Original Article

Indian Journal of Ancient Medicine and Yoga
Volume 7 Number 3, July - September 2014

Effect of Swarna Bhasma on Reproductive (Endocrine) System W.S.R. Immature Female Rat Model

Kamat Rajeshwari V.*, Hiremath R.S., Patil P.A.*****

Abstract

Swarna, the *Sara Lauha*is an important, noble metal known to Indians since antiquity. References can be traced back to *Charaka* and *SushrutaSamhita* where the noble metal has been used with a wide range of applications. Gold was used before the conception by the couple as geriatric and aphrodisiac, to get a healthy child, after conception at 2nd month to get the desired sex of the child, immediately after birth before the umbilical cord is cut, and as a substitute to mothers milk, and during post delivery period for enhancing intelligence, and before. And even at the death bed gold is given. So starting before the conception till the death gold was used in one or the other way. Various formulations of '*Swarna*' Bhasma are useful as Aphrodisiac, increasing body strengnth, as rejuvenator and disease alleviators particularly in chronic debilitating diseases like tuberculosis, Bronchial asthama, chronic cough, anemia etc. Human dose for '*Swarna Bhasma*' is 15 mg. to 30 mg. The present study is an attempt to observe the effect of Swarna bhasma on endocrine system of immature wistar strain female rats with special reference to uterus, ovary, no of follicles FSH & LH & the results are encouraging**.**

Keywords: Swarna; Swarna bhasma; FSH; LH.

Introduction

Swarna, the *Sara Lauha*[1] is an important, noble metal known to Indians since antiquity. References can be traced back to *Charaka* and *Sushruta Samhita* where the noble metal has been used with a wide range of applications. Gold was used before the conception by the couple as geriatric and aphrodisiac, to get a healthy child, after conception at 2nd month to get the desired sex of the child, immediately after birth before the umbilical cord is cut, as a substitute to mothers milk, and during post delivery period for enhancing intelligence, and even at the death bed gold is used. So starting before the conception till the death gold is used in one or the other way. So gold has a good chemistry with the body. It is said that gold is the Semen of Agni. It is the vigor and virility of Agni. If one consume gold, his vigor and virility will be increased. Ayurveda says kaya means Agni and general medicine means Agni Chikitsa. Gold has important role to play in treatment of many diseases and as a preventive and protective treatment.

Various formulations of '*Swarna*'(Gold) Bhasma are useful as Aphrodisiac, increasing body strength, as rejuvenator[2] and disease alleviators particularly in chronic debilitating diseases like tuberculosis, Bronchial asthama, chronic cough, anemia[3] etc. Human dose for '*Swarna Bhasma*' is 15 mg. to 30 mg.[4]

The present study is an attempt to observe the effect of swarna bhasma on endocrine system of immature wistar strain female rats with special reference to uterus, ovary, no of folliles FSH & LH.

Author's Affiliation: *Asstt. Professor & Ph.D Scholar, **Professor & HOD, Dept. of Rasashastra & Bhaishajya Kalpana, KLEU Shri BMK Ayurveda Mahavidyalaya, Shahapur, Belgaum, ***Professor & HOD, Dept. of Pharmacology, University of Sains Malaysia, KLE International Medical Programme School, Belgaum, Karnataka, India.

Reprint's Request: Kamat Rajeshwari V., Asstt. Professor & Ph.D Scholar, Dept. of Rasashastra & Bhaishajya Kalpana, KLEU Shri BMK Ayurveda Mahavidyalaya, Shahapur, Belgaum, Karnataka, India.

E-mail: rajeshwarikamat@yahoo.com

Material and Methods

Approval for Animal Study

Approval was taken from institutional Animal ethical committee with approval letter *No BMK/IAEC/Res-13/2012*.

Animals

12 Wistar strain albino rats of age 16-17 days of birth without evidence of any disease or physical abnormalities & weighing between 20±6gmwere procured from licensed breeder KLEU JNMC Animal House Belgaum.The day of the birth being considered as postnal day 0.& were randomly divided into two groups containing 6 animals in each group. The animals were identified uniquely by marking.

Quarantine

Animals were kept in quarantine for 1 day as per guidelines of Uterotrophic bioassay.

