Abstract—
Unhealthy Dietary habits like excessive intake of junk food, improper timing of diet; lack of exercise, excess stress have made females prone for many gynaecological disorders like dysmenorrhoea, infertility etc. In spite of advances in science, management of gynaecological disorders is still not satisfactory. As hormonal and surgical treatment approach is having various side effects, herbal treatment following Ayurvedic principles is most dependable. *Anethum Graveolens* (Shatapushpa) commonly known as “Dill” has been recognized in different system of traditional medicines for the treatment of different diseases and ailments of human beings. *Anethum graveolens* is especially useful in menstrual disorders and also in other gynaecological disorders. Use of *Anethum graveolens* has been described in the treatment of many diseases in Ayurveda literature. Various recent researches have also proved its beneficiary effects in various disorders like dysmenorrhoea, post partum haemorrhage etc. Present study is done in view to study *Anethum graveolens*, with respect to its active components, its uses in gynaecological diseases and exploiting its future scope in management of gynaecological disorders.

**Key Words:** Gynaecological disorders, *Anethum graveolens*, Shatpushpa

**Introduction**

*Anethum graveolens* (Dill), from *Apiaceae* family, is a traditional herb that has various medical indications worldwide [1]. *Anethum graveolens* L. (dill) believed to be the native of South-west Asia or South-east Europe and distributed throughout India. Dill usually grows to 40-60 cm [2]. Dill has a very long history of herbal use going back more than 2000 years. The seeds are a common and very effective household remedy for a wide range of digestive problems. The dill is used as an aromatic, carminative, mildly diuretic, galactogogue, stimulant and stomachic. It is also used to increase the flow of milk in nursing mothers, to help prevent colic, for bad breath, cough, cold and flu, period pains [3,4,5]. *Anethum graveolens* is used in the preparations of more than 56 ayurvedic preparations, which include Dasmoolarishtam, Dhanwanthararishtam, Mrithasanjeevani, Saraswatharishtam, Gugguluthiktaquatham, Maharasnadi kashayam, Dhanwantharam quatham and so on[6].

This review study is focused on diversity of plant *Anethum Graveolens*, its active component and its biological roles reported and studied in humans and animals mainly in Gynaecological disorders.
Methodology

Search criteria

Original articles and research papers in published journals and in Pubmed central on Shatpushpa (Anethum graveolens) in relation to gynecological diseases were studied out and related articles and papers were taken into consideration (table-1). Ayurveda literature including Samhita and Nighantu related to Shatapushpa (Anethum graveolens) was also studied. Information regarding gynaecological disorders was collected from modern and Ayurveda literature. All the literature was especially studied for medicinal use of Anethum graveolens in gynaecological diseases and taken in to consideration. More emphasis has been given on clinical trials carried out on Anethum graveolens. Finally results were obtained from all the data and literatures studied.

In present review it is observed that other variant of Shatapushpa (Peucedanum graveloens) was used in the research study of Clinical efficacy of Ayurveda treatment regimen on Subfertility with Poly Cystic Ovarian Syndrome (PCOS) [7].

Plant description-

The Plant is a glabrous (hairless) aromatic annual herb, hallow finely grooved stem, Striped dark green and white with bluish spots; leaves compound, 2-3 pinnate, bluish green, segments fil form, leaf sheath surrounds the stem, flowers yellow, in flat compound umbels, fruits narrowly winged, vittae large and conspicuous.

Distribution-

It grows throughout India, chiefly in Punjab, Uttarpradesh, Gujarat, Maharashtra, Assam and west Bengal [8-9].

Vernacular Names and Properties of Shatapushpa are as shown is Table no. 2-

<table>
<thead>
<tr>
<th>Search string</th>
<th>Article in Google</th>
<th>Article in Google scholar</th>
<th>Article in Pubmed</th>
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</thead>
<tbody>
<tr>
<td>shatapushpa</td>
<td>3220</td>
<td>91</td>
<td>8</td>
</tr>
<tr>
<td>Shatapushpa in Gynaecological disorders</td>
<td>1160</td>
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<tr>
<td>Anethum Graveolens</td>
<td>64900</td>
<td>8910</td>
<td>176</td>
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<tr>
<td>Anethum Graveolens in Gynaecological disorders</td>
<td>1530</td>
<td>164</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure -1 : Shatapushpa Habitat

Figure -2 : Inflorescence of Shatapushpa
Table 2: showing the description of Shatapushpa

