



Research Article

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CLINICAL EVALUATION OF VANGA BHASMA AS VRISHYA

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ABSTRACT

Day to day stress at work, various physical, biological, chemical and socio-economic factors contribute to a decline in concentration, motility and in the percentage of morphologically normal spermatozoa in fertile men. Ayurveda has several effective remedies which may act as a boon for seminal disorders. Vanga Bhasma (calcined tin) is one of the most popular drugs, used as Vrishya and to potentiate sexual vigour. It has been acclaimed to be efficacious in sukra dosa, swapanmeha and also prevents sukrakshaya. The present study was undertaken to evaluate the efficacy of Vanga Bhasma as Vrishya on the basis of seminal parameters, sexual dysfunction, and quality of sexual life. The study was conducted on 30 male subjects. The results were assessed in terms of seminal parameters, Questionnaire on Quality of Sexual Life and Symptomatic relief on the basis of scoring system. Statistically significant improvement ($p < 0.01$) was observed on total sperm count and semen volume. Highly significant improvement, with $p < 0.001$ was observed on abnormal sperm forms and sperm motility. In terms of subjective parameters also, highly significant improvement, with $p < 0.001$ was observed in sexual desire, rigidity, ejaculation, erection and orgasm. The study revealed that Vanga Bhasma can be used as a Vrishya drug.

Keywords: Vanga Bhasma, Vrishya, Seminal parameters, Sexual dysfunction.

INTRODUCTION

Diseases are the destroyers of health and life. They manifest themselves as a hindrance in leading a happy and healthy life. Day to day stress at work and at home also adds to the hostile environment against good health. Among the men, this stress also exhibits a negative impact on their sexual health.¹ The totality of physical, chemical, biological, behavioral and socio-economic factors play a major role in the development of disturbances in seminal parameters. Various studies have indicated a decline in the concentration, motility of sperm and in the percentage of morphologically normal spermatozoa in fertile men that is independent of the age of men.^{2,3} Similar studies have also been conducted in the Indian perspective, which indicate a reduction in sperm count and sperm morphology.^{4,5} Thus, it seems, the proportion of men with fertility problems is likely to increase in near future. Ayurveda describes the use of Vrishya (aphrodisiac) and Vajikarana (aphrodisiac) therapy for problems related to sexual health.⁶ Vrishya are the drugs which enhance the quantity and quality of semen. It also facilitates ejaculation of semen to the exterior of body and increase the production of Sukra (semen).^{7,8} In a nutshell, it can be deduced that 'Vrishya' are beneficial mainly in increasing the Sukra quantitatively and qualitatively, thus may show improvement in seminal parameters. The inventory of Ayurveda provides various medications in different dosage forms for use as Vrishya. Vanga Bhasma (calcined tin) is one of the most popular drugs used as Vrishya, i.e. to improve the quantity of Sukra as well as to treat the sukra dosa (vitiating of sukra). Vanga Bhasma has been acclaimed to be efficacious in Sukra Dosa, swapanmeha (night emissions), and also for prevention of sukrakshaya

(diminution of sukra).⁹ It is also used as balya (increases strength), sukra vardhak (increases sukra) and has a medohar (hypolipidemic) effect.⁹ Based on these properties of Vanga Bhasma, it was taken as trial drug for evaluation of its property as Vrishya on seminal parameters, sexual dysfunction and quality of sexual life. The complete evidence based data on the efficacy of Vanga Bhasma as Vrishya has certain lacunae. Also, no study has been conducted on Vanga Bhasma, taking in to account, the latest guidelines of WHO (World Health Organization) in respect to seminal parameters. Thus, the present study was planned to generate evidence on the basis of some new parameters like the latest recommendations of WHO for seminal parameters¹⁰, subjective parameters and a Questionnaire on Quality of Sexual Life¹¹ (Table 7).

MATERIALS AND METHODS

Selection of subject

30 male volunteers as well as patients attending the OPD of the Institution's Hospital were selected in the age group of 18 years to 60 years irrespective of race, caste and religion. It was an observational trial with single group only.

