RESEARCH PAPER

Effect *Shatapushpadi Taila* And *Phalaghrita Nasya* In Anovulation – An Open Label Comparative Clinical Study

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ABSTRACT

Background: Anovulation is characterized by failure of follicular rupture despite normal follicular development, resulting in absence of ovulation. The etiology of anovulation is multifactorial and includes polycystic ovary syndrome (PCOS), hyperprolactinaemia, premature ovarian insufficiency, hypothalamic dysfunction, luteinized unruptured follicle syndrome, and luteal phase defects. In *Ayurveda*, all *Acharyas* have described *Beeja Dosha* and *Beejopaghata* as important causative factors responsible for *Abeejotsarga* i.e., *Vandhyatwa*. Vitiated *Vata* along with *Kapha* causes *Margavarodha* in the *Artavavaha Srotas*, leading to impaired reproductive function. This may disturb the normal secretion, circulation, and regulation of hormones, thereby affecting follicular growth and timely ovulation, ultimately resulting in anovulation. Hence, normalization of the vitiated *Doshas* plays a vital role in the management of anovulatory condition. According to *Acharya Kashyapa*, *Shatapushpadi Taila* possesses properties such as *Rutupravartaka, Yonishukravishodhaka, Putraprada,* while *Phalaghrita* is described as *Yonishukradoshahara*, *Medhya*, and *Pushtikara*. Administration through the nasal route is considered beneficial for correcting dysfunction of the hypothalamic–pituitary–ovarian (HPO) axis. Therefore, these drugs were selected for the present study.

Study Design and objectives: An open label comparative clinical study was conducted to compare the efficacy of *Shatapushpadi Taila* and *Phala Ghrita Nasya* in anovulation.

Methods Subjects fulfilled the criteria for diagnosis and inclusion visiting OPD and IPD of Department of *Prasooti Tantra and Stree Roga,* JSS Ayurveda Medical Hospital, camps and other referrals were considered for the study. The assessment was done based on the follicular study by ultra sonography method from 12th day of menstrual cycle on alternate days of 3rd cycle after the treatment.

Results: Ordinal data were analyzed using the Wilcoxon Signed Rank Test for within-group and Mann–Whitney U Test for between-group. Quantitative data were analyzed using the Paired t-test for within-group and Unpaired t-test for between-group.

Group B showed statistically significant results in all subjective parameters than Group A. In objective parameters Group B demonstrated significantly greater improvement in follicular size compared to Group A, Overall, whereas both groups exhibited comparable effects in other parameters

Keywords: Anovulation, Beejadosha, Nashtartava, Shatapushpa Taila, Phalaghrita

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INTRODUCTION

Expulsion of *Beeja* (matured ovum) from the *Beejagranthi* means *Beejotsarga*, which can be correlated with ovulation, as *Utsarga* is a *Karma* of *Vata*. [1] While *Abeejotsarga* denotes absence of ovulation, is caused due to vitiation of *Vata* and *Kapha Dosha* as they do *Marga–Avarodha* to *Artavaha Strotas* leading to *Abeejotsarga*.[2]

Anovulation is an important subset in infertility [3]. According to FIGO-Ovulatory dysfunction contributes to 30% - 40% causative factors of infertility. The ovarian activity is totally dependent on the gonadotropins and normal secretion of the gonadotropins depends on the pulsatile release of GnRH from hypothalamus. Thus the disturbance may result not only in anovulation but also produce oligomenorrhea or even amenorrhea. Other causes of anovulation is polycystic ovarian syndrome, endometriosis, congenital malformation etc. [4]

Approximately 75% of anovulatory women of any cause have polycystic ovaries and 20- 50% women with normal ovulation demonstrate ultrasound findings typical of polycystic ovaries. When compared with levels found in normal women, patients with persistent anovulation have higher mean concentration of LH but low or low normal levels of FSH. [5,6] Ovulation refers to the physical act of rupture of the follicle with extrusion of the oocyte. When follicle does not rupture then ovulation failed and that is called anovulation or *Beejopaghata* or *Nastabeeja.*

