

A REVIEW: EFFECT OF SWARNA BHASMA IN THE MANAGEMENT OF SHUKRA-KSHAYA W.R.T. OLIGOSPERMIA

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ABSTRACT

Rasaushadhis and *bhasmas* were widely used by *Ayurveda Acharyas* as they gave a better result with minimum dose in short interval of time. Review of previous researches show ample of studies on the *swarna bhasma* which enables to state its importance in male infertility. Infertility is one of the most tragic of all marital problems. Rough estimate suggests that amongst the childless couples about 50% of cases are due to male infertility. Contemporary science advocates the use of surgical interventions while others are treated with androgens and gonadotrophic medication along with antioxidants which is far from satisfactory. All of these facts demand for a need to find safe & effective drug like *swarnabhasma*. So, the current review is done on the previous researches of *swarna bhasma* in semen relayed problems. Information was collected by going through available classical literature and other publications from authentic journals/articles and other studies conducted on *swarnabhasma*. In the current review 9 classical references of *swarnabhasma* were noted. In each reference it is known as, either, *vrushya*, *dhatu-wardhak*, *pumsavanopayogi*. From various clinical and preclinical studies, it is noted that Gold(Au) may be an important factor in maintaining fertility.

KEYWORDS: *Swarna,bhasma, vajikar, male infertility, gold, shukra.*

INTRODUCTION

In general, infertility is defined as not being able to conceive after one year or longer of unprotected coitus¹.

Factors essential for conception include:

- Healthy spermatozoa
- Spermatozoa should undergo changes.
- Motile spermatozoa

Male infertility refers to a male inability to result pregnancy in fertile female. There may be alterations in sperm motility & /or concentration & / or morphology. Sperm parameters below those described by the WHO are considered male factor infertility.

Of all infertility cases, male infertility

contributes to 40-50% of infertility cases and 2% experience suboptimal sperm parameters². Many common causes of male infertility are considered which include pre-testicular, testicular, post-testicular, sperm abnormalities such as oligospermia, asthenozoosperma, oligoasthenozoospermia etc. Oligospermia / oligozoospermia implies that the sperm count is less than 20 million/ml.

Shukra kshaya lakshana: Exhaustion, Impotency, Difficulty in ejaculation of semen, Pain in testes and penis, ejaculating little quantity of semen after painful coitus³.

Observations:

Table 1: From classical texts: Swarna bhasma Karma & rogagnata^{4,5,6,7,8,9,10,11,12.}

Swarna bhasma	R. T	R.R. S	R.J. N	R.P. S	A. P	R.S. S	R.S.	B.P.N.	K.N.
Kshaya	+	+	+		+		+	+	+
Agnimandya	+	+	+						
Pandu	+	+	+						
Visha-nashak	+	+	+	+	+	+		+	+
Oja-vardhak	+	+	+	+					+
Dhatu-vardhak		+	+	+	+	+	+	+	+
Balya	+	+	+		+		+	+	+
Snigdha		+						+	
Bruhana	+	+			+			+	
Medhashaktivardhak	+	+	+		+	+	+	+	+
Vrushya	+	+	+		+				+
Kantakar	+			+		+	+	+	+
Rasayana	+	+	+		+	+	+	+	+
Pumsavanopayogi	+								

Note: Rasatarangini (R.T.), Rasaratna samucchaya (R.R.S) Rasa jala nidhi (R.J.N), Rasa prakasha sudhakar (R.P.S.), Ayurveda Prakash (A.P.), Rasaendra Sara sangraha (R.S.S.), Rasayansara (R.S.), Bhavaprakasha Nighantu (B.P.N), KaidevaNighantu(K.N.)

Swarna bhasma matra: 1/8th to 1/4th part of ratti (15-30mg).^{13,14.}

Table2:Swarnabhasma Guna^{15,16,17,18,19,20,21}

Properties	R.T.	R.J. N	A.P.	R.S. S	R.S.	B.P.N.	K.N.
Madhura-tikta-kashaya	+	+	+	+		+	+
Guru		+	+	+			+
Sheeta		+	+	+	+		+
Madhuravipaka		+	+	+		+	+

Properties of shukradhatu:

According to Acharya Charaka, it has properties like snigdha, ghana, picchila, madhura, avidahi²² while Acharya Sushruta describes it as spathikabha, drava, snigdha, madhura, madhu-gandhi^{23.}

In Charaka Samhita, Acharya Charaka mentions the samanya-vishesha siddhanta in sutrasthana meaning, increasing dosha, dhatu, mala by increasing those substances which have dravya, guna or karma samanya.

Also, the properties, benefits and diseases if used in excess of madhura rasa are described. Madhura rasa is formed by prithvi and jala mahabhuta, it is sheetaveerya, being satmya it helps in increasing the dhatus and oja. In the shloka it is clearly mentioned as shukra-bhivardhanam^{24,25}. Therefore, due to samanya sidhanta, swarna bhasma may benefit in male infertility by increasing the overall quality of shukra dhatu.

Research work conducted on Swarna bhasma:

Godatwar et al from GAU, clinical trial was conducted to study the role of swarna bhasma in normozoospermia. The volunteers were orally administered swarna bhasma 4 mg twice daily for a month. The findings state that there was significant improvement in the sperm concentration. It improved the overall quality of the sperm, by increasing in Rapid Linear Progression (RLP) & Sluggish Linear Progression (SLP) motility, body weight. In rat models the diameter of seminiferous tubules along with their quantity was found to have increased²⁶.