Inclusion criterion

Patients willing for the trial and those suffering from seminal disturbances and volunteers were taken for the study.

Exclusion criterion

- Patients with significant cardiac, renal, hepatic or hematological disorder.
- Patients suffering from any local disease of genitalia.

Laboratory Analysis

Semen Analysis - Appearance, pH, Liquefaction time, Viscosity, Total Sperm count, Sperm motility, sperm morphology

Method of Study

IEC and Consent

Approval from the Institutional Ethics Committee (IEC) was taken prior to begin with this study vide No.16/2012 dated 15.05.2012. Written and informed consent of the patients was taken before their registration for the study.

Patient Information Sheet and CRF

All the patients were given an information sheet stating all the details of the study protocol, benefits of the trial and any expected side effects. A clinical research proforma was prepared to note down all the details of the patients and their disease profile.

Preparation and Administration of Drug

Vanga Bhasma was prepared from Vanga procured from the Pharmacy of the college. It included three stages namely, Shodhan (purification), Jaran and Maran (incineration).

Shodhan

Samanya¹² and Vishesha¹³:- Raw Vanga was heated to red hot stage and then quenched in Tila oil, Takra, Gomutra, Kanjika, Kulattha Kwath respectively seven times each. Then, it was quenched in Nirgundi Kwath mixed with Haridra powder for 3 times.

Jaran

Shodhit Vanga was put in an Iron vessel and heated over flame till it melted. Then equal quantity of Asvatha bark was added to it and rubbed till it turned into powder form.¹⁴

Maran

Maran was done with hingul media.¹⁵ Jarit Vanga was put in a pestle – mortar and Hingul (1/8th) was added to it and levigated with *Aloe vera* pulp. Then contents were dried, cut into pellets and subjected to heating at a temperature of 900°C in an electric furnace. This process was repeated 10 times till Bhasma of required parameters was obtained.

Administration of Drug, Duration and Dosage

The trial drug Vanga Bhasma was given by oral route in dose of 60 mg twice a day for 28 days.¹⁶

Assessment

Before and after treatment, total two assessments were carried out. Objective criterion included laboratory profile of semen analysis. Another criterion of assessment was based on the scoring of Questionnaire on Quality of Sexual Life, which included Sexual life score, Skills score, Psychological Well-being score and Global QOL Index. Assessment of subjective improvement in terms of sexual desire, erection, rigidity, ejaculation, frequency of coitus, post act exhaustion, performance anxiety and signs of Sukra Dushti¹⁷ was also done.

Statistical Analysis

The obtained data was analyzed statistically and expressed in terms of mean, standard deviation (\pm SD) and standard error (\pm SE). Appropriate 't' test was applied to observe the significance of results obtained after treatment. The data was analyzed using the "spss software" of statistics.

Observations

Of the total 30 subjects enrolled, 25 completed the study. Five volunteers did not turn up for the follow up and were considered drop out. Maximum numbers of patients, that is, 80 % belonged to 25-36 years of age, 50 % were Graduates, 50 % belonged to Middle class, 66.67 % were married, 90 % took spicy food, 70 % were under stress or were tense due to nature of work, 66.67 % used hot water for bathing purpose, 40 % were either smoker or took alcohol, 6.66 % suffered either from hydrocele or varicocele, 46.66 % of patients reported premature ejaculation as comorbid condition, 10 % patients were suffering from primary infertility, 26.66 % patients reported with secondary infertility, 76.66 % subjects had poor sex education, 40 % had Pitta Kapha Prakriti, 23.33 % had Vata Pitta Prakriti that 50 % subjects had Rajasika-Tamasika Prakriti, 70 % had Madhyam Satva and 63.33 % had Madhyam Sara. Seminal analysis revealed 13.33 % patients were suffering from oligozoospermia, 10 % were found to be azoospermic, 10 % were reported to be asthenozoospermic according to the W.H.O. criteria for semen analysis 2010.

