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Role of *Shatapushpa (Anethum sowa Kurz.)* In female reproductive health- a narrative review

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ABSTRACT

Ayurveda is the one of the ancient medical systems in the world which aims to restore physical and mental health and prevent and treat diseases as well. In relation with the female reproductive health, *Ayurveda* has contributed immensely. Among various plants, *Shatapushpa,* as mentioned by *Acharya Kashyap in Shatapushpa-Shatavari kalpa adhyaya,* plays an important role in the treatment and prevention of various diseases concerning the female reproductive system. With advancement and modernization, our lifestyle and food habits have changed drastically, which have adversely affected the normal physiology of the female reproductive system. Stress, competitive lifestyle, westernized food habits, depression, malnutrition etc. have brought in a host of gynaecological disorders specially among the female population in India and world-wide as well.

Ayurveda has always been stressing both on preventive as well as curative aspect of diseases. Therefore, low cost and effective therapy is the need of the hour in the present era. *Shatapushpa*, in various forms such as *Churna, taila, kwath* etc. or in compound formulation can be used in the treatment of various gynaecological disorders and thus help in the maintenance of the HPO-axis. Hence, an effort has been made through this study to lay importance and significance on the utility of *Shatapushpa* in clinical practice to combat the crisis among the female population in urban and rural India as well.

Keywords- *Ayurveda*, *Shatapushpa*, female reproductive system, gynaecological disorders.

INTRODUCTION

Gynaecological disorders are currently one of society's health concern because of today's sedentary lifestyle and lack of physical activity. The menstrual function in a female is deemed to be one of the main factors reflecting the functional potentiality of women which will be disturbed by some sort of discomfort in more than 50% of women[1]. Women, today must deal with obstacles brought on by hectic lives that lead to *Mithyaahara* and *Vihara*, over-exertion and malnutrition, which can result in *Vikruti* in "*Rituchakra*" and a variety of *Vyadhis* related to menstruation. No gynaecological illness can develop without the involvement of vitiated *Vata Dosha*, according to various *Ayurvedic* Scholars.[2,3]

As per modern medicine, neuroendocrinology along with vast hormonal interactions is responsible for maintaining the physiology of menstruation and reproductive functions in a woman.

It is now well established that a normal menstrual cycle depends on cyclical ovarian steroid secretions, which in turn are controlled by the pituitary and the hypothalamus and, to some extent, are influenced by the thyroid and adrenal glands. It is therefore essential to understand the hypothalamus-pituitary-ovarian (HPO) axis in normal women and apply this knowledge in therapeutic management in infertility, family planning and various gynaecological disorders.[4]

It is evident that the bodily metabolism plays an important role in the cause and treatment of menstrual disorders as per various studies.

For proper maintenance of uterine tone and regulation of uterine contractions, many effective ayurvedic regimens have been described in ayurvedic texts and various studies have also been conducted; but a proper understanding and interpretation of the disease spectrum is not available, furthermore the documentation of these data in terms of research is lacking.[5]

Acharya Kashyap has elaborated various uses of Shatapushpa in the *Shatapushpa-Shatavari kalpa adhyaya in Kashyap Samhita or Vriddhajivakiya Tantra.*

AIMS & OBJECTIVES:

1) To explore and study the properties of *Shatapushpa* concerning its utility in female reproductive health.
2) To correlate the properties of *Shatapushpa* as per modern and *Ayurvedic* view.
3) To derive *Shatapushpa* as a cost-effective, single drug treatment for various gynaecological disorders.

MATERIALS & METHODS:

Ayurvedic texts were reviewed to analyse the various aspects of *Shatapushpa* and correlated with various research papers establishing the concept as per evidence-based preventive and curative advancements in relation to female reproductive health. Databases like PubMed, Scopus were reviewed using keywords like *Shatapushpa,* Anethum sowa, *Kashtartava, Artavadushti,* flavonoids, *Udavartini, Ayurveda etc.*

LITERATURE REVIEW:

Sanskrit name- *Shatapushpa*

Botanical name- Anethum sowa Kurz.