Test Drug

Swarna bhasma was purchased from GMP Certified Ayurvedic Manufacturer with Batch No- P120500101 Date of Manufacture–May 2012. Prepared as per Bharata bhaishajya Ratnakara 5/8357 Ref. Manufacturer Claiming gold % > 95%. For reconfirmation The drug was analyzed for % of gold through ICPAES from IIT Mumbai.

Dose Fixation

Swarna Bhasma maximum therapeutic Human dose is 30 mg. The same dose was converted into animal dose followingPaget & Barnes table[5]. Dose was given once a day for 3 consecutive days, at the same time with honey as vehicle through oral gavage.

Control Group

Received vehicle i.e.0.05 ml Honey

Test Group

Received Swarna bhasma 30mg/kg body wt. with 0.05 ml Honey.

Observations

General and clinical observations were made once a day preferably at the same time each day. All animals we observed for mortality, morbidity, general clinical signs such as changes in behavior, fur, eyes, mucus membranes, occurrence of secretions and excretions, lacrimation, pilocrection, pupil size, unusual respiratory.

All animals weighed daily to the nearest 0.1 gm starting prior to the initiation of test drug. The amount of food & water consumed daily are expressed in grams per rat/day and ml per rat/day respectively.

Collection of Blood for FSH & LH Assay

24 hrs after the last dose through retro orbital puncture under anesthesia blood wascollected and sent for hormonal analysis.

Dissection

24 hrs after the last dose rats were humanely sacrificed.

Uterus Weight

Each uterus is transferred to a uniquely marked and weighed container. Then the uterus were transferred to a uniquely marked formalin container & sent for histological study.

Ovaries

Each pair of ovaries collected were transferred to a uniquely marked formalin container & sent for histological counting of follicles.

Table 1: Showing Statistical Results No of Follicles

Significance	Swarna Bhasma	Control	Perticulars
	55.50	29.00	Mean
	23.96	7.823	Std. Deviation
Ns		**0.0800**	P value

Graph 1: Showing No of Follicles

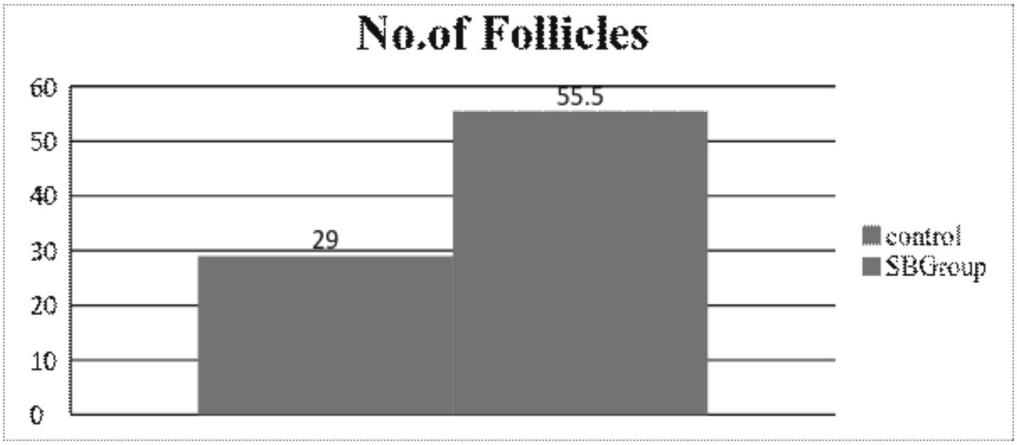


Table 2: Showing Statistical Result of Largest Follicle Size

Significance	Swarna Bhasma	Control	Perticulars
	0.2833	0.2917	Mean
	0.07528	0.05845	Std. Deviation
Ns		0.9816	P value

