

**CONCEPTUAL OVERVIEW OF SHATAVARI TAILA NASYA AND
UTTARABASTI IN MANAGEMENT STREE VANDHYATVA****Dr. Ankita Pandey^{*1}, Dr. Anjana Saxena² and Dr. Sarika Srivastava³**

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ABSTRACT

“Aputrasya gatih naasti” means without a child there is no eternity. Couples that have been unable to conceive a child after 12 months of regular sexual intercourse without birth control are infertile. As per ayurveda Vandhyatva can be classified into 3 types i.e Vandya (Absolute sterility), Sapraja means Women in her reproductive age does not conceive after giving birth to one or more children (secondary infertility). Apraja means women conceive after treatment (Primary infertility). According to Acharya Kashyapa, couples who conceive naturally as a result of their past life acts are fortunate; if not, they should receive medical attention. Nasya and Uttar Basti have been indicated in female infertility. Acharya Charaka states that since Uttar Basti normalizes Vata, the yoni quickly retains Garbha. Nasya's role in regulating the HPO-axis may be associated with the nervous, vascular, and lymphatic routes. Many successful studies have demonstrated that

the olfactory and trigeminal nerves are the primary routes via which drugs are transported from the nose to the brain. Present review is an effort to understand the efficacy of Shatavari Taila Nasya and Uttar Basti in female infertility according to evidence based clinical trials. Drawing from existing research, we suggest that Shatavari could potentially ameliorate female reproductive health issues, such as imbalanced hormone levels, PCOS, follicular growth and development, oocyte quality, and infertility by potentially lowering the body's

level of oxidative stress and elevating the level of antioxidants. Ayurvedic management provides a promising, cost-effective avenue for addressing infertility disorders and enhances the success rates of in vitro fertilization (IVF), especially after previous unsuccessful attempts. This study aims to enhance clinical evidence and Ayurvedic methods for infertility.

KEYWORDS: Vandhyatva, infertility, Nasya, Uttarbasti, Shatavari taila, IVF, Ayurveda.

INTRODUCTION AND BACKGROUND

Infertility has profound psychological, social effects and trauma to the marriage. Recent WHO research estimates that 1 in 6 adults worldwide, or about 17.5% of the population, are infertile.^[1] In India, 3.9 to 16.8% of female suffers from primary infertility. Nearly 15% of couples worldwide are afflicted with infertility in developing countries.^[2]

It's a medical condition affecting either the male or female reproductive system, characterized by the inability to conceive despite having regular, unprotected intercourse for 12 months or more^[3] This emphasizes the crucial importance of making accessible, affordable, and high-quality fertility care available to those in need.^[4]

For couples all over, not being able to conceive is a difficult circumstance. Personal suffering and social retribution are just two of the many consequences of infertility.^[5] It is essential that infertility be addressed because its effects go beyond a person's physical incapacity to procreate, causing them great mental, emotional, and financial suffering.^[6] Although both men and women are responsible for infertility, societal perception often places a heavier burden of blame on women due to the traditional notion that women symbolize fertility.^[7] Effective therapies for infertility are provided by assisted reproductive technologies (ART), such as intrauterine insemination (IUI), intracytoplasmic sperm injection (ICSI), and in vitro fertilization (IVF), but these procedures can be expensive and place an extensive financial strain on families.^[8]

The current approaches to treating these problems primarily focus on artificially supplementing the glands rather than correcting their intrinsic mechanisms. Therefore, to target these gaps in the therapeutic It was proposed that nasya, which has been described as a treatment that directly affects shiras with the aid of Shringataka marma, would encourage the glands' normal functioning in cases of female infertility which possess the trait of hormonal imbalance.

The classical text of Ayurveda regards Basti Karma as the most significant remedy for numerous diseases. It is also an excellent treatment for infertility in women. Uttara Basti (Urethral/ Intra Uterine/ Intra Vaginal enema) is one among the three types of Basti which is indicated in a great spectrum of diseases pertaining to Yonigarbhasya (Uterus and Cervix) and Mootramarga (Urethra). It is capable of performing both Sodhana (Detoxification therapy) and Snehana (Oleation therapy).

