

Role of *Kushmand Paak* in treating Male Infertility

Research Article

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Abstract

Objectives: To evaluate the efficacy of Ayurvedic herbal drug combination as a good and effective treatment on sperm production without any side effects on prolonged use. **Materials & methods:** It was a self-control clinical trial study. In this study, we enrolled 40 patients having complaints of infertility of age 25-40 years married for not less than 3 years. All these participants were advised to take 30 g of *Kushmand Paak* after mid meals with a cup of warm milk for 3 months. Sperm count, semen color, viscosity, and state were recorded before starting the treatment and after 3 months of completion of treatment. **Results:** It was observed that '*Kushmand Paak*' was accepted by all with no complaints about any side effects. Viable, active, and morphologically perfect sperm count was also increased to a significant level. **Conclusion:** *Kushmand Paak* can be used to improve sperm count without any side effects on prolonged use.

Key Words: Male infertility, *Vajikaran chikitsa*, *Kushmand paak*, *Benincasa hispida*.

Introduction

Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse.(1) Male infertility may occur be due to various causes, it may be related to anatomical or genetic defects, endocrine, immunological or inflammatory reasons etc. In consideration with the semen it may be due to absence or low levels of sperms, abnormal shape of sperms (morphological defects) or may be due to sperm motility defects. The science of male and female infertility is dealt under the branch of reproductive medicine. Ayurveda has dealt this health issue under the treatment protocol of *Vajikaran chikitsa* (2). Many herbal, herbo-mineral medicines have been quoted in various Indian Classical texts of Ayurveda. Few plants which have been used as aphrodisiac and spermatogenic include *Mucuna pruriens*, *Withania somnifera*, *Hygrophila spinosa*, *Asparagus racemosus*, *Benincasa hispida*, etc. *Benincasa hispida* has been used medicinally in various diseases based on its antioxidant, aphrodisiac, antidepressant, muscle relaxant, and anti-inflammatory properties.(3) Further, based on toxicity

studies it has been reported to have no side effects. Therefore, based on available literature citing the benefits of this herbal medicine, we designed this study where we have studied the effects (for 90 days) of the ayurvedic herbal drug (*Kushmand Paak*) on sperm production in 32 patients having the problem of infertility and a low sperm count.

Materials and Methods

This study was a self-control clinical trial and was conducted at a hospital attached to Ashtanga Ayurved Mahavidyalaya of Pune. Male patients who resided within a radius of 10 Kms. from the hospital and those who fulfilled the acceptance criteria were included in the study. The upper limit of patients was fixed to 32 (thirty-two) in consultation with a qualified statistician, but considering the possibility of 'dropouts,' it was decided to accept 40 (forty) patients. The patients were chosen at random from a pool of candidates on a first-come, first-served basis. There were no barriers based on caste, creed, occupation, education, monthly income, eating habits, or other factors. Patients between the age range of 25 years to 45 years, who were married for not less than 3 years and have no children, and have previous sperm count records were included in the study. The purpose of the trial was described to all participants on the first day, and they were all asked to sign the official written consent in the presence of a witness. They were given instructions on diet and behavior. Everyone was told to halt using any kind of treatment for at least three days. The dose schedule was described and were instructed to report any side effects as soon as possible. However, patients having diseases

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including tuberculosis, Malaria, Leprosy, HIV+ve, malignant ulcers, breast cancer, uterine cancer, convulsive disorders, who were mentally affected, and who were residing beyond 10 km distance from the hospital were not included.

Preparation of Kushmand Paak (jam)

In this study, we chose an herbal drug treatment called *Kushmand Paak* a formula from the classical text of *Yog Chintamani* (4). It has been indicated that it can be consumed at all ages, those inflicted with *rakta vikara* (haematological disorders), *Stree prasakti* (engaged in regular sexual intercourse), *krushsa* (malnourished), *kshata* (injury), *trishna* (excessive thirst), *Kasa* (cough), *arsha* (piles), *gudaruja* (anal diseases) and *chardi* (vomiting).

This preparation also had an additional advantage of easy availability of its ingredients, good palatability, and easy administration by oral route. Further, it's all ingredients are known to be nontoxic and thus can be consumed for a prolonged period (90 days).