<table>
<thead>
<tr>
<th>Plant Description</th>
<th>Vernacular Names</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingdom: Plantae</td>
<td>English Name- Dill</td>
<td>Rasa- Katu-Tikta</td>
</tr>
<tr>
<td>Subkingdom: Tracheobionta</td>
<td>Hindi- Soya</td>
<td>Virya- Ushna</td>
</tr>
<tr>
<td>Super division: Spermatophyta</td>
<td>Marathi- Balantshopa</td>
<td>Vipak – Katu</td>
</tr>
<tr>
<td>Division: Magnoliophyta</td>
<td>Kannada- Sabbasige</td>
<td>Guna- Laghu, Ruksha, Tikshan</td>
</tr>
<tr>
<td>Class: Magnoliopsida</td>
<td>Malayalam- Satakuppa</td>
<td>Doshakarma- Kaphavata shamak [10]</td>
</tr>
<tr>
<td>Subclass: Rosidae</td>
<td>Sanskrit- Shatapushpa</td>
<td>Tamil- Satakuppi</td>
</tr>
<tr>
<td>Order: Apiales</td>
<td>Telugu- Satakuppivittulu</td>
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<tr>
<td>Family: Apiaceae</td>
<td>Other names- Shatahva, Potika, Madhavi, Chhatra, Sugandh, Shatprasuna, Shifa, Karvi, Shatpushika[10]</td>
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</tr>
<tr>
<td>Genus: Anethum</td>
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<tr>
<td>Latin Name- Anethum Graveolens</td>
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<tr>
<td>Part used- Fruits[9].</td>
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<tr>
<td>Taste- Bitter(tikta), Acrid(Amla)[8, 11].</td>
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<td>Chemical Constituents-</td>
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<tr>
<td>Anethum graveolens contains proteins (15.68%), carbohydrates (36%), fiber (14.80%), ash (9.8%), essential oils, fatty oil, moisture (8.39%) and mineral elements such as calcium, potassium, magnesium, phosphorous, sodium, vitamin A and niacin. Fruits of Anethum graveolens contain 1 - 4% essential oil comprising of major compounds: carvone (30 - 60%), limonene (33%), α-phellandrene (20.61%), including pinene, diterpene, dihydrocarvone, cineole, myrcene, paramyrcene, dillapiol, isomyristicin, myristicin, vicenin, glycoside dillanoside. Anethum graveolens essential oil also contained furanocoumarin, 5-(4-hydroxy-3”methyl-2”- butenylxyloxy)-6, 7- furocoumarin, oxypeucedanin, oxypeucedanin hydrate and falcariadiol. Seed oil also contains tripetroselinin, petroselinic diol, dipetroselinicolein[12-18].</td>
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<tr>
<td>Observations-</td>
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<tr>
<td>The major biological properties and gynaecological uses of Anethum graveolens includes:</td>
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<tr>
<td>1. Postpartum hemorrhage-</td>
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<td>Atonic uterus is the most common cause of post partum haemorrhage. Researchers have proved that Dill seed extract is useful for the contraction of uterus. A dose of 6-7 gm of dill seed extract after delivery decreases postpartum haemorrhage due to its contractive characteristic. Limonene and Anethum showed contractive effect on uterine myometrium [19-25]. Ishikawa et al. and Mahdavian et al. also found that aqueous extract of Dill fruit decreases postpartum haemorrhage through increasing the uterus contractions [26].</td>
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<td>2. Dysmenorrheoa-</td>
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<td>Dysmenorrhea literally means painful menstruation. It is one of the most common gynaecological problems. Primary dysmenorrhea is one where there is no identifiable pelvic pathology. Incidence of primary dysmenorrhea of sufficient magnitude with incapacitation is about 5-10% [27]. In double-blind randomized study by Reza et al., it was demonstrated that Dill can be as effective as mefenamic acid in decreasing the pain severity of primary dysmenorrhea. [28].</td>
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<tr>
<td>3. Labour pains-</td>
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<tr>
<td>Anethum Graveolens seed affect the pattern of uterine contraction and shorten the fall time although feedback mechanism is not known. Dill seed consumption, due its contents and combination such as limonene and tannin increases the contraction of uterus and causes better progress of</td>
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</table>
delivery process. Dill seed consumption shortens the first stage of labour. Dill seed can be used for augmentation of uterine contraction in low risk women in labour and also prevention of post term pregnancy [29-31].