Etiology^[9]

According to World Health Organization (WHO) in 37% of infertile couples, female infertility was the cause; in 35% of couples, both male and female causes were identified; in 8% there was male factor infertility. In the same study, the most common identifiable factors of female infertility are as follows:

- Ovulatory disorders: 25%
- Endometriosis: 15%
- Pelvic adhesions: 12%
- Tubal blockage: 11%
- Other tubal/uterine abnormalities: 11%
- Hyperprolactinemia: 7%

Epidemiology^[10]

Infertility is becoming more common and affects nearly one in six adult people who are of reproductive age. The situation gets worsened by the socioeconomic state of low- and middle-income countries. It necessitates that infertility patients receive high-quality, economically feasible care, as recommended by the World Health Organization (WHO).

In India, being the largest populous country, the major demographic focus has remained on population control. The country contributes to a large proportion of global infertility. Prevalence of infertility is 17.9% and the proportion remained static in the last two decades. Despite its great incidence, the illness is rarely treated in primary health care because none of the national health program cover it.

A number of variables have been linked to the rise in infertility, including genetics, altered lifestyles, elevated stress levels, and environmental contamination. There is a social stigma wherein marital discord is attributed to the female partner.^[11]

Vandhya has been mentioned by Charaka and Vagbhata in relation to Beejamsa dushti.^[12,13] According to Charaka, infertility can be caused by abnormalities in any one of the Shadbhavas (matraj, pitraj, atma, satwa, satmya, rasa). Vandhya has been discussed by Sushruta in Vataja Yoni-roga.^[14] In Kashyap Samhita Vandhyatva is mentioned in eighty rogas of vata. According to Bhela, infertility arises in women because of disorders of yoni, non-consumption of congenial rasas (malnutrition leading to inappropriate development of rasa dhatu and its updhatu artava), and abnormalities of mother and father's bija.^[15] Bhavprakash has mentioned Vandhya in yonirogadhi and mentioned Artavanasha as one among the 80 vatananatmaja vikara.^[16]

The first person to classify vandhyatvas in detail was Acharya Harita. Among the causes of infertility mentioned by Harita include childhood, garbhkoshbhanga, loss of dhatus, constriction of the uterus and vulva as a result of coitus performed on the girl prior to her menarche. Harita Samhita mentions six types of vandhya like Kakavandhya (secondary infertility), Anapathya (primary infertility), Garbhasrahvi (repeated abortions), Mrta vatsa (repeated still births), Balakshaya (Nutritional) and Vandhyatva due to injury to garbhashaya or bhaga.^[17]

Ritu (fertile period), Kshetra (uterus & reproductive organs), Ambu (appropriate nutritional fluid), Bija (shukra-shonita), and normalcy of hridaya (psychology) are considered essential requirements for conception in Ayurveda. Infertility may arise from abnormalities in the vayu and shadbhava systems. Yoni pradosh is the term for anomalies that prevent conception in the uterus, fallopian tubes, cervix, and vagina.^[18]

Nasya Karma

It's one of the major five karma of Panchakarma. It is also known as Shirovirechan, Murdhavirechan, Navana, and Nastahkarma. It is a therapeutic procedure in which Sneha (oil), Churna (powder), and Swaras (fresh juice) are instilled through nose. The term Nasya in Ayurveda refers to a method of administering medication. Nasya Karma primarily treats disorders of the upper clavicular area, or Urdhva-jatrugata Vikara.^[19]

Nasya also comes up in connection with menstrual problems in women; any malfunction initially impacts her hypothalamus functioning, which then shows up as a menstrual issue.

NASYA KARMA WAS PERFORMED IN FOLLOWING STEPS

1. Poorva Karma

- In a room having sufficient daylight and devoid of direct atmospheric influences like dust wind etc was selected.
- Abhyanga with lukewarm shatavari taila was done over Urdhwanga for 10 minutes.
- Mridu Svedana was given with steam.
- Patient was then asked to lie in supine position with head somewhat (45°) tilted from neck.
- Then slowly 8 drops of Shatavri Taila was inserted with the dropper in each nostril and the patient was asked to inhale slowly.
- Patient was advised to spit out the secretion which was collected in oropharynx.
- Forehead, frontal, maxillary and temporal areas were massaged.
- Svedana was again given with the steam machine for 2 minutes.
- Gandoosha with lukewarm water was advised after procedure.
- Patient was advised to go home after 1 hour of the procedure.
- They were asked to take care from direct wind, sunlight and cold