Sr. No	Ingredient	Botanical name	Quantity
1	<i>Kushmand</i>	<i>Benincasa hispida</i> (Thunb.) cogn.	1kg
2	<i>Maricha</i>	<i>Piper nigrum</i>	10 g
3	<i>Pippali</i>	<i>Piper betel</i>	10 g
4	<i>Sunthi</i>	<i>Zingiber officinale</i>	10 g
5	<i>Twak</i>	<i>Cinnamomum verum</i>	10 g
6	<i>Tejpatra</i>	<i>Cinnamomum tamala</i>	10 g
7	<i>Jeera</i>	<i>Cuminum cyminum</i>	10 g
8	<i>Ela</i>	<i>Elettaria cardamomum</i>	10 g
9	Sugar Syrup		960 g (60%)
10	Cow's fresh clarified butter (Ghee) as required		

Kushmand (*Benincasa hispida*) was bought fresh from the local market and was identified by experts in Ayurved (*Dravyaguna vidnyan*) as well as botanist. Its exterior skin was peeled, and the surface was cleaned with potable water. It was chopped into 1-inch square pieces and cooked for 15 minutes in a pressure cooker. It was then placed in a stainless-steel wide-mouth skillet with 200 g clarified butter (cow's ghee) and stir-fried for 10 minutes, or until it formed a mushy mass. Sugar was added and it was continuously stirred until the jam was formed. Other components like *maricha*, *pippali*, *sunthi*, *twak*, *tejpatra*, *jeera* and *ela* were added one by one to this soft mixture, with continuous stirring after each addition for a few minutes. The *paak* preparation was completed and cooled and was stored in clean airtight jars for dispensing.

Dose

30 g of *Kushmand Paak* was advised for 3 months (90 days) in the late afternoon after mid meals,

(in between 4 and 5 pm) with a cup of warm milk as 'anupana' (vehicle). This duration of treatment was indicated since sperm maturation takes roughly 90 days for spermatogenesis.

Collection of data

Data collection was done using a special case paper in which the data entry was done on the same day of the visit, or their arrival for the pathological examination of semen analysis, on day 1, day 45, and day 91.

Results

A total of 32 patients completed the 90 days clinical trial without break. They reported every week on a fixed day and time and on mobile every day. The average age years of participants were 37.06 years, and the average body weight was 62.72 Kg. All the participants were fairly educated as three (3) of them were graduates, twenty (20) had completed the secondary school examinations and only nine (9) had education up to primary level. All of them fulfilled all criteria laid down for this study. No change was suggested in their daily routine, and they all continued their usual routine life such as food habits and daily work patterns.

Table No 2: General information about participants

Sr. No	Parameters	Mean±SD
1	Average Age (years)	37.065±6.231
2	Average body weight (Kg)	62.71±7.778
3	Marriage history (years)	10.125±3.883
4	Education	03
	a) Graduate	20
	b) Secondary education	09
5	Average monthly income (Rs.)	18778.125±1862.79

Semen examination

Initially, on day 1 examination, colour of the fresh semen sample was found to be milky in twenty-three (23) patients and exhibited a reddish tinge indicating trauma to the urethra in seven (7) patients, and yellowish indicating infection and suppuration in two (2) patients. After 90 days of treatment this changed to milky in twenty-eight (28), patients, a reddish tinge could be observed only in four (4) patients, and no sample had a yellowish appearance (Figure 1 (A)).

On day 1, the viscosity of semen was thick in twenty (20), thin in nine (9), and knotty in three (3) patients. At the end of the stipulated period of 91 days, it changed to thick in twenty-six (26), thin in five (5), and knotty in only one (1) patient, and this was very encouraging (Figure 1 (B)).

The quantity of semen on the first day was scanty in seventeen (17) participants, medium in ten (10), and adequate in five (5). This was changed to scanty in four (4), medium in six (6), and adequate in twenty-two (22) patients (Figure 1 (C)).

Sperm morphology and movement

On day 1, before starting the treatment, defective sperms were observed in fourteen (14) participants, such as short tails, double heads, absence of neck or crooked appearance, and dead sperms in ten (10), and sluggish sperm movements in eight (8) participants. This changed to defective sperm count only in four (4) participants, there were no dead sperms in any of the participants and sluggish sperms were observed in three (3) participants (Figure 1(D)).

This shows good development and nourishment of sperms which are the essential factors of fertility.

