Section A-Research paper
ISSN 2063-5346

"Efficacy of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* orally in the Management of *Vandhyatva* (Female Infertility) W.S.R to Anovulatory Factor – An Open Labelled Randomized Comparative Clinical Trial"

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DOI: 10.48047/ecb/2023.12.si10.00337

ABSTRACT:

Background: According to Ayurveda Infertility primarily refers to the biological inability of a woman of reproductive age to contribute to conception & also the state of a woman who is unable to carry a pregnancy to full term. According to modern science, Infertility is defined as an inability to conceive a pregnancy after one year of unprotected intercourse. Ovarian factor contribute **30-40%** in causes of the female infertility. So, it is the main common cause of infertility. **AIM:** To evaluate and compare the efficacy of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* orally in the management of *Vandhyatva* (female Infertility) W.S.R. to Anovulatory factor. **OBJECTIVES**: To assess the efficacy of *Rasnadi basti* and *Vardhamana Shatapushpa Kalpa* on Anovulatory factor. To assess the role of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* on menstrual abnormalities associated with anovulation like irregular, scanty menstruation, dysmenorrhoea. **Material and methods:** Total 38 patients were registered for the present study on the basis of inclusion, exclusion and diagnostic criteria. Among registered patients, six patients were dropped out. Patients were randomly classified into two groups. Group A: *Rasnadi Basti* in a dose of 700ml for 16 days, after cessation of menses for 2 consecutive cycles, Group B: *Vardhamana Shatapushpa Kalpa* (6gm at 1st day i.e. from 5th day of menses then gradually increase the dose 1 gram per day till 13th day (18 gram dose). From 14thday 1 gram per day decrease in daily dose till 25thday (6 gm dose) with *Go Ghritra* For 2 months(60 days)after cessation of menses. **Result:** There is statistically highly significant (P= <0.001) result was found in group-A and in group-B on follicular growth and ovulation. In *Rasnadi Basti* Group Ovulation occurred in 93.75% patients and in *Vardhamana Shatapushpa Kalpa* Group follicular growth and Ovulation occurred in 100% patients. The conception rate is 12.15% in *Rasnadi Basti* and 21.87% in *Vardhamana Shatapushpa Kalpa.* There is significantly difference in the result of the both trial group on ovulation. But *Vardhamana Shatapushpa Kalpa* is more effective in

conception rate as compare to *Rasnadi Basti.* **Conclusion:** The study overall concluded that *Vardhamana Shatapushpa Kalpa* is highly effective to induce ovulation & achieving conception.

1. INTRODUCTION:

Acharya Charaka has mentioned that the woman is the origin of progeny. The creator of universe has empowered the women to carry out the noblest and reverent work of mankind and that is the work of reproduction. “*Vivaha” Samskara* is one of the *16 Samskaras* described in our *Shastras*. The main aim of marriage is reproduction for best progeny. Family is the base of a healthy society and child completes the family and continues it further. *Putra Eshana* is the strongest desire of all the married couple. For the successful *Gruhasthashrama,* child is required.

According to Ayurveda Infertility primarily refers to the biological inability of a woman of reproductive age to contribute to conception & also the state of a woman who is unable to carry pregnancy to full term. According to modern science, Infertility is defined as an inability to conceive a pregnancy after one year of unprotected intercourse[1]. It can either be primary where no previous pregnancy has occurred or secondary where there has been a previous documented pregnancy.

The World Health Organization (WHO) estimates that 60 to 80 million couples worldwide currently suffer from infertility[2]. Infertility varies across regions of the world and is estimated to affect 8 to 12 per cent of couples worldwide.[3] According to **International Federation of Gynecology and Obstetrics (FIGO)** manual, ovarian factor contribute **30-40%** in causes of the female infertility. Identifiable factors affecting female infertility include: hormonal or endocrine disturbances (menstrual or ovulatory disturbances), tubal factors (occlusions, pelvic adhesions and other tubal abnormalities), acquired non-tubal factors (cervical or uterine disturbances), sexual dysfunction and congenital abnormalities. [4]

Ovulation refers to the physical act of rupture of the follicle with the extrusion of the Oocyte. When the follicle does not rupture then ovulation fails and it is called anovulation. There are many reasons both which can be solved and which cannot be behind anovulation. So, there is a ray of hope for women to achieve ovulation which gives her motherhood through the *Ayurvedic* treatment.

Aims and Objectives:

Aim: To evaluate and compare the efficacy of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* orally in the management of *Vandhyatva* (female Infertility) W.S.R. to Anovulatory factor.

Objectives:

1. To assess the efficacy of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* on Anovulatory factor.
2. To assess the role of *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* on menstrual abnormalities associated with anovulation like irregular, scanty menstruation, dysmenorrhoea.

