vulgare dried fruit extract in experimental animals. Phytother Res., 1996; 10: 33-36.
11. Saini N, Singh GK and Nagori BP. Physicochemical characterization and spasmolytic activity of essential oil of fennel (Foeniculum vulgare) from Rajasthan. International Journal of Pharmacotherapy, 2014; 4(2): 97-103.
12. WHO monographs on selected medicinal plants, 2001; 3: 136-138.
13. Elizabeth AA, Josephine G, Muthiah NS and Muniappan M. Evaluation of analgesic and anti- inflammatory effect of Foeniculum vulgare. Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2014; 5(2): 658-668.
14. Malini T, Vanithakumari G, Megala N, Anusya S, Devi K, Elango V. Effect of Foeniculum vul- gare Mill. seed extract on the genital organs of male and female rats. Indian J Physiol

Pharmacol, 1985; 29: 21–26.

15. Sadr Fozalaee S, Farokhi F, Khaneshi F. The effect of metformin and aqueous extract Foenicu- lumvulgare (fennel) on endometrial histomorphometry and the level of steroid hormones in rats with polycystic ovary syndrome. Qom Univ Med Sci J, 2015; 8: 12–19.