Uttar Basti

It's a type of Basti upakrama, a mode of administration of drug into the body. Uttar basti has been well highlighted in the classics for the management of most of the gynecological disorders.^[20,21] Charaka recommends the use of basti for repeated still births.^[22]

Definition

UttaraBasti is the Basti that is delivered through Uttarmarga or Utkrishta Avayava or a therapeutic process with Shreshta Guna.^[23] Put differently, as per Acharya Vagbhata, it is referred to as UttaraBasti because it is administered subsequent (Uttar) to the Niruha Basti procedure.^[24] The routes of administration differ for men and women. For men, the route of administration of UttaraBasti is Mootramarga; for women, the routes of administration are Mootra and Apathya Marga.^[25]

Indications: Uttar Basti is indicated in the following conditions.

1. Yoni vyapath
2. Pushpanasha
3. Garbhashaya vikaras.^[26]

Quantity & Frequency: Uttar basti can be administered three times a day on 3 consecutive days. Acharya Charaka mentioned is ½ pala (20g).

Uttar basti is advised to be given during the ritukala (period of ovulation) when yoni mukha is open.^[27,28]

Procedure: The physician should administer it to the women lying in supine position with knee flexed. Then introduce the nozzle into the vagina by pressing and squeezing the pouch.^[29] The process is repeated for 3–4 times after the previous medicine comes out.

Modified Uttarbasti

In modern practice, classical Uttarbasti has undergone significant modifications. Changes have been made to its indications, contraindications, instruments, and methods. Currently, Snehana-type Uttarbasti is more widely used, whereas Niruha-type Uttarbasti is employed by only a few practitioners.

- *Yoni Prakshalana* – Using Kwatha of drugs having antiseptic property eg- Panchavalkal kwatha, Dashmool kwatha.
- Sim's speculum retracts the posterior vaginal wall.
- An anterior wall retractor is used to retract the anterior vaginal wall and reveal the cervical os.
- The anterior lip of cervix is grabbed by the vulsellum.
- Gently reposition the cervix upwards and forward, then insert a uterine sound to measure the length of the uterine cavity and assess its position.
- Introduce Uttarbasti Cannula fitted with 5ml disposable syringe (pre filled with Shatavari taila) into the uterine cavity through cervix.
- Slowly inject 3-5 ml of shatavari oil.
- All instrument should be removed.
- Place a pichu (a type of absorbent cloth) soaked in Shatavari oil into the vaginal canal.
- Instruments are removed and the patient is shifted to bed.
- Ask the patient to lie in a low head supine position.

Considering, it became evident that these remedies were superior palliative treatments for a variety of illnesses affecting women, helping to restore the hormonal balance with positive outcomes. Based on the existing studies, we propose that Shatavari improves female reproductive health complications possibly by reducing Oxidative Stress level and increasing antioxidants level in the body. Further studies are required to elucidate the mechanism of

Shatavari actions at the level of ovary and oocyte that directly impacts the reproductive health of women.

Probable Mode of Action of Shatavari Tail

Vandyatva due to anovulation is vata-kapha pradhan vyadhi. In case of avaranatmak samprapti it is vata pitta pradhan vyadhi. In case of kshayatmak samprapti it is vikruti of vata dosha (i.e. Apan vayu karmatah hani) occurs. Hence the treatment is vata kaphashamak, agnidipan, pachak and vatanulomaka and brihan.

The drug 'Shatavari taila' has Tridosha Shamana property and is predominantly Vata Shamaka. It is also Agni Deepaka and Sroto-Shodhaka. Some of its ingredients have Anulomana (carminative) property, which also acts on Vata. The drug as a whole is Medhya, Ojasya, and Rasayana. Considering all these properties, the drug acts on the mind with the help of *Nasyakarma* which acts on the HPO-Axis and regularizes the hormonal imbalance. Ovulation and the emergence of the dominant follicle must have followed from this i.e., *Prakrutbeeja*.