2. MATERIAL AND METHOD

2.1.PATIENT:

- Patients were selected from the O.P.D. of Prasutitantra and Streeroga, I.P.G.T. & R.A., Jamnagar fulfilling the criteria of diagnosis and inclusion criteria, were registered for study. Irrespective of their caste, religion, etc.
- All the selected patients after the registration with necessary information and taking the consent have been studied. After preliminary registration, diagnostic medical history was taken according to Ayurveda and Morden clinical methods.
- A special detailed research Proforma was prepared which was used to record the progress and status of the patients under trial.

2.2.DRUG:

- The raw drugs for *Rasnadi Basti Karma* and *Shatapushpa Churna* were obtained from Pharmacy of Institute of Training and Research in Ayurveda, Jamnagar and *Rasnadi Basti* was freshly prepared every day in the IPD, Department of Prasutitantra and Streeroga, Institute of Teaching & Research in Ayurveda, Jamnagar.
- Oral drug, *Shatapushpa* Seed had been purchased from the local market of Jamnagar and identified in *Dravyaguna* Department of I.T.R.A. Jamnagar. The seed powder was passed through sieve no. 80. and packed in airtight container.

DIAGNOSTIC CRITERIA:

✓ Trans Vaginal Sonography (TVS) was carried out to diagnose anovulation.

METHOD OF DIAGNOSIS:

✓ TVS was done from day 8th – 9th day of the menstrual cycle up to at least 22nd day of cycle to diagnose anovulation as per need. For perfect diagnosis in each and every patient, TVS was carried out consecutive for 2 cycles.

INCLUSION CRITERIA:

1. Female Patients of Childbearing age from 20-40 years
2. Patients having active married life minimum 1 year and suffering from Infertility with at least 2 or more consecutive anovulatory cycles
3. Primary and secondary both types of infertile patients having anovulatory cycle or with immature ovarian follicle
4. Patient eligible for *Basti*
5. Patient willing for *Basti*
6. Patients willing to participate in trial

EXCLUSION CRITERIA:

1. Female Patients having age less than 20years and more than 40years
2. Congenital deformities and infectious diseases of reproductive tract like tuberculosis, Sexually transmitted diseases and carcinoma
3. Chronic systemic diseases like Diabetes, Hypertension, HIV, TB etc.
4. Patient not eligible for *Basti*
5. Patient not willing for *Basti*
6. *Pitta Prakriti* females.

INVESTIGATIONS:

- **General investigations :(B.T. & A.T.)-** Hematological- Hb%, T.L.C., D.L.C., E.S.R., PCV, Biochemical - FBS, Lipid profile, Urine Routine and Microscopic examination, Serological - HIV, HBsAg, VDRL, HCV (B.T.)
- **Specific investigations:** Trans vaginal sonography (TVS): - (**B.T, D.T. and A.T.),** Hormonal Assay-Serum FSH, LH, Prolactin, TSH **(B.T &A.T.) – 2nd or 3rdday of Menstruation**

2.3.TREATMENT PROTOCOL:

Preparatory Phase: - Clinically diagnosed and registered patients of infertility due to anovulation for 2 consecutive cycles were randomly divided into two groups by computer generated Randomization method. All Patients were advised to discontinue any allopathic medicines i.e. Hormones therapy, they might be taking earlier for the treatment of Anovulation.

WASH OUT PERIOD: 3 months

Before starting the treatment, *Deepana–Pachana* and *Koshtha Shuddhi* was given for three days to all the patients from the third day of Menses **(Table 1)**

Table 1: Preparatory Phase Protocol

Treatment Modality	**Drug**	**Dose**	**Duration**
Deepana- Pachana	*Amapachana Vati*	2 Tablets (each of 500mg) b.i.d. with luke warm water after meal.	3-5 days
Koshtha Shuddhi	*Erandabhrishta Haritaki*	5 gm. or as per *Koshtha* with lukewarm water at H.S.	3-5days

GROUPING: The subject included in the clinical study were integrated into two groups i.e. Group A and Group B by computer generated randomization method. **(Table 2)**

GROUP A: *Rasnadi Basti (*Reference-*Navaneetakam –5/11-16)*

GROUP - B: *Vardhamana Shatapushpa Kalpa (Kashyapa Samhita Kalpasthana* 8/5)

TABLE 2: POSOLOGY OF TRIAL DRUGS

Group	**Drug**	**Route**	**Dose**	**Time**	**Duration**
A	*Rasnadi Basti*	Rectal	700ml	At morning 8:30am to 10:00am	Total 16 days, After cessation of menses for 2 consecutive cycles

B	*Vardhamana Shatapushpa Kalpa*	Oral	6gm at 1st day i.e. from 5th day of menses then gradually increase the dose 1 gram per day till 13th day (18 gram dose) From 14th day 1 gram per day decrease in daily dose till 25th day (6 gm dose) With *Go Ghrita*	At morning (Empty stomach) After Digestion of previous meal	For 2 months (60 days) After cessation of menses

2.4. BASTI PROCEDURE:

Procedure of *Basti* The patient was advised to lie down in left lateral position. Little quantity of *Tila Taila* was applied on patient's anus and Nozzle of *Basti Yantra.* The Nozzle was gently inserted into the anal canal up to a specific length and *Basti Putaka* containing mixture was pressed uniformly. The pressure was continued till small quantity of Fluid remains in the bag (To avoid air insertion). Then the nozzle was removed gently and the patient allowed lying down on supine position till she feels to excrete. *Basti* was given in the morning empty stomach.