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Because of low FSH follicular growth arrested at different phases of menstruation and because elevated level of LH there will be hypertrophy of theca cells and more production of androgens from theca or stroma cells, hence ovulation cannot occur.[7] In *Ayurveda classics* there are many scattered references are available in different *Samhita*. *Acharya Sushrutha* quotes *Artavakshaya Lakshanas* in *Doshadhatumalakshayavriddhi Adhyaya*, they are *Yathochitkala Adarshana*(irregular), *Alpadarshana*(scanty flow).[8] *Nastabeejartava* is caused by vitiation of *Vata* and *Kapha*, which impairs the *Uttarottaradhatu Vridhi* resulting in *Rasa Kshaya*, this affects the *Artava Utpatti* which is an *Upadhatu*, due to impaired *Kapha* does *Avarana* which results in anovulation. All *Acharyas* have mentioned *Beejadosha* with *Beejopaghata* is a factor for *Vandhyatva. Artava Kshaya* and its treatment which described in *Ayurveda* texts indicates both for menstrual cycle and ovulation. *Acharya Kashyapa* has described that *Revatigraha*, misuse of *Pancha Karma* and *Manasikavayadhis* as cause for *Nastabeeja.*[9]

Ovulation induction is the first line of treatment for the Anovulation. There are number of drugs are used for ovulation induction but they are reported to have various adverse effects, such as Ovarian hyper stimulation syndrome, Ovarian enlargement, Ovarian cancer, Ectopic pregnancy, Premature delivery, nausea, vomiting, breast tenderness, headache etc.[10] In the present scenario, the role of Ayurveda assumes great significance. Ayurveda, the ancient science of life, is a time-tested and scientifically based system of medicine that adopts a holistic and natural approach in the prevention and management of diseases. So as for *Shatapushpadi Taila* many studies are conducted in the form of *Basti, Pana, Nasya in Vandhyatwa,* PCOS/PMOS,[11] *Artavakshaya* and *Anartava,* because *Shatapushpadi Taila* has qualities like *Rutupravartaka, Yonishukravishodha, Putraprada* and *Deepana, Pachana*.[12,13] And for *Phalaghrita* the research studies were conducted in the form of *Snehapana, Uttarabasti* in *Vandyatwa /* female infertility,[14] development of ovarian follicle.[15] *Phalaghrita* possess the properties like *Yonishukradoshahara, Ayushya*, *Medhya, Pushti.*[16]

Therefore by this concept for the present study *Shatapushpadi Taila and Phalaghrita* were selected for *Nasya Karma* to achieve ovulation.

Aims and ObjectiveS:

Primary objectives:

To compare the efficacy of *Shatapushpadi Taila* and *Phala Ghrita Nasya* in Anovulation.

Secondary objectives:

To evaluate the effect of *Shatapushpadi Taila Nasya* in Anovulation.

To evaluate the effect of *Phala Ghrita Nasya* in Anovulation.

MATERIALS AND METHOD:

Source of Data

Literary source: Classical text books of *Ayurveda*, textbooks of contemporary sciences, published articles and journals from authentic websites.

Sample source: Subjects fulfilling the criteria for diagnosis and inclusion visiting OPD and IPD of Department of *Prasooti Tantra* and *Stree Roga,* JSS Ayurveda Medical Hospital,camps and other referrals will be consider for the study.

Drug source*:* *Shatapushpadi Taila* and *Phala ghrita* will be Purchased from GMP certified Pharmacy

Methods of collection of data:

Study design: An Open Label Comparative clinical study

Sample size: 40 subjects fulfilling the inclusion and diagnostic criteria.

Selection criteria: subjects fulfilling the inclusion criteria and diagnostic criteria with informed consent will be selected for the study.

Diagnostic criteria:

Ultrasonography of abdomen and pelvis before treatment

Number and size of the follicles

Volume of ovaries

Luteinizing hormone and Follicular stimulating hormone - range and ratio before and after the treatment.

Inclusion criteria:

Subjects complain of irregular cycles.

K/C/O PCOS.

Subjects fulfilling the diagnostic criteria.