Because Uttarbasti is a novel technique for gradually infusing medicinal oil through the cervical os, it directly affects the uterine endometrium. Administered drugs are directly absorbed through the endometrial blood vessels. The mulasthan of artava vaha srotasa is the uterus. The drug being directly instilled in the uterus gives direct access to the seat of strotovaigunya and dosha –dushya-sammurchana and hence acts on the vikrut vayu thereby disintegrating the samprapti. It also acts on ovary after absorption and affects the hypothalamic-pituitary-ovarian axis. Additionally, it activates certain endometrial receptors, which corrects all of the reproductive system's physiological functions. In Shatavari taila, Tila taila is used this increases the therapeutic benefits of the intervention. Taila with its sneha and sukshma gunas, may be easily absorbed through the mucous membrane, glands, and vessels, and by its steroidal action, gives nutrition and potentiates the endometrial receptors. That is why Shatavari taila Chikitsa given shows very good results in Infertility.

Tikta rasa of shatavari causes rasraktashodhana, agnideepana and amapachan. Madhura rasa of shatavari acts as sthanik balya and pittashamana. Shatavari is a phytoestrogen; it exerts both estrogenic and antiestrogenic activity. It acts in both high oestrogenic and low oestrogenic condition. Thus, it increases the endometrial thickness & menstrual flow. These are weaker than natural estrogens in action. In the presence of an excess of estrogens in the

body, phytoestrogens may have antiestrogenic effect by occupying the same estrogen receptor. In conditions of low serum estrogen, phytoestrogens occupy vacant receptors and stimulate estrogenic action.^[30] and estrogen is what makes woman, a woman.

The mineral elements found in the different parts of the herb were identified as calcium, magnesium, copper, iron, manganese, nickel, zinc, potassium, cobalt, and chromium. The roots are considered as an astringent. Hence, they reduce the menstrual flow by this property. Moreover, *Asparagus racemosus* was found to be an effective antiulcerogenic and antisecretory agent and thus has its role in healing of endometrium. It is also an adaptogen. It has significant antidepressant activity, and this effect is probably mediated through the serotonergic and the noradrenergic systems and augmentation of antioxidant defenses. This helps to reduce the stress levels in the body, thus normalizing the imbalance of hormones.^[31]

DISCUSSION

Infertility management entails identifying the precise reason of infertility, treating it, and providing counselling to both couples. Female infertility is caused by a variety of reasons, including cervical, tubal, and anovulatory factors. The most prevalent cause of female infertility is ovulation dysfunction. Another prevalent cause of infertility is Salpingitis, in which the tube lumen becomes adherent and obstructs the path between the uterus and abdominal cavity. Five percent of cases of infertility are caused by cervical variables, which include changed cervix pH. The other potential causes for infertility are endometriosis and long-term illness.

In condition of anovulation, Uttar Basti removes the srotosangha and corrects the artavagni which regulates the menstrual cycle, thus resulting in ovulation. The brain and pituitary gland produce hormones, which are received by receptors in the ovaries. The medication activates these receptors, facilitating appropriate ovulation during every cycle.^[32]

Suitable for a variety of infertility issues and reproductive tract disorders, Uttar Basti is a perfect local treatment for tubal obstruction. The medication is largely reaching the pathological location in tubal obstruction. Thus, Uttar Basti releases blockage and lyses adhesions to remove tubal block.

In cervical factor, drug administered locally in the cervix and absorbed by cervical epithelium due to Sukshma property of drug. In the direction of its concentration gradient, the lipid-soluble medication passively diffuses across the membrane. The rate of transport is

proportional to lipid: water partition coefficient of the drug. The more lipid soluble, higher is the concentration and quicker diffusion. In this way altered cervical pH can be corrected by Uttar Basti.

Uttar Basti helps in endometrial conditions by improving thickness of endometrium, improves the quality of endometrium, aid in the treatment of endometriosis; rapid absorption produces faster results.^[32]

Nasya acts on the Neurological pathway, stimulates the olfactory nerve that in turn stimulates the middle cephalic fossa and portion of amygdale. Further it acts on the Hypothalamus which is the processing centre of brain. The stimulation produced by the hypothalamus acts on the Anterior and posterior pituitary further regulates the hormonal production. Urdwa jatru is the kapha sthana so the endocrinal disorders which produce the infertility are may be produced by kaphavarana or vata vridhi kshayavasta. If Kaphavarana is there Shodhana nasya, In Vata vridhi avastha Shamana nasya and in vata kshayavasta Brimhana nasya is indicated. Always the doshas should be removed from the nearest root, Hypothalamus, pituitary, thyroid gland these are urdvajatrugata, so to remove the morbid dosha nose is the nearest root and the nasya is the best treatment modality.^[33]