Famiy- Apiaceae

Synonyms- *Atilambi, Sitachatra, Madhura, Karavi, Misi, Shatahva, Samhita Chatrika*[6]

Regional names- Soya(Hindi), Dill(English), Suva(Gujarati), Shatakuppivirai(Tamil), Shatakuppivittalu(Telegu), Shaluka(Bengali), Shivitt(Arabic)[7]

Chief characters-

1. Perennial herb.
2. Bifoliate or trifoliate compound leaves.
3. Yellow coloured flowers.
4. Compound umbel inflorescence
5. Fruit- Cremo carp, 3-4mm long, dorsal and intermediate ridges distinct.
6. Flowering and fruiting time- January to March
7. Kinds and varieties- Fruits of the Indian variety (Anethum sowa Kurz.) are longer in size and has dorsal ridges which are paler in colour as compared to those of the European species.
8. Dose- Powder-1-3gm, Oil- 1-3drops, *Arka*-20-40ml.
9. Formulations- *Shatapushpadi lepa, Shatapushpadi Kashaya, Arka soya, Shatapushpadya churna.*[8]

Pharmacodynamics:

Rasa: Katu, Tikta
Guna- Laghu, Ruksha,Tikshna
Virya- Ushna
Vipaka- Katu

Pharmacological actions- *Vatakaphahara, Deepana, Pittakrita*.

As per *Kashyap Samhita, Shatapushpa* is indicated to be sweet (*Madhura),* anabolic(*bringhaniya),* strength providing(*balya),* promoter of nutrition, complexion and digestive/metabolic fire (*Pushti-varna-agni Vardhani).* It is initiator of ritu(menstruation/ ovulation) i.e *ritupravartani* , is virtuous(*dhanya),* clarifies *yoni*(female reproductive organs) and *shukra(*sperm/spermatic fluid), is hot, supresses *Vata,* is auspicious, eradicates effect of evil deeds, gives progeny and increases *virya(*virility).

According to *Kashyap,* by the use of *Shatapushpa, vandhya(*infertile women) and *sandha*(impotent/hermaphrodite woman) also delivers, the aged becomes young and also attains strength and complexion, becomes endowed with lustre, *ojas, buddhi*(critical understanding), longevity, intellect, progeny and patience has absence of wrinkles and greying of hair.[9]

CHEMICAL COMPOSITION

Researches shows that Shatapushpa has following composition:

Carbohydrate, Fiber, Ash, Calcium, Magnesium Phosphorus, Iron, Sodium, Potassium, Zinc, Vitamin A, thiamine, riboflavin, protein, Niacin, Vitamin B6, essential oil which contain carvone, limonene, and a-phellandrene., fatty oil and palmitic and linoleic acid were the major saturated and unsaturated fatty acids. Glutamic acid, glycine and lysine were found as the major amino acids.

Qualitative phyto-chemical evaluation of methanolic extract of dried fruit of Shatapushpa reveals presence of

alkaloids, carbohydrates, tannin, triterpenoids, flavonoids, proteins.[10]

OBSERVATION

The incidence of gynaecological disorders is on a rise due to lifestyle changes i.e due to *mithya ahara* and *vihara.* As per *Ayurvedic* classics, various treatment principles have been mentioned by various scholars.

It has been seen that Shatapushpa has been considered as the one of the most significant drugs by *Acharya Kashyap* in treating various gynaecological disorders and obstetrics related ailments.

Phytochemical analysis of *Shatapushpa* revealed the presence of alkaloids, carbohydrates, tannins, triterpenoids, flavonoids and proteins in methanol extract of *Shatapushpa.*

Mode of action of various active constituents:

- Triterpenoids- they are multifunctional in nature, possess anti-inflammatory and anticarcinogenic activity. It has been found that triterpenoids are potential agents for chemoprevention and therapy for breast cancer.
- Flavonoids- they put on potent protective potency in hypertensive disorders in pregnancy, especially in preeclampsia.