Graph 2: Showing Result of Largest Follicle Size

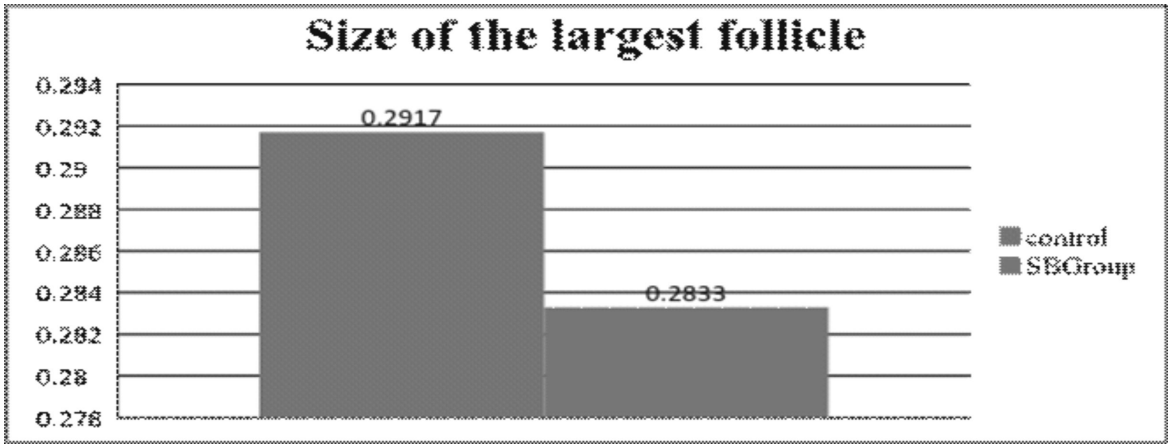


Table 3: Showing Statistical Result Thickness of Endometrium

Significance	Swarna Bhasma	Control	Particulars
	0.6500	0.4333	Mean
	0.1643	0.1211	Std. Deviation
Ns		0.1293	P value

Graph 3: Showing Thickness of Endometrium

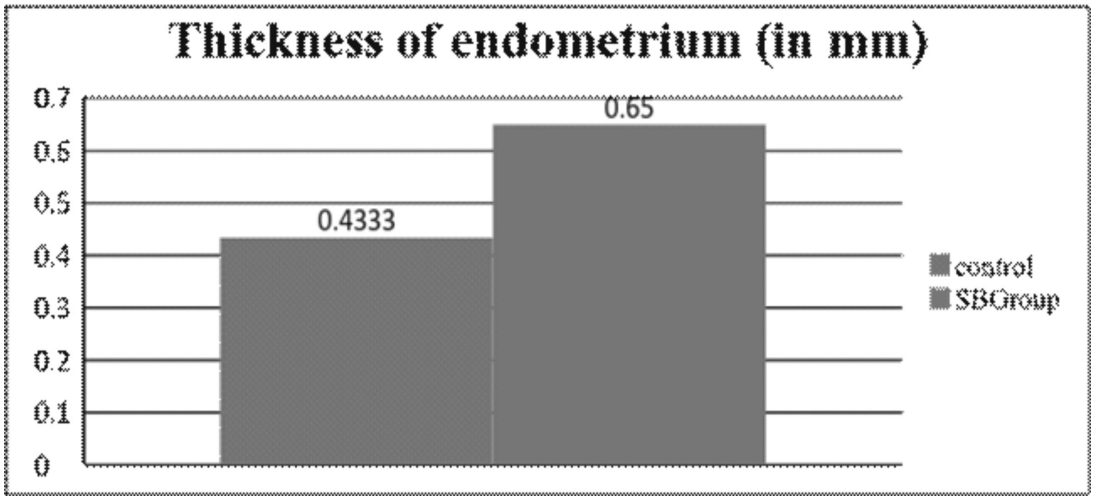


Table 4: Showing Statistical Result Diameter of Uterus in mm

Significance	Swarna Bhasma	Control	Particulars
	3.867	4.017	Mean
	0.2503	0.7731	Std. Deviation
Ns		0.6611	P value