Discussion on HPO axis Pituitary secretions include the gonadotropin hormones, LH and FSH. For the development of the immature ovum (Primordial follicle in the ovary) FSH is required, and LH triggers ovulation.^[34] The secretion of FSH and LH from the pituitary gland is under the control of Gonadotropin releasing hormone from the Hypothalamus^[35], and the hypothalamus in turn is controlled by the levels of the ovarian steroid hormones' oestrogen and progesterone in the blood by means a feedback mechanism. When we administer the Nasya, it leads to the stimulation of Hypothalamus and Pituitary to release hormones that in turn stimulates the ovarian axis.

The above-mentioned drugs could be regulating the Gonadotropin Releasing Hormone to induce ovulation and improving uterus blood flow, menstrual changes of endometrium. They are useful in infertility resulting from anovulation, cervical factors, tubal factors and immunological disorders. Strict aseptic measures should be adopted to avoid complications.

CONCLUSION

This review provides an overview and assessment of the data supporting the use of Nasya and Uttar basti for infertility in women. Extensive research is required to investigate potential

mechanisms, such as the optimal dosage, adverse effects, and safety of Ayurvedic medication in the management of infertility. Nasya and Uttar Basti have a lot of therapeutic potential. Choosing the right medication and timing of administration is crucial to achieving the intended effects. These treatments offer the advantages of boosting ojus, reviving the hormonal balance, and aiding in conception. Reproductive physiological abnormalities are the cause of infertility, which can lead to endometrial polyps, tubal obstructions, anovulatory cycles, PCOD, and other disorders. Standard hormonal replacement therapy and surgical management are expanded extensively by modern medical science. In order to achieve deha and kshetra shuddhi and normalize hormones to build a healthy pregnancy, Ayurvedic therapies can be used to circumvent this. As a result, treating the many causes of infertility using Ayurvedic medicine can be seen of as an effective therapy approach.

■ **Below are a few synopsis of the research on Nasya and Uttar Basti**

- These data provide an overview of Uttar Basti and Nasya's possible application in treating female infertility, along with an evidence-based assessment of the treatment's effectiveness.
- 1. Rawat Stuti et al: Role of Nasya Karma In Gynecological And Obstetrical Conditions-
- 2. Madhushree Ragi Et Al: Effect Of Nasya In Endocrinal Disorders W.S.R To Female Infertility Retrospective Analysis Of Case Series. International Ayurvedic Medical Journal {online} 2017{cited April, 2017}
- 3. Donga KR, Donga SB, Dei LP. Role of Nasya and Matra Basti with Narayana Taila on anovulatory factor. Ayu. 2013 Jan;34(1):81-5. doi: 10.4103/0974-8520.115453. PMID: 24049410; PMCID: PMC3764886.
- 4. Dr. Neha Mamgain, 2012: A further study on Vandhyatva w.s.r. to Tubal block and its management with uttabasti of Yava-Kshara taila & Kumari taila.
- 5. Dr. Hetal Baria, 2013: A further study on Uttara Basti of Yava Kshara Taila & Kumari Taila in the management of vandhyatva w.s.r. to tubal blockage.
- 6. Kamayani Shukla (2010)21: This study was a randomized clinical trial. Patients of child bearing age having complaint of failure to conceive due to tubal factor selected. For group A, Yava Kshara Taila & for group B, Kumari Taila intra uterine Uttar basti (5ml, after cessation of menstruation 6 days with a gap of 3 days in between for 2 consecutive cycles) was given. Tubal block was open in 85.71% patients in group A & in 80% patients in group B.