RESULTS

Effect of therapy was assessed on the basis of observations on seminal parameters (Table 2), sukra dushti lakshana (symptoms of sukra dushti) (Table 4), subjective parameters (Table 6) and quality of sexual life (Table 8). The morphological sperm forms like pin head sperms, double head sperms, amorphous heads and bifid tailed sperms were studied under abnormal sperm forms. Statistically, highly significant improvement with $p < 0.001$ was observed in terms of reduction in abnormal sperm forms. There was marked improvement in the motility of sperms with $p < 0.001$, which was statistically highly significant. Significant improvement with $p < 0.01$ was observed on total sperm count and semen volume. The Sukra dusti lakshana were attributed grading pattern as depicted in Table 3. The collected semen sample was kept for some time at room temperature to allow for its liquefaction to occur and then observed for Sukra dushti lakshana. Statistical analysis revealed highly significant improvement, in phenilam, puti and tanu sukra symptoms, with $p < 0.001$. The mean score of Anyadhatupsansrishtam Sukra could not be calculated as none of the patients had presented with this symptom. Also the mean score of Vivarnam Sukra could not be calculated statistically as only one patient presented with this symptom. Sexual dysfunction was studied on the basis of subjective parameters as depicted in Table 5. Highly significant results were observed statistically, with $p < 0.001$ in subjective parameters in terms of Sexual Desire, Erection, Rigidity, Ejaculation and Orgasm. There was improvement in performance anxiety also. Statistical

evaluation of performance anxiety revealed significant result with $p < 0.01$. A Questionnaire on Quality of Sexual Life (QVS) (Table 7) was given to each patient to assess the quality of Sexual Life, and its impact on their social life and well-being. Statistical analysis (Table 8) showed highly significant improvement ($p < 0.001$) in their Sexual life score and the skills score. Psychological Well-being was another aspect that was analysed in the QVS. Highly significant score with $p < 0.001$ was observed on it. Global QOL Index was analysed according to a single question as stated in the QVS and the result was highly significant ($p < 0.001$). Based on this result, it could be inferred that the patients responded well to the treatment and there was a marked improvement in their Quality of Life. This part of the result also indicated that the treatment was effective in improving the social life and well-being of the patients.

Overall effect of therapy

Overall effect of therapy on 25 patients (who completed the trial) was calculated by taking the percentage of relief and based on objective criteria. The study revealed (Table 9) that 12 % patients showed highly effective result of the therapy. Forty percent patients were improved moderately, 44 % were having mild improvement while 4 % did not show any improvement

DISCUSSION

The present study was undertaken to evaluate the efficacy of Vanga Bhasma on seminal parameters and its action as Vrishya. The outcome of the study showed ample evidence in regard to Vanga Bhasma acting as a "Vrishya". Vanga possess tikta, kashaya rasa, sheet virya, laghu and rooksha guna.¹⁸ By virtue of its lavana rasa, ushna guna and balya guna it mitigates vata.¹⁹ The drugs

which are used in the Shodhan, Jaran and Maran especially Aswattha, have the property of vata and pitta saman and is also a Vajikara.²⁰ Also the karma of Vanga is vajikara and vrishya which enhances the quality and quantity of shukra. These properties can also be attributed to its prabhava. Tin has been known to be an ultra-trace element. The term ultra-trace element has been defined as an element with an established, estimated or suspected requirement generally indicated by $\mu\text{g/day}$ for humans.²¹ The need for ultra-trace elements becomes apparent when the body is stressed in some manner. It has been estimated that one fourth of all known enzymes involve a metal ion as their constituent. Moreover these elements serve as coenzymes for irreplaceable metal-ion-activated enzymes or metallo-enzymes. The oxidation-reduction potential of $\text{Sn}^{2+} = \text{Sn}^{4+}$ is 0.13 V, which is very near to the oxidation reduction potential of the flavine enzymes. Thus, tin might have a role in some redox reaction occurring in the body. The presence of Na, Mg, Al, Si, S and Fe in Vanga Bhasma as evident from its EDX report adds to its therapeutic efficacy. (Image 1) Studies have shown the essential role of these ions in the process of spermatogenesis.²² The other important ions found in human semen are magnesium and sodium which are also present in Vanga Bhasma. Our understanding of the biological events, which link an ultra-trace element to its specific vital function, is still limited. This combination of specific metal ions and a protein produces unique enzymes with specific catalytic functions. From these facts it can be inferred that tin in the form of Vanga Bhasma may act as a catalytic agent in body by binding to different enzymes and alter certain chemical reactions in reference to the physiology pertaining to the sexual functions of the body, whose final effect is observed as Vrishya.