END POINT: *Basti* was stopped after ovulation.

Follow Up- Patients were advised to visit the hospital every week during the treatment & every 15 days for 2 Cycles after the treatment as follow up.

2.5. CRITERIA OF ASSESSMENT:

- **Subjective Parameter:** A special Proforma was prepared incorporating the associated complains related to anovulation like menstrual abnormalities i.e. Scanty menses, painful menses and Inter menstrual bleeding. A special scoring pattern for Subjective Parameters was done and assessed on the basis of changes at end point in comparison to base line score. **(Table 3)**

Table 3: Scoring Pattern for Menstrual abnormalities

(a)Duration of Menstrual Cycle	(b) Interval between two cycles
0 - 4-7 days	0 – 21 to 35 days
1 - 3 days	1 - 35 to 39 days
2 - 2 days	2 - 40 to 45 days
3 - 1 day	3 - above 45 days

(c) Quantity of menstrual blood	(d) Pain during menses (*Yonivedana*)
0 - 4 or more than 4 pad use / cycle	0 - No pain
1 - 3 pad use / cycle	1 - Mild pain
2 - 2 pad use / cycle	2- Moderate pain
3 - 1 pad use / cycle	3- Severe pain
4 - Spotting bleedings without pads	

- **Objective Parameter:** On the basis of follicular study by Trans Vaginal Sonography and/or on the basis of conception. For that a special scoring method according to size of follicle was adopted.

2.6.STATISTICAL TEST:

After preparing the master chart of all the required data in Microsoft excel work sheet, statistical calculation was done with the help of INSTAT software. Wilcoxon Signed Rank test for non-parametric paired data, Paired t-test for quantitative parametric paired data, and Un-paired t-test for quantitative unpaired data was used for analyses of the data. The result was interpreted as. The result was interpreted as: Insignificant $p>0.05$, Significant $p<0.05$, Highly significant $p<0.01$, Very highly significant $p<0.001$. The overall effect of therapy was assessed as shown in **table 4**

Table 4: Overall effect of therapy

Complete remission	100% Relief (Ovulation) were considered as complete remission.
Marked improvement	>75-≤99%Relief (>19-23mm size of follicle) were considered as marked improvement.
Moderate improvement	>50-≤75% Relief (12-19mm size of follicle) were considered as moderate improvement.
Mild improvement	>25-≤50% Relief (<12 mm size of follicle) were considered as mild improvement.
No improvement	≤ 25 (Not any change in size), i.e. immature follicle
Secondary outcome: Conception	Number of patients who conceived during or follow up period.

3. OBSERVATION:

Total 38 Patients were registered in this present study, out of which 32 patients completed the total protocol of treatment and 6 patients dropped out during treatment. Out of 6 patients, 2 patients dropped out in Group A and 4 patients dropped out in Group B. So, Observations of 38 patients and Results of 32 patients are given below.

42.10% in the present study were of the age group between 26-30 years followed by 36.84% patients to 31-35 years of age group.