7. Anitha S. (2009)22: In this open clinical trial 30 well established tubal block cases in the age group of 20-35yrs were included in the study. Narayan taila Uttar Basti was given for 7 days in the dose of 5ml after the cessation of menstrual cycle. It shows efficacy in 70% cases and 53% cases conceived within 3-12 months period after treatment.
8. (2008)-A Clinical Study on Management of Vandhyatva Due to Anovulatory Cycle with Mahanarayana Taila Nasya and Uttarbasti-- Dei, Laxmipriya & Meera, R & Pandya, MA & Tanna, CH & Donga, Shilpa. (2008). A Clinical Study on Management of Vandhyatva Due to Anovulatory Cycle with Mahanarayana Taila Nasya and Uttarbasti. Ayu. 29. 118-122.
9. Sushila Sharma (2008)23: This is a case study of a patient with secondary infertility due to anovulation being treated with Pushpadhanva rasa and Ojaswani vati 1 tablet twice daily for 3 months along with Panchtikta ghritha + Nimba taila utara basti (5 ml). Uttar basti was started on 6th day of menstrual cycle and continued alternatively till 12th day for 3 cycles. After 5 months patient got conceived.
10. Chetna M Kodinariya (2008)24: In this clinical trial, 14 patients having cervical cause for infertility were selected in 2 groups to evaluate the efficacy of drugs like Shatavari ghritha and Goghritha utara basti (5 ml) on 10th,11th,12th day after menstruation for 3 consecutive cycles. For diagnosis of cervical cause, cervical mucus test and post coital test were done before and after treatment. Significant results were found in both the groups but shatavari ghritha showed better results.
11. R. Meera (2007)25: In this clinical trial Mahanarayan taila was administered among 33 patients with anovulatory cycles in the form of Nasya and Uttar basti. They were classified into 3 groups; in group B 5ml Mahanarayan taila was administered in form of Uttar basti, for consecutive 2 cycles, for 3 days after cessation of menstruation. Ovulation occurred in 57% patients in Uttar basti group.

REFERENCE

1. World Health Organization -www.who.int/news/item/04-04-2023-1-in-6-people-globally-affected-by-infertility.
2. Feng J, Wang J, Zhang Y, et al. The Efficacy of Complementary and Alternative Medicine in the Treatment of Female Infertility. Evid Based Complement Alternat Med., 2021; 2021: 6634309. Published 2021 Apr 23. doi:10.1155/2021/6634309 [Google Scholar].
3. Is infertility a disease and does it matter? Maung HH. Bioethics, 2019; 33: 43–53. [PMC free article] [PubMed] [Google Scholar]

4. World Health Organization: 1 in 6 people globally affected by infertility: WHO. [Dec; 2023]; <https://www.who.int/news/item/04-04-2023-1-in-6-people-globally-affected-by-infertility>, 2023; 6: 2023–2024. [Google Scholar]
5. Psychological impact of infertility. Cousineau TM, Domar AD. *Best Pract Res Clin Obstet Gynaecol*, 2007; 21: 293–308. [PubMed] [Google Scholar]
6. Psychological aspects of infertility: a systematic review. Szkodziak F, Krzyżanowski J, Szkodziak P. *J Int Med Res.*, 2020; 48: 300060520932403. [PMC free article] [PubMed] [Google Scholar]
7. Psychological and social aspects of infertility in men: an overview of the evidence and implications for psychologically informed clinical care and future research. Fisher JR, Hammarberg K. *Asian J Androl*, 2012; 14: 121–129. [PMC free article] [PubMed] [Google Scholar]
8. Recent advances in medically assisted conception. Report of a WHO Scientific Group. *World Health Organ Tech Rep Ser.*, 1992; 820: 1-111. [PubMed] [Reference list]
9. *J Reprod Infertil*, Oct-Dec. 2023; 24(4): 287–292. doi: 10.18502/jri.v24i4.14156 PMCID: PMC10757690 PMID: 38164426
10. M.N. Shubhashree. *Researches on Female infertility. Ayurvedline*, 2012; 12: 70-7.
11. Shastri Kashinatha, Chaturvedi Gorakhnath. *Charak Samhita*, 1sted. Varanasi. Chaukhamba Bharati Academy, 2005; 770.
12. Kinjavadekara Ramacandrasastri. *Astanga Sangraha, Indu's Sasilekha Comm.*, Sri Satguru., 1990; Sharir Sthana 2.
13. Sharma Priyavratta. *Sushruta Samhita Hindi Comm by Sharma Anantram*. Varanasi Chaukhamba Surbharati Prakashan, 2008; Uttar Tantra 38.
14. Sharma P.V., .Krishnamurthy K.H, Bhel Samhita, Varanasi, Chaukhamba Vishwabharati, 2000. Sharirastana 5/6.
15. Mishra Sri Brahmsankara, Bhavprakash, Varanasi, Chaukhamba Sanskrit Bhawan, 2004.
16. Tripathi Pt. Hariharprasad, *Harita Samhita*, Chaukhamba Krishnadas Academy, Varanasi, 2009. Sthana 3/48.
17. *Ayurveda Deepika commentary, Charaka Samhita*, Chaukhamba Krishnadas Academy, Varanasi, 2004. Cha. Sha 8/17.
18. Charaka, *Charaka Samhita vidyotini Hindi commen tary by Kashinath Shastri and Gorakhnath Chaturvedi*, Chaukhambha Bharati Academy, 2018, Part 2, Siddhi sthana 9/88, 1070.