Figure 1: Charts showing comparison of (A) color (B) viscosity (C) quantity and (D) state of semen on day 1 day 91

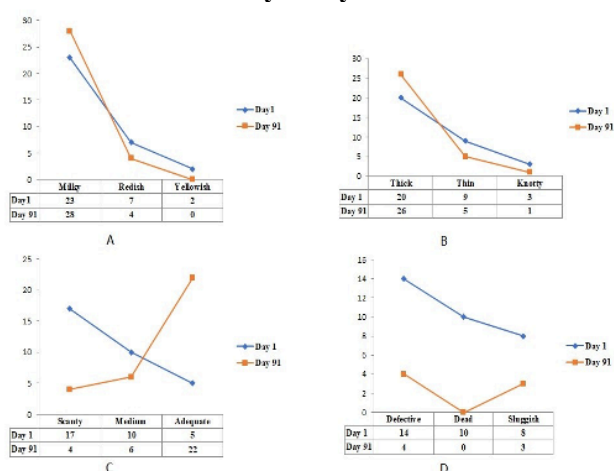


Table No. 3: Comparison of semen characteristics on day 1 and day 91

Sr. No	Parameters	Types	Day1	Day 91
1	Colour of semen	Milky	23	28
		Reddish tinge	7	4
		Yellowish tinge	2	0
2	Viscosity of semen	Thick	20	26
		Thin	9	5
		Knotty	3	1
3	Quantity of semen	Scanty	17	4
		Medium	10	6
		Adequate	5	22
4	Sperm count		14.2± 4.169	18.0875± 2.571
5	Sperm state	Defective	14	4
		Dead	10	0
		Sluggish	8	3

Discussion

In recent times, cases of infertility have been rising at an alarming rate where male infertility accounts for around 50% of such cases. In our country, 27.5 million couples suffer from infertility and increasing marital age, stress, rising alcohol, poor eating habits, consumption of alcohol, and tobacco

consumption are some of its leading causes. The most important causative factors include compromised sperm count and quality which have been explained by several abnormalities. For ages, Ayurvedic medicines have been used to treat many diseases including infertility.

Being childless is emotionally and physically distressing. Further, stress and erratic lifestyle impact both mental and physical well-being and can be responsible for infertility. *Yogasanas* can help increase the chances of conceiving by bringing about balance in life, along with herbal '*Rasayana*' and '*Vajikarana*' treatment. In the present study one such herbal *Rasayana vajikaran* treatment called '*Kushmand Pak*' was tried clinically in 32 males of fertility age and from the lower middle class with a modest monthly average income of Rs. 18778.13/-. The fruit of this plant is *vrushya* or aphrodisiac in nature, balances *tridoshas* (3 humours of the body), and has been recommended as an Ayurvedic remedy for erectile dysfunction. Regular consumption of matured pulpy fruit has also been proven to improve the quality and quantity of semen. It also improves the body's strength, energy, and stamina. It has been used to alleviate a wide range of symptoms based on its antiulcer, anthelmintic, antioxidant, and neuropharmacological activity.

In this study, we observed a marked improvement in the quality as well as quantity of sperms and semen. Further, these patients did not report any side effects and completed the protocol for 3 months. This improvement might be due to an increase in testosterone levels which controls spermatogenesis, motility as well as the function of accessory sex organs. Further, there are published reports stating the role of high cortisol in infertility. High cortisol increases stress and might impact the level of testosterone. In our study, we could not study the impact of this treatment on these hormones. However, other studies using other herbal medicines to treat infertility have reported this relationship between cortisol, testosterone, and infertility. Further, reaction oxygen species (ROS) increase during stress. '*Kushmand Paak*' has been reported to have antioxidant properties and thus it might also act by decreasing ROS and stress in the patients. The total period of this study has been restricted to one year. This work is being followed for another 9 months for the incidence of conception. At present, it can be safely concluded that the treatment of *Kushmand Paak* for 91 days was responsible for this beneficial change in sperm quality and quantity.

Conclusion

In conclusion, the herbal preparation '*Kushmand Paak*' used in the study was accepted by all and there were no complaints about any type of side effects. This psychological acceptance might have also contributed to the most noteworthy results that were obtained in the semen examination. This treatment led to significantly improved sperm count with viable and morphologically active sperms.

Conflict of Interest: None

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