Age group - from 18 to 35 years. Subjects who are fit for *Nasya Karma.*

Exclusion criteria:

Known case of chronic illness like cardiac diseases, thyroid dysfunction and diabetes mellitus, chronic rhinitis and sinusitis.

Known case of Pelvic inflammatory disease, benign and malignant lesions of reproductive organs, tuberculosis of reproductive organs.

Congenital deformities of female reproductive system.

Patients who are under treatment like oral contraceptives/steroids, emergency pills or any reproductive hormones.

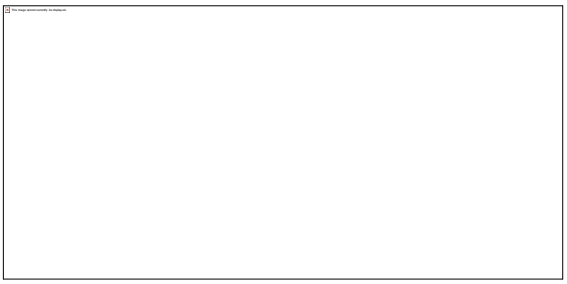
Assessment criteria:

Subjective parameters –

Regularity of cycle - was assessed before and after the treatment.

Interval of cycle

Assessment criteria for menstrual cycle



Criteria	Before Treatment	During Treatment Menstrual Cycle			After treatment Menstrual cycle
	Menstrual Cycle	In First Visit	In Second Visit	In Third Visit	In fourth visit
Duration of flow					
Interval between two menstrual cycles					
Amount of menstrual blood loss (No of pads used)					

Objective parameters

USG of Abdomen and Pelvis before treatment
number and size of the follicles
volume of ovaries
LH and FSH Range and Ratio before and after treatment.
The Assessment was based on the follicular study by ultra sonography method from12th day of menstrual cycle upto ovulation on alternate days of 3rd cycle after the treatment.
Follicular size
Effectiveness of treatment was assessed by following

GRADE	SIZE OF FOLLICLES
GRADE 0	< 12 mm
GRADE 1	12 – 19 mm
GRADE 2	19 – 23 mm
GRADE 3	Ovulation

GRADE	IMPROVEMENT	RESULT
GRADE 0	No changes	No changes in growth of follicles
GRADE 1	Mild Improvement	Improvement in size of follicles up to 12-19 mm
GRADE 2	Moderate Improvement	Ovulation will not occur but improvement in size of follicles >19 mm
GRADE 3	Marked Improvement	Ovulation will occur

Treatment protocol:

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	GROUP A	GROUP B
No Of Subjects	20	20
Medicine	*Shatapushpadi taila*	*Phala ghrita*
Dose	*6 bindu* (3ml) in each Nostril	*6 bindu* (3ml)in each nostril
Time Of Administration	Morning (empty stomach)	Morning (empty stomach)
Mode of administration	Nasal route	Nasal route
Duration of administration	3 consecutive months (interval of 28 days) for 7 days of intervention irrespective of menstrual cycle	3 consecutive months (interval of 28 days) for 7 days of intervention irrespective of menstrual cycle

Procedure of *Nasya karma:*
Purvakarma: *Mukha Abhyanga* with *Ksheerabala taila* followed by *mukha bashpa sweda*
Pradhana Karma:
GROUP A: *6 bindu* [17] (3ml) of *Shatapushpadi Taila*
GROUP B: *6 bindu* [16] (3ml) of *Phalaghrita.*
Paschat Karma: *Kavala* with *Sukoshna jala* and *Doomapana* with *Haridravarti*
Intervention period: 3 consecutive months

Assessment schedule: The Assessment was done based on the follicular study by ultra sonography method from 10th day of menstrual cycle till ovulation on alternate days of 3rd cycle after the treatment
Follow up : 1 month
Total study duration: 4 consecutive months
OBSERVATIONS:
Age (in years):

Table no 1: distribution of patients based on age

Age (in years)	Group A		Group B		Total	
	f	%	f	%	f	%
16-20	4	20	0	0	4	10
21-25	7	35	6	30	13	32.5
26-30	6	30	6	30	12	30
31-35	3	15	8	40	11	27.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

Occupation:

Table no 1: distribution of patients based on occupation

Occupation	Group A		Group B		Total	
	f	%	f	%	f	%
Homemaker	2	10	15	75	17	42.5
Student	13	65	3	15	16	40
Engineer	4	20	1	5	5	12.5
Doctor/Medico	1	5	0	0	1	2.5
Other	0	0	1	5	1	2.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

Marital status

Table no 3: Distribution according to Marital status

Marital status	Group A		Group B		Total	
	f	%	f	%	f	%
Unmarried	14	70	3	15	17	42.5
Married	6	30	17	85	23	57.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

Chief Complants

Table no 4: Distribution according to Chief Complaints

Chief Complaints	Group A		Group B		Total	
	f	%	f	%	f	%
Irregular cycles	15	75	4	20	19	47.5
Primary infertility	4	20	13	65	17	42.5
Secondary infertility	1	5	3	15	4	10
Total	**20**	**100**	**20**	**100**	**40**	**100**

Nature of work

Table no 5: Distribution according to Nature of work

Nature of work	Group A		Group B		Total	
	f	%	f	%	f	%
Heavy	0	0	1	5	1	2.5
Moderate	5	25	11	55	16	40
Sedentary	15	75	8	40	23	57.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

BMI:

Table no 6: Distribution according to BMI

BMI	Group A		Group B		Total	
	f	%	f	%	f	%
18-20 kg/m2	1	5	3	15	4	10
20-22 kg/m2	6	30	5	25	11	27.5
32-24 kg/m2	1	5	2	10	3	7.5
44-26 kg/m2	1	5	3	15	4	10
56-28 kg/m2	1	5	3	15	4	10
68-30 kg/m2	4	20	1	5	5	12.5
Above 30 kg/m2	6	30	3	15	9	22.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

RESULTS:

Regularity of cycle:

Table no 7: Effect of treatment on Regularity of cycle

Regularity of cycle		Mean	Median	SD	SE	Wilcoxon W	P value	% Effect	Result
Group A	**BT**	2.05	2	0.887	0.198	-0.513	0.608	4.9	Not Sig.
	AT	1.95	2	0.826	0.185				
Group B	**BT**	1.55	1	0.686	0.153	-2.271	0.023	25.8	Sig.
	AT	1.15	1	0.366	0.082				

In Group A, the mean score for regularity of cycle decreased from 2.05 to 1.95 after treatment with $p > 0.05$ showing the change was statistically not significant. In Group B, the mean score decreased from 1.55 to 1.15 after treatment ($p < 0.05$) indicating a statistically significant improvement in regularity of cycle.

Interval of cycle:

Table no 8: Effect of treatment on Interval of cycle

Interval of cycle		Mean	Median	SD	SE	Wilcoxon W	P value	% Effect	Result
Group A	BT	2.75	2	1.446	0.323	-0.121	0.608	-3.6	Not Sig.
	AT	2.85	2	2.183	0.488				
Group B	BT	1.95	1.5	1.099	0.246	-1.396	0.163	20.5	Not Sig.
	AT	1.55	1	1.146	0.256				

In Group A, the mean score in interval of cycle increased from 2.75 to 2.85 after treatment with $p > 0.05$. Therefore change was not statistically significant.
In Group B, the mean score decreased from 1.95 to 1.55 with $p > 0.05$. Hence the reduction was also not statistically significant.

Duration of flow:

Table no 9: Effect of treatment on Duration of flow

Duration of flow		Mean	Median	SD	SE	Wilcoxon W	P value	% Effect	Result
Group A	BT	1.6	1	0.883	0.197	-0.891	0.059	-53.1	Not Sig.
	AT	2.45	1	1.849	0.413				
Group B	BT	1.1	1	0.308	0.069	-1.000	0.317	-18.2	Not Sig.
	AT	1.3	1	1.129	0.252				

In Group A mean score increased from 1.6 before treatment to 2.45 after treatment. In Group B mean score increased from 1.1 before treatment to 1.3 after treatment.
However, neither Group A nor Group B showed statistically significant improvement in duration of flow after treatment (> 0.05).