Graph 4: Showing Diameter of Uterus in mm

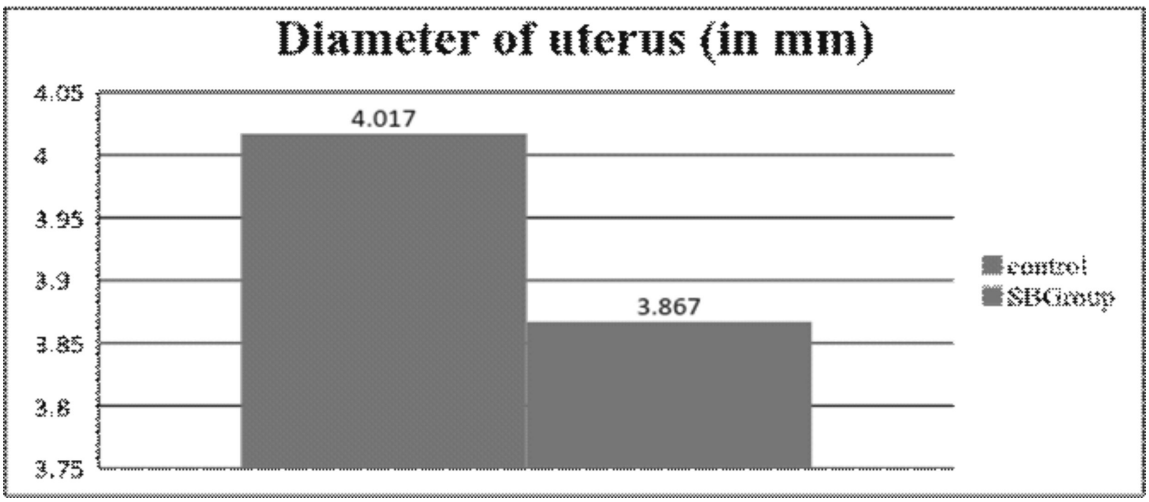


Table 5: Showing Statistical Result FSH

Significance	Swarna Bhasma	Control	Particulars
	0.6433	0.6667	Mean
	0.4500	0.1506	Std. Deviation
Ns		0.4564	P value

Graph 5: Showing Result FSH (Follicle Stimulating Hormone)

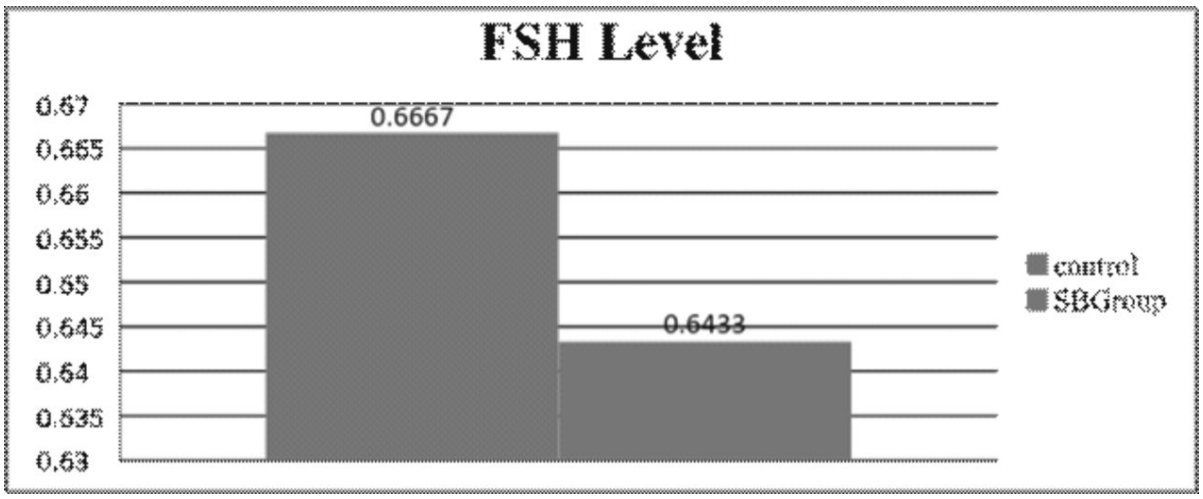
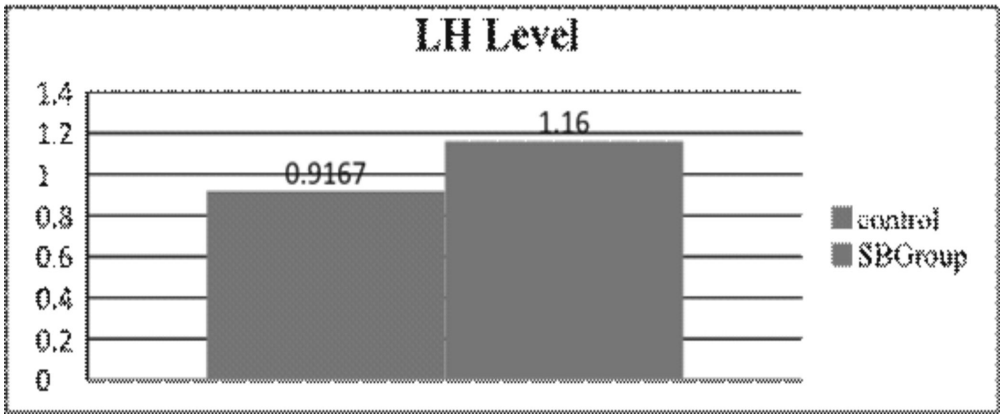