Table 1: Demographic Observations

Factor	Observation	No. of Patients (Percentage)
Age group	25-36 years	80 %
Education	Graduates	50 %
Socio-Economic Status	Middle class	50 %
Marital Status	Married	66.67 %
Dietary Habit	Spicy food	90 %
Appearance	Stress/Tense/anxious	70 %
Bathing pattern	Hot water	70 %
Addiction	Smoking/Alcohol	40 %
Physical Examination (genitals)	Hydrocele/Varicocele	6.67 %
Chief complaint	Premature Ejaculation/ED	46.66 %
	Primary Infertility	10.00 %
	Secondary infertility	26.66 %
Prakriti	Vata-Pitta	23.33 %
	Pitta-Kapha	36.66 %
	Kapha-Vata	40.00 %

Table 2: Effect of therapy on various seminal parameters

S. No.	Criteria	Mean		Mean Diff. (%)	SD	SE	t	p
		BT	AT					
1.	Total sperm count (mill/ml)	03.90	41.90	19.09	11.20	2.30	-3.4	<0.01
2	Abnormal sperm forms (%)	11.80	06.65	43.64	04.20	0.90	5.4	<0.001
3	Semen volume (ml)	01.96	02.30	14.78	00.40	0.09	-3.3	<0.01
4	Motility (%)	45.40	52.20	13.02	07.04	1.43	-4.7	<0.001
5	Liquefaction time (min)	25.80	23.40	09.30	07.50	1.50	1.5	>0.05
6	Viscosity	02.00	01.90	05.00	00.80	0.01	0.4	>0.05
7	pH	07.30	07.20	01.36	00.07	0.01	3.1	<0.01

AT- After Treatment, BT- Before Treatment, SD- Standard deviation, SE- Standard Error

Table 3: Assessment on basis of Sukra dusti Lakshana

Parameter	Symptom present (Grade)	Symptom absent (Grade)
Phenilam	1	0
Tanu	1	0
Ruksham	1	0
Vivarnam	1	0
Puti	1	0
Picchilam	1	0
Anyadhatupsansrishtam	1	0
Avasadi	1	0

Table 4: Effect of therapy on Sukra Dushtilakshana

S. No.	Criteria	Mean		% Diff.	SD	SE	t	p
		BT	AT					
1	Phenilam	1.00	0.22	78.00	0.44	0.14	5.29	<.001
2	Tanu	1.00	0.22	78.00	0.42	0.10	7.71	<.001
3	Ruksham	0.81	0.45	44.44	0.80	0.24	1.49	>.05
4	Vivarnam	1.00	1.00	00.00	-	-	-	-
5	Puti	1.00	0.27	73.00	0.45	0.09	7.48	<.001
6	Picchilam	0.80	0.70	12.50	0.73	0.23	0.42	>.05
7	Anyadhatupsansrishtam	0.00	0.00	00.00	-	-	-	-
8	Avasadi	1.00	0.18	82.00	0.01	0.10	8.06	<.001

AT- After Treatment, BT- Before Treatment, SD- Standard deviation, SE- Standard Error