  Flavonoids play significant role in the prevention of ovarian and endometrial cancers.[11]

There have been studies regarding the protective effect of flavone luteolin, flavonol kaempferol and total or individual isoflavones (daidzein, genistein, glycitein) against ovarian and endometrial cancers.

Studies have shown that luteolin and kaempferol possess antioxidant, antimicrobial and anticancer activities. They also have been known to have cardioprotective, antidiabetic and neuroprotective effects. Luteolin and kaempferol inhibit prelabour and proinflammatory mediators in human gestational tissues.[12]

To date, numerous studies have demonstrated the potential of kaempferol to induce tumour cell apoptosis, inhibit proliferation, and prevent metastasis and invasion in several gynaecological malignancies, including breast, ovarian and endometrial cancers.[13]

Various preclinical studies have shown that kaempferol and some glycosides of kaempferol have a vast range of pharmacological activities, including anti-inflammatory, antioxidant, antimicrobial,cardioprotective, neuroprotective, anticancer, antidiabetic, anti-osteoporotic, estrogenic/antiestrogenic, anxiolytic, analgesic and antiallergic activities.[14]

Kaempferol, trans-anethole and limonine possess phytoestrogenic activity. Therefore, depending on the target tissue, they exhibit both, hyper estrogenic and hypoestrogenic action. Hence, they are beneficial for amenorrhoea, menorrhagia and various other menstrual disorders.

- Proteins- They help in maintaining feto-maternal well-being by aiding in the expansion of blood volume and growth of maternal tissues. Protein forms the basic foundation for the proper growth of fetal organs including the brain and therefore is very essential for a healthy pregnancy outcome.

DISCUSSION

Therefore, it can be summarized as:

Gynaecological disorders	Probable mode of action of *Shatapushpa*
Anovulatory menstruation	Due to its *Ushna virya,* it is beneficial for ovulation(*beejotsarga)* and hence maintain healthy ovulatory menstrual cycle.
Infertility and Pre-conception care	Due to its *Ushna virya,* it suppresses Vata dosha which is the main reason for *yonivyapads.* Moreover, it possess *Madhura rasa, has qualities such as Bringhana, Balya and Rasayana* which favours conception by promoting enhancement of receptibility of endometrial lining.
Amenorrhoea, Oligomenorrhoea, Menorrhagia, Menopausal syndrome	Due to its estrogenic activity, it aids in maintaining the HPO-axis and hence proves to be beneficial for relieving complaints of various menstrual disorders
Polycystic ovarian syndrome	Due to its *guna*, such as Katu, *Tikshna* and *Ruksha*, it clarifies *yoni* i.e works as *Srotoshodhak* by removing obstruction in the *srotas*.
Delayed menstruation	Due to *pittakrita* action, it aids in the initiation of *ritu* or menstruation.
Dysmenorrhoea	Due to its Vataghna action, it alleviates the pain and discomfort.
Pregnancy	Due to presence of properties like *bringhana, balya*, *Pushti-varna-agni Vardhani,* it helps to nourish the endometrial lining. It also contains minerals such as calcium, iron etc. which are essentially required for a healthy pregnancy and thereby creating healthy progeny.
Lactation	Due to its qualities like *Madhura, balya, bringhana* and protein content it proves to be beneficial in poor lactation and hence stands to be a good galactogogue.

CONCLUSION

Menstruation is a normal physiological phenomenon which forms the backbone of fertility and production of a healthy progeny. The change in our diet and lifestyle i.e *mithya ahara-vihara* have brought in a host of various gynaecological problems. Hence, through the above study it can be inferred that *Shatapushpa* can be an effective, low cost, easily available single drug therapy for maintenance of

normal physiology of the female reproductive system and treatment of various menstrual disorders. This single drug may be used in various forms such as *taila, churna,* or in compound formulation depending on the type and severity of the disease. Therefore, *Shatapushpa* may be incorporated as a single drug remedy for female reproductive problems in our health care system.

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