Menstrual history:
52.63% of patients were having irregular menstrual history. 60.52% of patients were having moderate quantity of menses and 39.48% were having scanty menses. 31.57% of patients had painful menses. 57.89% of patients were having duration of menstrual period of 2-5 days. 39.47% of patients were having duration of menses < 2 days. Maximum no. of patient i.e. 52.63% were having inter-menstrual period of >35 days while 47.37% of patients had interval of 21-35 days.
Obstetric history:
55.26% of patients had primary infertility and 44.74% of patients had secondary infertility. 63.16% of patients had 1-5 years chronicity. 55.26% of patients were Nulligravida while 44.74% patients were Para. History of Abortion in 26.32% of patients and D&C/D&E was found in 15.79% of patients. 60.53% had history of intercourse 2-5 times /week, 31.58% had intercourse, <2 times/week, while 7.89% patients had intercourse >5 times/week. Maximum numbers of patients i.e. 86.84% had satisfactory sexual life with proper position during the coitus, while 2.63% had complain of Dyspareunia. 63.16% had taken Ayurvedic treatment, while 36.84% had received hormonal treatment.
History of *Hetu’s* present: 34.21% each were taking *Madhura Rasa* and *Katu Rasa* dominant diets. 23.69% were taking *Lavana Rasa* dominantly, *Tikta Rasa* was consumed regularly by 18.42% of patients, *Amla Rasa* was consumed regularly by 15.79% of patients, while. Majority had reported with the dominancy of a combination of two *Rasa* together in their diet. 92.10% patients were having addiction of Tea and 07.89% patients were having addiction of Coffee. 71.05% patients were having the habit of doing irregular exercise, whereas 28.94% patients were doing a regular exercise. 57.89% of patients were not doing any kind of exercise, 18.42% of patients were having the habit of doing moderate exercise and 10.53% patients were having the habit of doing less exercise while 5.26% patients were having the habit of doing excessive exercise.76.32% of the patients had Sound sleep, while 23.68% patients were having disturbed sleep. 36.84% had history of *Mutravegadharana*, 26.32% of patients had history of *Purisha Vegadharana*, while 18.42% had history of *Adhovata Dharana*. *Chinta* was present in 65.79% of the patients; *Shoka* in 15.79% and *Krodha* was found in 13.16% of the patients respectively. *Bhaya* was observed in 05.26% of the patients. 55.26% of patients were having Grade 2(18.50 to 24.99) BMI, 21.05% of patients were having Grade 3 (25-29.99) BMI. Grade 4(>30) BMI was observed in 13.16% of patients and 10.53% of patients were having Grade 1(<20) BMI.
100% patients had *Artavavaha Srotodushti*. 63.16%, 36.84%, 26.32%, and 2.63% of patients were having *Rasavaha, Raktavaha, Annavaha, Mamsavaha Srotodushti* respectively. 34.21% of patients were having *Medovaha Srotodushti. Purishavaha Srotodushti* was found in 7.89% of patients. 5.26% of the patients were having *Mutravaha Srotodushti*. *Yathochit Kale Adarshana* (Oligomenorrhoea) was found in 52.63%; *Alpata* (Hypomenorrhoea) was found in 39.48% of patients while 31.57% of the patients had symptoms of *Yoni Vedana*.
Other factors involved: 97.37% of patient’s HSA was normal in range, while Abnormal HSA was found in 2.63%. Out of all the 38 patients registered in the study, 23.68% of patients were suffering from PCOD, and 2.63% patients were having uterine anomaly in form of unicornuate uterus.

4. RESULT:

Effect of therapy on follicular growth and Ovulation:

In Group A, total 93.75% of relief was found after the treatment. This improvement was statistically highly Significant (P= <0.001). In Group B, total 100% of relief was gained after the treatment. This shows statistically highly Significant (P= <0.001) improvement. **(Table 5).** Comparative effect of therapeutic value of Group A and Group B said to be have statistically insignificant difference.

Table 5: Follicular Growth and Ovulation

Group	n	Mean		Mean diff	% of Relief	W	P	Significance
		B.T	A.T.					
A	16	3.0	0.18	2.82	93.75	120	<0.001	HS
B	16	3.0	0.20	2.80	100.00	105	<0.001	HS

Effect of therapy on Menstruation:

In Group A *(Rasnadi Basti*) on menstruation revealed that statistically **Highly significant** result was obtained in duration, interval, quantity of menstruation whereas **insignificant** result was seen in pain during menstruation. **(Table 6)**

Table 6: EFFECT OF THERAPY ON MENSTRUATION IN GROUP A (N=16)

Subjective Parameter	Mean		Mean diff	% of Relief	W	P	Significance
	B.T.	A.T.					
Duration of Menstruation	3.0	0.17	2.82	94.00	153	<0.001	HS
Interval of Menstruation	2.76	0.05	2.70	97.82	153	<0.001	HS
Quantity of Menstruation	2.94	0.05	2.88	97.95	153	<0.001	HS
Pain during Menstruation	0.17	0.11	0.05	29.41	1.0	>0.05	IS

(n = number of patients in Group, HS= Highly significant, IS= Insignificant)

In Group B *(Vardhaman Shatpushpa Kalpa*) on menstruation revealed that **statistically Highly significant** result was obtained in duration, interval, quantity and in pain during menstruation. **(Table 7).**

TABLE 7: EFFECT OF THERAPY ON MENSTRUATION IN GROUP B (N=16)

Subjective Parameter	Mean		Mean diff	% of Relief	W	P	Significance
	B.T.	A.T.					
Duration of Menstruation	2.81	0.09	2.72	96.79	66	<0.001	HS
Interval of Menstruation	2.56	0.09	2.47	96.48	66	<0.001	HS
Quantity of Menstruation	2.31	0.05	2.26	97.83	153	<0.001	HS
Pain during Menstruation	0.30	0.05	0.25	83.33	15	<0.001	HS

(n = number of patients in Group, HS= Highly Significant, IS= Insignificant)

There were **statistically insignificant differences** achieved in both groups on **comparative effect** of therapy on menstruation.