Amount Of Menstrual Blood Loss:

Table no 10: Effect of treatment on Amount of Menstrual Blood Loss

Amount Of Menstrual Blood Loss		Mean	Median	SD	SE	Wilcoxon W	P value	% Effect	Result
Group A	BT	2.05	2	0.224	0.05	-2.349	0.019	-26.8	Sig.
	AT	2.6	2	0.94	0.21				
Group B	BT	1.8	2	0.616	0.138	-1.508	0.132	-13.9	Not Sig.
	AT	2.05	2	0.51	0.114				

In Group A, the mean score increased from 2.05 before treatment to 2.6 after treatment with $p < 0.05$ showing statistically significant result. In Group B, the mean score in amount of menstrual blood loss increased from 1.8 before treatment to 2.05 after treatment with $p > 0.05$ indicating that the change was not statistically significant .

Sr LH:

Table no 11: Effect of treatment on Sr LH

Sr LH		Mean	SD	SE	t	P value	% Effect	Result
Group A	BT	15.30	15.13	3.38	0.696	0.495	4.63	Not Sig.
	AT	14.59	11.39	2.55				
Group B	BT	13.32	11.75	2.63	1.068	0.299	10.48	Not Sig.
	AT	11.93	7.24	1.62				

In Group A, the mean Sr LH level showed a slight decrease from 15.30 before treatment to 14.59 after treatment with $p > 0.05$, indicating that the change was not statistically significant. In Group B, the mean Sr LH level also decreased from 13.32 before treatment to 11.93 after treatment p value > 0.05 which was not statistically significant.However, comparatively, Group B showed a higher percentage reduction, indicating a relatively better therapeutic effect, although the difference was not statistically significant.

Sr FSH:

Table no 12: Effect of treatment on Sr FSH

Sr FSH		Mean	SD	SE	t	P value	% Effect	Result
Group A	BT	5.75	2.23	0.50	0.319	0.753	2.6	Not Sig.
	AT	5.60	1.80	0.40				
Group B	BT	6.02	1.69	0.38	-0.965	0.347	6.9	Not Sig.
	AT	6.44	1.40	0.31				

In Group A, the mean Sr FSH level showed a slight decrease from 5.75 before treatment to 5.60 after treatment, p value > 0.05 indicating that the change was not statistically significant. In Group B, the mean Sr FSH level slightly increased from 6.02 before treatment to 6.44 after treatment with a p value > 0.05 indicating that the change was not statistically significant.

Volume of ovaries:

Table no 13: Effect of treatment on Volume of ovaries

Volume of ovaries			Mean	SD	SE	t	P value	% Effect	Result
Group A	Right	BT	11.59	4.00	0.89	2.224	0.038	11.39	Sig.
		AT	10.27	3.93	0.88				
	Left	BT	10.82	2.95	0.66	0.876	0.392	6.93	Not Sig.
		AT	10.07	4.38	0.98				
Group B	Right	BT	11.31	5.24	1.17	1.134	0.198	8.66	Not Sig.
		AT	10.33	3.74	0.84				
	Left	BT	9.35	4.55	1.02	2.117	0.048	12.14	Sig.
		AT	8.22	3.62	0.81				

In Group A, the right ovarian volume showed a reduction from 11.59 before treatment to 10.27 after treatment with a p value < 0.05 , indicating a statistically significant reduction and left ovarian volume decreased from 10.82 before treatment to 10.07 after treatment with p value of > 0.05, indicating that the change was not statistically significant. In Group B right ovarian volume decreased from 11.31 before treatment to 10.33 after treatment with p value > 0.05 indicating a non-significant change and left ovarian volume showed a reduction from 9.35 before treatment to 8.22 after treatment with a p value of < 0.05 indicating a statistically significant reduction.

Size of the follicle:

Table no 14: Effect of treatment on Size of the follicle

Size of the follicle		Mean	SD	SE	t	P value	% Effect	Result
Group A	BT	9.89	1.77	0.40	-4.052	0.001	34.33	Sig.
	AT	13.29	4.33	0.97				
Group B	BT	10.58	3.02	0.68	-6.298	<0.001	63.3	Sig.
	AT	17.28	5.30	1.19				

In Group A, the mean follicular size increased from 9.89 before treatment to 13.29 after treatment with p value 0.001- indicating a significant improvement in follicular development following treatment. In Group B, the mean follicular size showed a more pronounced increase from 10.58 before treatment to 17.28 after treatment with p value < 0.001, this change was highly statistically significant indicating marked improvement in follicular development after treatment.