Rao Niranjan et al, in his clinical trial, administered swarnabhasma 5 mg twice daily for two months. Swarna bhasma was found to be more effective than the combination of Amlakadi kwatha and katphaladi kwatha. There was improvement in RLP & SLP motility of spermatozoa & sperm count²⁷.

Prasad B.S. et al conducted a similar clinical study to observe the role of swarnabhasma & vajikaran drugs in management of shukradushti. It was found that by administering swarna bhasma [capsule form] in dose of 4mg twice daily [anupan-milk] for 30 days significantly improved the RLP & SLP and decrease in immotile and abnormal sperms. Swarna bhasma was comparatively found to be more effective than other vajikaran drugs used on the study (ashvagandha & shweta musali)²⁸.

Thakar A.B. et al conducted a comparative study between swarna bhasma, kokilaksha

beeja & ashvagandha churna as a clinical study on oligospermia. Swarna bhasma was administered 10 mg twice daily [anupan-milk] for 30 days. It was found that swarna bhasma significantly increased sperm concentration and decreased abnormal spermatozoa²⁹.

DISCUSSION

Studies have shown presence of several trace elements like copper, zinc, gold etc in the male reproductive organs³⁰. In a study conducted by Jain Vinod et al, to estimate the amount of gold in the whole semen of fertile men, this study takes into account the concentration of gold after its digestion (i.e. to convert all organically bound gold into inorganic forms which is the detectable form). The observed range of Au was found to be between 0.36 to 1.98 µg/ml with a mean value of 0.88 µg/ml³¹. A recent study by Alexandria journal of medicine (2016), of seminal analysis in a person with normal semen analysis parameter, seminal plasma 17.0+/-9.63 µg/dl and in spermatozoa it is 17.66+/-5.55µg/dl for presence of gold. Similarly, in cases of oligozoospermia gold in seminal plasma was found to be 13.0+/-0.73µg/dl and in spermatozoa 6.0+/-0.65µg/dl. Therefore, it may be said that in pathological conditions gold content is comparatively less³². Taking a look at the clinical trials conducted on swarna bhasma it is noted that the results showed increase in sperm concentration and improved motility of the sperms [Table 3].

Table 3: Clinical studies conducted on swarna bhasma.

Name	Study type	Dose	Study Duration	Results
Godatwar	Clinical	4mg twice	30 days	Sperm concentration, overall

		daily			quality of the sperm, by increasing in RLP & SLP motility, body weight.
Rao Niranjan	Clinical	5mg daily	twice	60 days	Improvement in RLP & SLP motility of spermatozoa & sperm count.
Prasad B.S.	Clinical	4mg daily	twice	30 days	Improved the RLP & SLP and decrease in immotile and abnormal sperms.
Thakar A.B.	Clinical	10mg daily	twice	30 days	Increased sperm concentration and decreased abnormal spermatozoa.

Probable mode of action:

The main part of the male reproductive anatomy taking part in production of a live motile sperm, are, seminiferous tubules. Seminiferous tubules are located within the testes, and are the specific location of meiosis, and the subsequent creation of male gametes, namely spermatozoa. Spermatogenesis occurs in the seminiferous tubules that form the bulk of each testis. Inside the seminiferous tubules are six different cell types. These include sustentacular cells, as well as five types of developing sperm cells called germ cells. The epithelium of the tubule consists of sustentacular or Sertoli cells, which are tall, columnar type cells that line the tubule. In between the Sertoli cells are spermatogenic cells, which differentiate through meiosis to sperm cells. Sertoli cells function to nourish the developing sperm cells.

The study conducted by Godatwar et al³³, on rat models, states that the administration of swarna bhasma increases the diameter of seminiferous tubules along with the number of seminiferous tubules. Therefore, it may be said that the administration of swarnabhasma stimulates these cells located within the seminiferous tubules to

produce live, motile normal sperms, which result in fertile male.

CONCLUSION

Swarna bhasma has been advocated by Ayurveda Acharyas since ancient times as vajeekara dravya. Recent studies have shown that traces of elements like zinc, calcium, lead, gold etc have been found in the male reproductive system. Au was detected not only in male reproductive system³⁴ but also in female reproductive systems in frog³⁵. A number of references are found in Ayurveda classical texts of swarna bhasma being shukra-janaka, as dhatu-vardhaka, pumsavana upyogi, veerya vardhaka and vrushya. Shukradhatu and swarna bhasma both being madhura rasatmaka and also madhura rasa itself being dhatu-vardhaka, then according to samanaya vishesha siddhanta there should be increase in shukra dhatu on administration of swarna bhasma. Various clinical trial conducted also indicate that administration of swarna bhasma increases sperm concentration, motility as well as decreases abnormal spermatozoa and immotile sperm in semen. This is validated by the fact that on studying the semen analysis of fertile male volunteers and those with pathological conditions of

infertility, Au concentrations in such clinical conditions was found to be less as compared to the concentration of Au in fertile male volunteers. Also, from the clinical trials conducted it can be seen that the swarna bhasma is just as effective at the low dose of 8mg daily to 20 mg daily for 30-60 days and with no toxicity.

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Source of support: Nil,

Conflict of interest: None Declared

Cite this article as

Bhogan Madhuri : A Review: Effect of Swarna Bhasma in the Management of shukra-Kshaya W.R.T. Oligospermia; *ayurpub*; III(3): 933-938