Total Effect of Therapy on Conception

Among 32 patients included in the present study, **Total rate of conception was 21.87%, 31.25% (5)** of patients achieved conception in **Group-B,** while 1**2.50 %** (**2**) of patients achieved conception in **Group-A. (Table 8)**

Table 8: TOTAL EFFECT OF THERAPY ON CONCEPTION

Group A			Group B			Total	%
No. of patients	Conception	%	No. of patients	Conception	%		
16	02	12.50%	16	05	31.25	07	21.87

Overall Effects of Therapies

In Group A, Complete remission i.e. Ovulation was found in **93.75 %** (15) of patients, while **6.25% (1)** of patients remained unchanged. In Group B, Complete remission i.e. Ovulation was found in **100% (16)** of the patients. (**Table 9**)

Table 9: OVERALL EFFECTS OF THERAPIES

Parameters	Group A		Group B	
	No. of patients	%	No. of patients	%
Complete remission	15	93.75	16	100.0
Markedly Improved	00	00.00	00	00.00

Moderately Improved	00	00.00	00	00.00
Unchanged	01	06.25	00	00.00

5. DISCUSSION

Anovulation due to endocrine disorders, polycystic ovarian diseases, corpus luteal phase defect and hyperprolactinemia is one of the important causes of **Female Infertility**.

Clinical correlation between Anovulation and *Abeejatva/Alpa Beeja*: There is no direct description available in *Brihadtrayi* in the context of *Vandhyatva*. The References in *Ayurvedic* Classics indirectly provoke us to think about the ***Beejagranthi, Phalasrotas* and *Antargata Phala*** as terminology indicating Ovaries. In modern science, anovulatory cycles are diagnosed as menstrual bleeding without preceding ovulation and no corpus luteum formation; which can be correlated with *Nashta Pushpa* or *Alpa Pushpa*. The explanation available for the physiology of ovulation is the same as explained in modern books, which says that ovum starts its maturity at the age of 12 to 14 years and ceases at age of 45-50 years. During this period whole physiology is governed by hormones. This hormone is nothing but the ***Beejashayagata Sukshma Bhaga*** of ***Rasa***, which helps in the formation of ***Beeja*** in ***Beejagranthi***. The ***Paripurna Dhatu*** mentioned by Kashyapa, is maturity of gonads with age, because without maturity of gonads, ovulation cannot occur.

According to modern, menstrual irregularity are associated with oligomenorrhoea and Anovulation, same as that Acharya Sushruta has mentioned *Ashtartava Dushti* will be resulted into *Abeejatva* i.e. Anovulation if remains untreated.[5] Due to *Nidana Sevana* by Mother, Vitiation of *Beeja* or *Beejabhaga* or *Beejabhagavayava* occurs in female child and she might turn herself in the congenital abnormality of genital organ which leads to *Vandhyatva* in future.[6] One Research study reveals that lack of the physiological down regulation of LHR mRNA levels by ZFP36L2 in the ovaries is associated with anovulation and oocyte meiotic arrest. It will lead to infertility.[7] Though *Vandhyatva* is not directly mentioned in *Brihatrayi*, the basis of *Nidana*, *Doshas*, *Dushyas*, *Agni*, *Srotas*, *Rupa* and *Chikitsa* of *Vandhyatva* can pave the way for proper diagnosis.

Understanding of *Vandhyatva* (*Abeejam*, *Nashtabeaja*) as per Ayurveda: Ayurveda gives major importance to principles (*Siddhanta*) more than anything. So, anything that is not described in classics can be understood on the basis of principles (*Siddhanta*). Acharya Charaka has enumerated all the diseases and then discussed the fact that every disease should not have particular name. Vaidya should do *Chikitsa* on the basis of *Kupita Dosha*, *Samutthana*, *Prakruti* and *Adhisthana* of the *Vikara*.[8]

After collecting all the references in the context of *Vandhyatva* (Female infertility w.s.r. Anovulatory factor) from Ayurvedic texts, it can be said that it is a disease with multiple etiopathology and varied symptoms. It is *Sanga* type *Srotodushti*, which is produced due to *Avarana* or *Dhatukshayaja* or *Margavarodha* in *Rasavaha*, *Raktavaha* and *Artavavaha Srotas*. When any *Srotas* gets involved in any disease process, the role of *Agni* and *Ama* should be given more importance. So, *Samprapti Ghataka* has been discussed separately.

Beejotsarga occurs due to _Vata_ and its _Karma_ & _Swabhava_

Vayu performs the *Karmas* like *Yantratantradhara, Vibhajana, Pravartana* and *Dhatuvyuhakara.* As per these *Karmas* of *Vayu* it may help in ovulation. Most important factor for all cell division is *Karma* and *Swabhava.* When *Vayu* is regulated by *Karma* and *Swabhava* then it works in balanced state which causes normal physiological function and leads to Ovulation. Importance of *Shukra* (spermatozoa), *Artava* (ovum), and healthy state of female reproductive system, nutritional and psychological status of female for having conception has been accepted by all the ancient treatise of *Ayurveda* as a prerequisite for conception (*Cha. Sha.* 2/7).

Acharya Sushruta has propounded four factors responsible for *Garbhotpatti,* which have to be studied in *Vandhyatva* prospective too; the four factors are *Ritu, Kshetra, Ambu, & Beeja* as Mentioned previously. To assess the abnormal state, one must know the normalcy of the same. The concept regarding vitiation of formation of *Beeja* can be made clear only after making attention towards normal process of formation of *Beeja*. In *Ayurveda*, *Tridosha* are the basic pillar of any physiology of human body. So, the role of *Vata, Pitta* and *Kapha* must be ruled out in Ovulation for further interpretation of Ovulatory dysfunction.