Subjective parameters results between Group A and Group B:

Table no 15: Results between Group A and Group B by Mann Whitney U test

Parameter	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	p value	Result
Regularity of cycle	Group A	20	25.95	519	91.0	0.001	Sig.
	Group B	20	15.05	301			
	Total	40					
Interval of Menstrual Cycles	Group A	20	23.9	478	132.0	0.043	Sig.
	Group B	20	17.1	342			
	Total	40					
Duration Of cycle	Group A	20	23.95	479	131.00	0.017	Sig.
	Group B	20	17.05	341			
	Total	40					
Amount of Menstrual Blood Loss	Group A	20	23.35	467	143.0	0.027	Sig.
	Group B	20	17.65	353			
	Total	40					

Overall Group B showed statistically significant results in all subjective parameters like regularity of cycle (p value 0.001) , interval, duration and amount of blood than Group A ($p < 0.05$).

Objective parameters results between Group A and Group B:

Table no 16: Results between Group A and Group B by Unpaired t test

Parameter	Group	N	Mean	SD	Unpaired t	p value	Result
Sr. LH	Group A	20	14.59	11.39	0.882	0.383	Not Sig.
	Group B	20	11.93	7.24			
	Total	40					
Sr. FSH	Group A	20	5.60	1.80	-1.641	0.109	Not Sig
	Group B	20	6.44	1.40			
	Total	40					
Volume of Right ovaries	Group A	20	10.27	3.93	-0.05	0.96	Not Sig
	Group B	20	10.33	3.74			
	Total	40					
Volume of Left ovaries	Group A	20	10.07	4.38	1.455	0.154	Not Sig
	Group B	20	8.22	3.62			
	Total	40					
Follicular size	Group A	20	13.29	4.33	-2.61	0.013	Sig.
	Group B	20	17.28	5.30			
	Total	40					

Group B demonstrated significantly greater improvement in follicular size compared to Group A, Overall, whereas both groups exhibited comparable effects on hormonal parameters and ovarian volume with $p > 0.05$ indicating statistically not significant differences observed between them

Overall Effect:

Table no 17: Showing overall effect of both groups in follicular size

Overall effect	Group A		Group B		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Marked Improvement	4	20	11	55	15	37.5
Moderate Improvement	0	0	4	20	4	10
Mild Improvement	7	35	1	5	8	20
No changes	9	45	4	20	13	32.5
Total	**20**	**100**	**20**	**100**	**40**	**100**

Considering the overall pooled distribution of all 40 patients, 37.5% showed marked improvement, 10% showed moderate improvement, 20% showed mild improvement, and 32.5% showed no change after treatment

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DISCUSSION:

Anovulation is a condition which explains the failure of ovulation due to the dysfunction of hypothalamus-pituitary-ovarian axis. It is characterized as menstrual bleeding without preceding ovulation and corpus luteum formation. Any disturbance in co-ordination of hypothalamo pituitary-ovarian (HPO) axis can cause anovulation.[18] Such disruption may be correlated with *Dushtartava* or *Pradushtartava* i.e., *Dhatu Rupi Artava.*[19]

From *Ayurvedic* point of view, *Dhatu Rupi Artava* can be interpreted as female reproductive hormones responsible for regulating the menstrual and reproductive functions. When this *Dhatu Rupi Artava* becomes vitiated, its normal functions are disturbed, leading to defective folliculogenesis, failure of ovulation, menstrual irregularities, and ultimately infertility i.e., *Beeja Rupi Arthava Dushti*.[20, 21]

As *Vata* plays a crucial role in the pathogenesis of *Abeejotsarga*/*Nashtabeeja*. Hence, the management of anovulation aimed towards *Vata shamana*, *Artava-Pravartana*, and restoration of normal reproductive physiology. Considering the role of *Vata* in the pathogenesis of *Abeejotsarga*, *Shatapushpadi Taila* and *Phalaghrita* were selected for *Nasya Karma* in the present study due to their properties.