19. Ayurveda Deepika Comm. Charaka Samhita, Chaukhamba Krishnadas Academy, Varanasi, 2004. Cha.Si 9.
20. Nibanda Sangraha Comm, Sushruta Samhita, Chaukhamba Krishnadas Academy, Varanasi, 2004.Su. Chi 37.
21. Ayurveda Deepika Comm. Charaka Samhita, Chaukhamba Krishnadas Academy, Varanasi; 2004. Cha.chi 25/15, 30/52, 30/69.
22. Agnivesa Caraka. Sharirasthana, Trimarmiya Siddhi-9/verse 50. In: Yadavjitrikamji A, editor. Caraka Samhita. Chakrapani Tika. Varanasi, India: Chaukhambha Surbharati Prakashan, 2014; 720.
23. Vrddha vagbhata. Sutrasthana, Bastividhiadhyaya -28/verse 9. In Shivprasad S, editor. Astanga Samgraha. 3rd ed. Varanasi, India: Chaukhambha Sanskrit series office, 2012; 504.
24. Srimadvagbhata. Soothrasthana, Bastividhi adhyaya-19/ verse 70. In: Brahmanand T, editor. Astanga Hridayam. Delhi, India: Chaukhambha Sanskrit pratisthan, 2014; 293.
25. Sarvanga Sundara and Ayurveda Rasayana commentary, Astanga Hridaya, Chaukhamba Krishnadas Academy, Varanasi, 1998; Sutra Sthana 19: 70.
26. Sharma Priyavratna. Sushruta Samhita Hindi Comm by Sharma Anantram. Varanasi Chaukhamba Surbharati Prakashan; 2008.Su.Sha 3/6.
27. Ayurveda Deepika Comm. Charaka Samhita, Chaukhamba Krishnadas Academy, Varanasi, 2004; Cha.Si 9/62.
28. Sharma Priyavratna. Sushruta Samhita Hindi Comm by Sharma Anantram. Varanasi Chaukhamba Surbharati Prakashan, 2008; Su.Chi 37/114.
29. Vd. Gayatri Mishra, Role Of Shatavari Taila Uttaravasti And Combined Drug Therapy Including Shatavari Taila Uttaravasti And Some Indigenous Drugs On Vandhyavta W.S.R. To Ovulation, Jamnagar University, 2003.
30. Dahiya L, Sharma R, Sharma S. A Broad Review on Shatavari (*Asparagus racemosus*): Queen of All Herbs. J Palliat Care Med., 2022; 12: 462.
31. Savaliya Hetal. Comparative study of shatpushpa churna and shatpushpa taila Uttar Basti in the management of vandhyatva wsr to viphalata artava. Postgraduate thesis, Jamnagar: GAU, 2005.
32. Vagbhata. Ashtanga Hridaya with the commentaries of Sarvanga Sundara of Arunadatta and Ayurveda Rasayana of Hemadri Chapter 13, Shloka number 29,. reprint 2000. Varanasi: Krishnadas Academy, 2000.
33. https://en.wikipedia.org/wiki/Gonadotropin-releasing_hormone

34. Orell AG, Gregoriadis G, Scheinberg IH, Hickman J, AshwellG. The role of sialic acid in determining the survival of glycoproteinsin the circulation. J Bi ol Chem., 1971; 246(5): 1461–7.