Discussion on Developed Treatment Protocol

Deepana-Pachana & Vatanulomana:

Deepana-Pachana with *Amapachana Vati* helps to bring the *Niramata* of *Sama Doshas* and thus aids in bringing the *Shakhagata Doshas* or *Tiryaka Doshas* back to *Koshtha* which can be easily removed by mild purgative like *Eranda Bhrishta Haritaki. Eranda Bhrishta Haritaki* also helps to alleviate constipation and thus may be helpful in bringing *Pratimola Apana Vayu* back to normalcy.

Mode of Action of the _Bastikarma_

Vata is mainly responsible for all types of *Yonirogas* (all the gynaecological disorders).[9] *Prakrita Vata* is responsible for the *Beejotsarga* (Ovulation). *Vata* predominance *Tridosha Dushti* is responsible for *Abeejotsarga* (Anovulation). *Basti Chikitsa* is considered to be a prime treatment modality among the *Panchakarma* in *Ayurveda.*[10] It has not only curative aspects but also preventive and promotive aspects. According to *Ayurvedic* physiology, *Pitta* and *Kapha* both are dependent on *Vata* as it governs their functions. *Basti* eradicates morbid *Vata* from the root along with other *Dosha* and in addition, it gives nutrition to the body tissue[11]. Therefore, *Basti* therapy covers more than half of the treatment of all the diseases[12], while some authors consider it the complete remedy for all the ailments. Though *Basti* is considered the best remedy for morbid *Vata*, it can also be used in *Kaphaja* and *Pittaja* disorders by using different ingredients[13]. Further, it has both *Samshodhana* as well as *Samshamana* effects.

According to Acharya Parashara, "*Guda is* the *Mula* of the body", where all the *Siras* are located. The *Sneha* administered through *Guda* reaches up to the head giving nutrition to the body. So drug which is given by anal route has local and general effect.

Systemic Action of *Basti*:

The *Veerya* of *Basti* administered through the *Basti* into the *Pakvashaya* reaches the whole body through the channels (*Srotas*), as the active principles in the water when poured at the root of the tree reaches the whole plant.[14]

Eliminative or Purificative Action of *Basti:*

Basti administered into *Pakvashaya* draws the *Dosha*/*Mala* (morbid matter) from all over the body from the foot to the head by the virtue of its *Veerya* (potency), just as the sun situated in the sky draws the moisture from the earth by its heat. [15]