Table 6: Showing Statistical Result LH (Luteinizing Hormone)

Significance	Swarna Bhasma	Control	Particulars
	1.160	0.9167	Mean
	0.9652	0.6113	Std. Deviation
Ns		0.8935	P value

Graph 6: Showing Result LH (Luteinizing Hormone)



Discussion

It is essential to prove mode of action of ayurvedic drugs scientifically by modern parameters, through which Ayurveda can excel in the current era as evidence based & well documented system of medicine.The reason behind selecting immature rat model is the Uterotrophic Bioassay relies for its sensitivity on an animal test system in which the hypothalamic-pituitary-ovarian axis is not functional. (Test No. 440: Uterotrophic Bioassay in Rodents*A short-term screening test for oestrogenic properties)*

Follicle-stimulating hormone (FSH) is a hormone found in humans and other animals. It is synthesized and secreted by gonadotrophs of the anterior pituitary gland.[6] FSH regulates the development, growth, pubertal maturation and reproductive processes of the body. FSH and lutenizing hormone(LH) act synergistically in reproduction.in the present study low FSH levels indicate early maturation of the follicle

in the test group.

Luteinizing hormone (LH, also known as lutropin[7] and sometimes lutrophin[8]) is a hormone produced by gonadotroph cells in the anterior pituitary gland. In females, an acute rise of LH ("LH surge") triggers ovulation[9] and development of the corpus luteum. In males, where LH had also been called interstitial cell-stimulating hormone (ICSH).[10] It acts synergistically with FSH. FSH &LH levels are normally low during childhood. During the reproductive years, typical levels are between 1-20 IU/L. in the present study LH levels are increased in the Swarna bhasma group which indicates the early ovulation, development of corpus luteum & increase in the thickness of the uterus.

Statistical Analysis

One-way ANOVA followed by post hoc multiple comparisons (Dunnets) test.

Conclusion

No of follicles,thickness of uterus & LH levels though statistically not significant but graphical representation shows remarkable increase in Swarna bhasma group in comparison to control. Size of the largest follicle, Diameter of the uterus FSH levels were more in the control group in comparison to test group. These results conclude that Swarna bhasma is having its action on female reproductive endocrine system in immature Wistar strain female rat.

References

1. Rasa Vagbhatta. 'Rasaratnasamuccaya'. 5/1. New Delhi, India: Meharchand Lachhmandas Publications; 1998.
2. Sadananda Sharma. 'Rasa Tarangini'. New Delhi, India: Motilal Banarasidas; 1998, 15/69-71.
3. Somadeva. 'RasendraChudamani'. Varanasi, India: Chaukhambha Orientalia; 2004, 14/23.
4. Sadananda Sharma. 'Rasa Tarangini'. New Delhi, India: Motilal Banarasidas; 1998, 15/81.
5. Paget GE, Barnes JM. Evaluation of drug activities. In: Lawrence DR and Bacharach AL, editors. Pharmacometrics. New York: Academic Press; 1964, 161.
6. Follicle-Stimulating Hormone.
7. Lutropin at eMedicine Dictionary
8. Jump up^ "Subunit-specific sulphation of oligosaccharides relating to chargeheterogeneity in porcine lutrophin isoforms". Oxford Journals. 1 February 1992. Retrieved 17 May 2012.
9. Jump up to:a b Physiology at MCG 5/5ch9/s5ch9_5
10. Jump up^ Louvet J, Harman S, Ross G (1975). "Effects of human chorionic gonadotropin, human interstitial cell stimulating hormone and human follicle-stimulating hormone on ovarian weights in estrogen-primed hypophysectomized immature female rats". Endocrinology 96(5): 1179–86. doi:10.1210/endo-96-5-1179. PMID 1122882.