4. Galactagogue-

Adequate breast feeding is must for normal physiological growth of baby especially up to the first six month of life. Sometimes if there is inadequate production of milk, growth of baby is likely to be affected. *Anethum Graveolens* has capacity to increase the production of milk and researchers, literature have proven it. So it can be used as Galectogogue [32-34].

5. Postmenopausal female-

Postmenopausal women are at a risk of developing diseases like osteoporosis, cardiovascular diseases and cancer along with their mortality rate and burden of their management and side effects have turned attention of all medical sciences to a safe, cheap and effective alternative. Phytoestrogens are now being thought beneficial in such patient and gaining popularity [35]. *Anethum Graveolens* contains Beta-Sitosterol and can be used as a source of Phytoestrogen. Phytoestrogens bind to oestrogen receptors just as oestrogen, but they have more affinity for oestrogen receptor β found in brain, bone, bladder and vascular epithelia. In breast and endometrial tissue, phytoestrogens acts as anti estrogenic. So when used in proper way these can be beneficial in breast CA, Endometrial CA, and also in the management of menopause. These are also useful in reducing the menopausal sign and symptoms like hot flush, vaginitis, anxiety and osteoporosis [36].

6. Infertility-

Use of *Shatapushpa* oil for *Nasya, abyanga* and *basti* is beneficial in female infertility. Oral intake of *Shatpushpa kalpa* and *Shatapushpa* oil also found useful in infertile female [37].

7. Hyperlipidaemic effects

The crude extract of *Anethum graveolens* L showed anti-hyper cholesterolaeic and anti-hyperlipidaemic activities [38-39].

8. Anti oxidant:

Antioxidant activities of ethanolic extract from dill flower and its various fractions were evaluated with 2, 2-diphenyl-1-picrylhydrazyl radical scavenging, Trolox equivalent antioxidant capacity, reducing power, chelating power, and β-carotene bleaching assays [40-41].

9. Antimicrobial:

*Anethum graveolens* is found activity against *S. aureus, E. coli, P. aeruginosa, S. typhimurium, Shigella flexneri* and *Salmonella typhi*. [42-44].

10. Anti-inflammatory and analgesic effects:

The hydro alcoholic extract of the *Anethum graveolens* seed caused significant decrease in the inflammation and pain in rats. *Anethum graveolens* oil and diclofenac-gel showed a significant (p < 0.001) decrease in the paw volume in rats compared to the blank group. *Anethum graveolens* oil showed even more decrease in the paw volume compared to the diclofenac. So it can be used as an anti-inflammatory and analgesic agent [45-46].

11. Other-

Seeds have essential oil and are used for treatment of stomach illnesses, food digestion, stopping hiccup, relieving of pain and as anticonvulsant and antivomiting [47].

Discussion-

All these above studies prove that *Anethum graveolens* is useful in gynaecological disorders like dysmenorrhoea (Especially in Primary dysmenorrhoea), Post partum haemorrhage, for increasing labour pains. *Shatapushpa* oil is beneficial for *Nasya, Abyanga* and *Basti* in cases of infertility. *Artav (Ovum)* is having *Agney* (hot) Property, *Shatapushpa* is with *Katu Rasa* and *Ushna Virya* can be used for the purpose formation of *Stri Beej* (Ovulation). Researchers and literature have proven that *Anethum Graveolens* has capacity to increase the production of milk. It is also rich source of Phytoestrogen hence can be effectively used in menopausal females for symptoms like hot flush, vaginitis, anxiety and osteoporosis. Phytoestrogens acts as anti estrogenic in breast and endometrial tissue, so when used in proper ways these can be beneficial in breast CA, Endometrial CA. Along with this it is also beneficial as antioxidant, antihyperlipidemic, antiinflammattory and antimicrobial. Seed oil is also effective in stomach illnesses, food digestion, stopping hiccup, relieving of pain. *Shatapushpa* grows throughout in India and
easily available. It is also cheaper, hence can be used widely for treating various disorders.

**Conclusion-**

In present review it is clear that *Shatapushpa* has properties which are useful for treating many gynaecological disorders. *Shatapushpa* can prove key plant especially in the management of dysmenorrhea, infertility and menopause.

So it is concluded that existing preparations of *Anethum graveolens* can be effectively used in the management of various gynaecological disorders. Also, there is a great scope for development of new Ayurvedic preparations of *Anethum graveolens*.

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