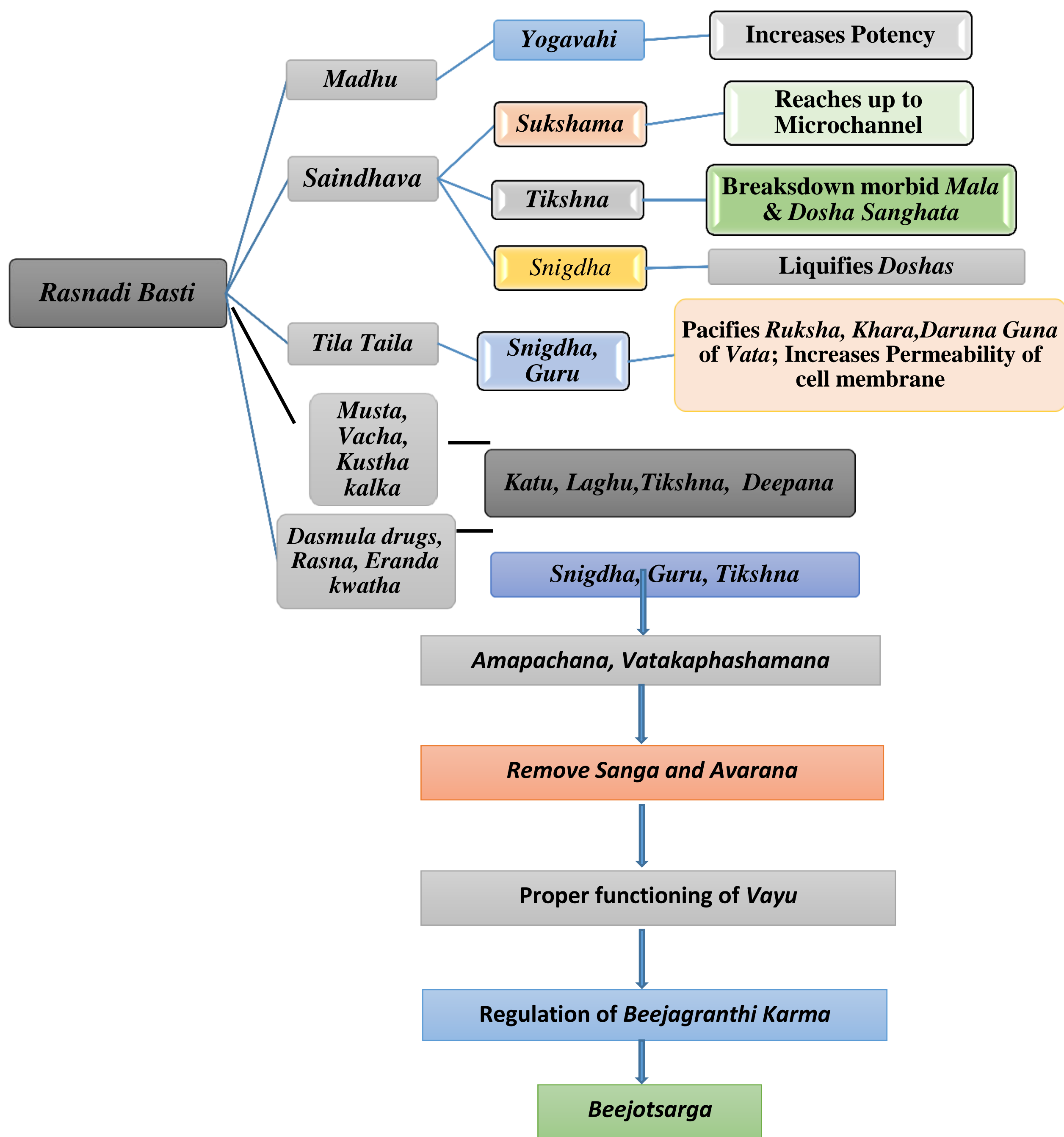
Action of *Basti* on *Vayu:*

Vayu is considered to be the main controller of the body. Now if *Vayu* alone or in combination with other *Dosha* gets vitiated, then *Basti* by the way of evacuation or elimination normalizes the path of *Vayu* along with *Pitta*, *Kapha* and fecal matter. As tree irrigated in its root level attains nourishment for the whole tree, in the same way, *Basti* drugs are given through *Guda* (Rich of blood vessels, lymphatics & nerves) nourishes all the limbs & organs of the body.

According to modern science, there is no digestive action of fat or oil in the stomach. The fat digestion and absorption take place in large intestine and no food substances other than water and salt are absorbed from the large intestine. *Basti* drugs contain *Sneha Dravya* in sufficient quantity. Hence *Basti* drugs mixed with *Sneha Dravya* when introduced through the rectum get easily absorbed in large intestine.

Pakvashaya is the place where *Paka* of *Sneha Dravya* takes place. This fact is mentioned while dealing with the action of *Anuvasana Basti*; it gives a clue to say that the *Sneha* is digested in *Pakvashya* more than in any other part of the body. The mode of action of *Basti* can be illustrated as shown in **Figure 1.**