Table 5: Subjective assessment criteria

Parameter	Assessment Grade					
	0	1	2	3	4	5
Sexual Desire	No desire at all	Lack of desire	Desire only in demand of Partner	Normal desire	Excess desire	-
Erection	No erection by any methods	Erection with artificial methods	Erection but unable to penetrate	Initial difficulty but able to penetrate	Erection with occasional failure	Erection whenever desired
Rigidity	Unable to maintain erection or unable to continue sexual act	Erection in some cases but able to continue the act	Sexual act to maintain erection and continue sexual act	-	-	-
Ejaculation	Mere thought/slight/No ejaculation at all	Ejaculation during Foreplay	Ejaculation before penetration	With penetration <30 sec and 1-5 pelvic thrusts	With penetration <60 sec and 5-10 pelvic thrusts	With penetration >60 sec atleast 10 pelvic thrusts
Orgasm	No ejaculation at all	Lack of enjoyment in most of occasions	Enjoyment in 25% of sexual encounters	Enjoyment in 50% of sexual encounters	Enjoyment in 75% of sexual encounters	Enjoyment in every sex act
Performance anxiety	Anxiety hampers in almost all the encounters	Anxiety that hampers 75 % of the encounters	Anxiety that hampers 50 % of the encounters	Anxiety that hampers 25 % of the encounters	Slight anxiety, does not hamper sexual act	No Anxiety
Post act exhaustion	After every sexual act	In 75% of the encounters	In 50% of the encounters	In 25% of the encounters	Slight exhaustion	No exhaustion
Frequency of Coitus	0/ week	1-2 /week	3-4 /week	>4/week	-	-

Table 6: Effect of therapy on Subjective Parameters

S. No.	Criteria	Mean		% age Diff.	SD	SE	t	P
		BT	AT					
1	Sexual Desire	1.72	2.84	39.43	0.43	0.08	-12.73	<.001
2	Erection	2.92	3.56	17.97	0.63	0.12	-5.01	<.001
3	Rigidity	1.12	1.76	36.36	0.48	0.09	-6.53	<.001
4	Ejaculation	3.16	3.72	15.05	0.50	0.10	-5.52	<.001
5	Orgasm	2.48	3.20	22.50	0.45	0.09	-7.85	<.001
6	Performance anxiety	2.36	2.68	11.94	0.47	0.09	-3.36	<.01
7	Post act exhaustion	1.84	2.60	29.23	0.52	0.10	-7.26	<.001
8	Frequency of coitus	1.20	1.36	11.76	0.74	0.07	-2.13	<.05

AT- After Treatment, BT- Before Treatment, SD- Standard deviation, SE- Standard Error