As Shatapushpadi Taila is having *Ritu Pravartana, Yoni Shukra Vishodhana, Putrapada, Veeryakari* properties.[15] *Shatapushpa* as a key ingredient in the formulation mainly contains phytoestrogens, phytoestrogens have mixed estrogenic and anti-estrogenic action, depending on target tissue. Phytoestrogens may be either able to affect the endogenous production of estrogens. The pituitary gland releases gonadotropins that stimulate estrogen synthesis in the ovaries.[22] Carvone, a major constituent, exhibits phytoestrogenic activity and being a lipid-soluble bioactive compound, it can easily cross cell membranes and the blood-brain barrier, stimulate hypothalamic activity, act upon the HPO axis, and helps to regulate the normal menstrual cycle.[23]

And *Phalaghrita* formulation contains *Yonishukradoshahara, Ayushya*, *Medhya, Pushti*, *Pumsavanam, Dhanya* properties.[16] Key Ingredients of *Phalaghrita* like *Shatavari* has adaptogenic and estrogen-mimicking properties. It promotes ovulation, regulates menstrual cycles. *Ashwagandha* considered as a *Medhya Rasayana, Ashwagandha* supports adrenal and thyroid function, helps in stress management, and improves hormonal balance. *Brahmi* acts as a nerve tonic, managing psychological factors like stress, anxiety, and sleep disturbances that can impact ovulation and fertility. *Adaptogens* in the formula stabilise hypothalamic-pituitary-ovarian (HPO) signalling, improving luteinising-hormone surges needed for timely ovulation.[24]

Probable mode of action of *Nasya*:

According to *Charaka Samhita*, the drug which is administered through the nose enters the *Uttamanga* and eliminates the morbid *Doshas* residing there.[25]

According to modern science: Hypothalamus is the major integrating link between the nervous and endocrine system. It receives input from the limbic system, cerebral cortex, thalamus, reticular activating system and also sensory signals from internal organs as it is a crucial endocrine gland.[26] *Nasya* regulates *Prana Vayu*, which in turn normalizes *Apana Vayu*, responsible for reproductive functions and act on *Manovaha Srotas*, improving stress-related gynaecological disorders. When *Nasya* formulations possessing *Teekshna* and *Ushna Guna* are administered through the nasal route, absorption of the drug constitutes is the initial step. These properties stimulate local secretions and facilitate the expulsion of vitiated *Doshas* from the cranial region. Expulsion of secretions from the paranasal sinuses is the most crucial process. Drugs excite olfactory neurons in the mucous membrane, as well as the trigeminal ganglion. The olfactory bulb's fibers provide essential information to the hypothalamus. Which regulates endocrine processes and promotes reproductive health by gently stimulating the hypothalamus-pituitary-ovarian(HPO) axis. *Nasya* with uses medicinal *Taila/Ghrita* will soothe the nervous system, reducing cortisol levels and increasing hormonal stability.[27]

Therefore, *Nasya* may exert its therapeutic effect through stimulation of the hypothalamic centers, leading to improved regulation of GnRH secretion and subsequent normalization of FSH and LH levels. Such neuro-hormonal regulation may facilitate follicular maturation

and ovulation, thereby contributing to the management of anovulatory conditions.

CONCLUSION:

The present study concludes that both *Shatapushpadi Taila Nasya* and *Phalaghrita Marsha Nasya* are effective in the management of anovulation. However, *Phalaghrita Marsha Nasya* demonstrated greater therapeutic efficacy, producing significantly better clinical outcomes in comparison to *Shatapushpadi Taila Nasya* although no statistically significant differences were observed between the groups in most objective parameters.

Thus, *Phalaghrita Nasya* may be considered a safe, promising, and effective *Ayurvedic* intervention for the management of anovulation. Future studies should be undertaken with larger sample sizes and longer follow-up periods to evaluate the efficacy of *Phalaghrita Pratimarsha Nasya* along with appropriate supportive oral medications and to assess its role in enhancing and sustaining the therapeutic outcomes in the management of anovulation.

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