FIGURE1: PROBABLE MODE OF ACTION OF DRUGS OF *RASNADI BASTI*



ISSN 2063-5346

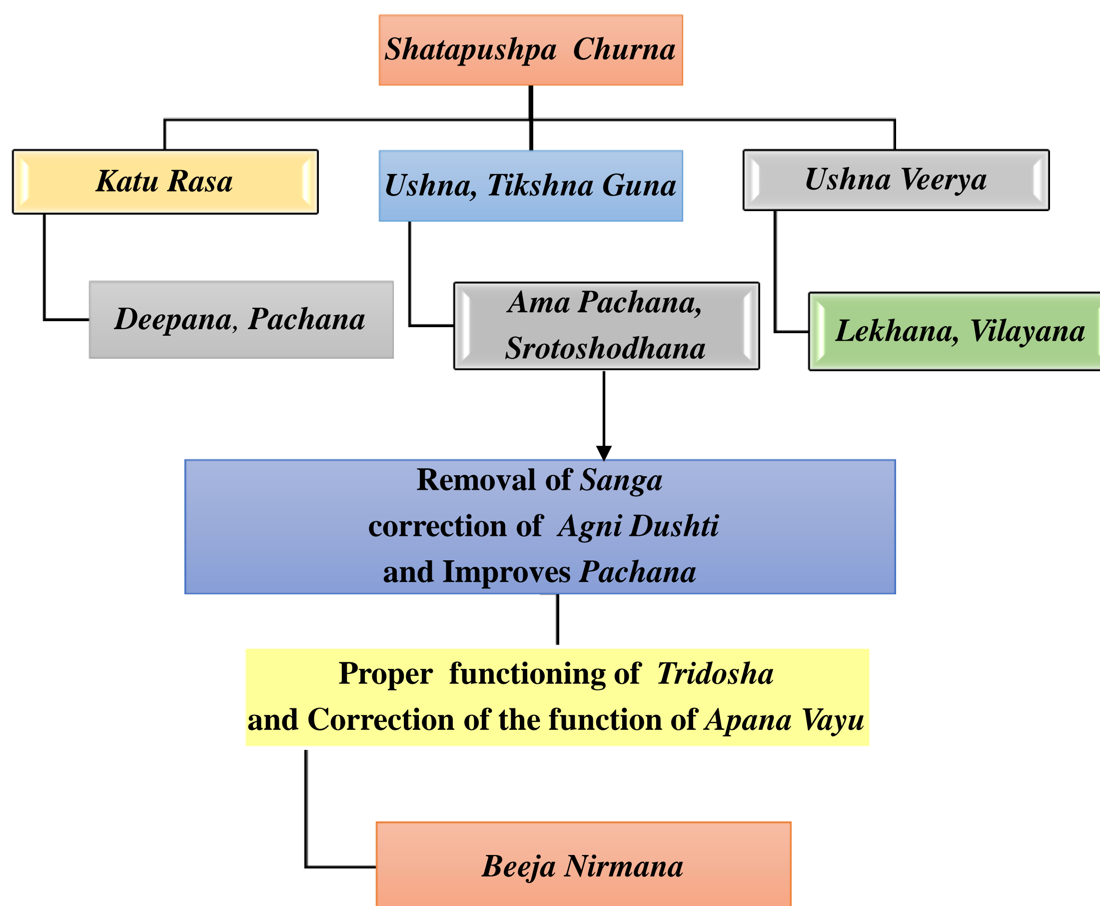
Table 9: OVERALL EFFECTS OF THERAPIES

Parameters	**Group A**		**Group B**	
	No. of patients	**%**	**No. of patients**	**%**
Complete remission	15	93.75	16	100.0
Markedly Improved	00	00.00	00	00.00
Moderately Improved	00	00.00	00	00.00
Unchanged	01	06.25	00	00.00

Probable Mode of Action of *Shatapushpa Churna* (Figure2)

Shatapushpa in the form of *Churna* was administered. *Agnimandya* and production of *Ama* at the tissue level, vitiation of *Vata, Srotorodha, Avarana* of *Vata* by *Kapha* and *Pitta*, *Dhatukshaya* causing *Poshanabhava*, may be the major events in the pathogenesis of *Vandhyatva* W.S.R.to *Abeejotsarga*. While considering *Rasa, Veerya, Vipaka, Guna* and *Doshaghnata* collectively, *Shatapushpa* has *Katu Rasa, Ushna Veerya, Katu Vipaka, Laghu Tikshna Guna, Deepana property.* The drug is given with the *Sahapana* of *Ghrita* which adds *Rasayana* property and also decreases *Tikshna Guna* of *Shatapushpa*. In addition, *Ghrita* contains beta-carotene and Vit. E which are antioxidants themselves. It also contains Cholesterol which provides the basic material for the production of sex hormone and anti-stress hormones. Saturated fats boost the immune system.

FIGURE 3: PROBABLE MODE OF ACTION OF *SHATAPUSHPA CHURNA*



***Kalpa* method** [16]

Literary meaning of word *Kalpa* is to grow or to increase. The concept of *Kalpa Chikitsa* in the management of chronic diseases is known since *Samhita Kala*. The *Kalpa Chikitsa* is a unique approach of therapy, where a specific drug is administered in a gradually increasing dose is tapered in the inverse order of the increased dose to the level of the initial dose. During this period the patient is kept on suitable specific cereal or non-cereal diet. Choice of diet and its regime depends on the nature of disease it also depends on the status of *Agni-Bala* of the patient and adaptability with drugs and *Kala* of the treatment.

According to Acharya Kashyapa, Hundred *Pala* of *Shatapushpa Churna* should be stored in new earthen pot. After getting up in the morning (of previously taken meal), according to the capacity of patients 1/4*Pala*, 1/2 *Pala* or 1 *Pala* of this *Churna* should be licked with *Goghrita.* After its digestion, the patient should eat cooked rice mixed with milk. After using hundred *Pala* of *Shatapushpa Kalpa* the patient will conceive. [17]

Shatapushpa is having Anti-microbial effects[18], Anti-inflammatory and analgesic effects, carminative, aphrodisiac, tonic, uterine stimulant and promote the secretion of milk. Seeds

help in reducing insulin resistance and in bringing down the inflammation in PCOS. *Shatapushpa* seed is useful in Oligomenorrhoea and Dysmenorrhoea. [19]

6. Conclusion

Thus in nutshell, the principles and practices of *Dinacharya, Ahara, Vihara, Shodhana, Shamana* in *Ayurveda* holds good even to 21st century in the management of multitudes of emerging non-communicable lifestyle diseases. *Rasnadi Basti* have properties like anti-inflammatory**,** Hypolipidemic**,** antioxidant, antiarthritis which help in relieving the causative factors of anovulation like stress, age decline changes, etc. and help to regularize the proper function of ovaries. *Vardhamana Shatapushpa Kalpa* had good maintained effect on Ovulation and Menstruation both during treatment and in follow up and regularized Hypothalamus-pituitary-ovarian axis.

Clinical study confirmed the alternative hypothesis that the *Ayurvedic* treatment modality i.e. One among *Rasnadi Basti* and *Vardhamana Shatapushpa Kalpa* is significantly effective against the other in the management of female infertility W.S.R. to anovulation.

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