Table 7: Quality of Life Questionnaire

Quality Of Sexual Life Questionnaire (QVS)											
The following questions ask about your sexual life. Please indicate your answer by ticking one box. Please take your time to fill in the questionnaire and answer the questions alone in a quiet place. There are no right or wrong answers. If you do not know how to answer, please choose the response that best corresponds to your situation.											
1. You think things are going :- 1- very badly; 2- fairly badly; 3- neither well nor badly ; 4- fairly well; 5- very well											
S. No.	Sexuality (you think things are going)	BT					AT				
		1	2	3	4	5	1	2	3	4	5
1.	Concerning the pleasure you can reach in your sexuality										
2.	Concerning how you feel before starting a sexual activity										
3.	Concerning your feeling of manliness										
4.	Concerning how sexually normal you feel										
5.	Concerning yours partner's satisfaction during sexual relations										
6.	Concerning your sexual desire										
7.	Concerning the intensity of your orgasms										
8.	Concerning the quality of your ejaculation										
Social life											
9.	Your relationships with other people										
10.	Concerning your relationships with your family										
11.	Concerning your professional relationships										
Well Being											
12.	Concerning how you feel about yourself										
13.	Concerning your mood										
2. In your life you consider this to be :- 1- unimportant; 2- somewhat important; 3- very important; ; 4- extremely important;											
S. No	Sexuality (In your life you consider this to be)	BT					AT				
		1	2	3	4	5	1	2	3	4	5
1.	Concerning the pleasure you can reach in your sexuality										
2.	Concerning how you feel before starting a sexual activity										
3.	Concerning your feeling of manliness										
4.	Concerning how sexually normal you feel										
5.	Concerning yours partner's satisfaction during sexual relations										
6.	Concerning your sexual desire										
7.	Concerning the intensity of your orgasms										
8.	Concerning the quality of your ejaculation										
Social life											
9.	Your relationships with other people										
10.	Concerning your relationships with your family										
11.	Concerning your professional relationships										
Well Being											
12.	Concerning how you feel about yourself										
13.	Concerning your mood										
3. Global : 1- very dissatisfied; 2- somewhat dissatisfied; 3- indifferent; 4- somewhat satisfied; 5- very satisfied											
S. No	Global	BT					AT				
		1	2	3	4	5	1	2	3	4	5
14.	If you were to live that way for the rest of your life, how satisfied would you be:										
Scoring method											
Sexual Life score (eight items): The raw score is the sum of answers to set: 'you think things are going...' of items: 1, 2, 3, 4, 5, 6, 7 and 8. If the number of items without any answer is >3, the score cannot be calculated. If the number of items without any answer is <3, the missing value is replaced by the mean score of the items which are completed. Minimal (Min) score is 8, maximum (Max) score is 40. Final score = [(raw score-Min)/(Max-Min)] x 100.											
Skills score (13 items): The raw score is the sum of answers to set: 'in your life you consider this to Be..' of all items except item 14. If the number of items without any answer is >6, the score cannot be calculated. If the number of items without any answer is <6, the missing value is replaced by the mean score of the items that are completed. Minimal score is 13, maximum score is 52. Final score = [(raw score-Min)/(Max-Min)] x 100.											
Psychosocial Well-being score (six items): The raw score is the sum of answers to set: 'you think things are going' of items: 9, 10, 11, 12, 13 and 14. If the number of items without any answer is >2, the score cannot be calculated. If the number of items without any answer is <2, the missing value is replaced by the mean score of the items that are completed. Minimal score is 6, maximum score is 30. Final score = [(raw score-Min)/(Max-Min)] x 100.											
Global QOL Index (14 items): The raw score is the sum of items from the Sexual Life score and Psychosocial Well-being score. If the number of items without any answer is >6, the score cannot be calculated. If the number of items without any answer is <6, the missing value is replaced by the mean score of the items that are completed. Minimal score is 14, maximum score is 70. Final score = [(raw score-Min)/(Max-Min)] x 100.											

BT- Before Treatment, AT- After Treatment

Table 8: Effect of therapy on Quality of Sexual Life

S. No.	Criteria	Mean		% age Diff.	SD	SE	t	P
		BT	AT					
1	Sexual life score	49.87	68.74	27.45	7.46	1.49	-12.64	<.001
2	Skills score	52.40	68.61	23.62	4.35	0.87	-18.61	<.001
3	Psychological Well-being score	55.33	72.49	23.68	6.28	1.25	-13.65	<.001
4	Global QOL Index	66.92	85.35	21.59	6.22	1.24	-14.81	<.001

AT- After Treatment, BT- Before Treatment, SD- Standard deviation, SE- Standard Error

Table 9: Overall effect of therapy

S. No.	Effect	No of Patients	Percentage of patients (%age)
1.	Highly improved	3	12
2.	Moderately Improved	10	40
3.	Mildly Improved	11	44
4.	No Improvement	1	4

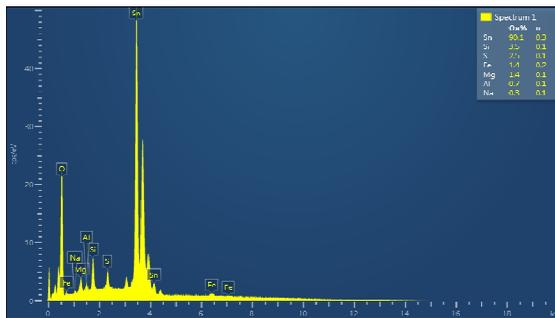


Image 1: EDX of Vanga Bhasma

CONCLUSION

Vrishya is a broad term comprising physical, mental and social factors. In the present study Vanga Bhasma was evaluated for its Vrishya effect. The drug showed potent Vrishya effect which is evident from the improvement in seminal parameters, subjective symptoms, quality of life, psychological and social well-being. However, further research to elucidate its exact mechanism of action and studies over animal models to validate the claim are required.

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