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PHARMACOGNOSTICAL AND PHYSICOCHEMICAL EVALUATION OF *CHURNARATNAM*: AN *AYURVEDIC* COMPOUND FORMULATION

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ABSTARCT

One of the main cause of male infertility is low sperm count (oligozoospermia) and it is correkated with *Ksheena Shukra*. *ChurnaRatnam* (CR) is a yoga which is given in *RasendraChintamani* used in desease like *Ksheena Shukra*at OPD of Kayachikitsa department of IPGT & RA, Jamnagar. *Churna Ratnam*contains Satavari, Aatmagupta, Vidari, Gokshura, Ikshurak, Bala, Atibala, Abhraka and Sarkara. The present study was carried out to standardize the finished product CR to confirm its identity, purity and quality. The presence ofAscicularCristals, Lignified Annular Vessels, Lignified Fibers, Components Starch Grains, Group of Stone Cells, Lignified Shifted Cells, Steroids, Hypodermal Cells, etc.were the characteristic features of observed in microscopy of drug.Physico chemical analysis shows water soluble extract is 104.70% w/w, methanol soluble extract is 14.31% w/w, ash value is 19.50% w/w and PH is 6.0 High Performance Thin Layer Chromatography (HPTLC) at 254nm and 366 nm resulted into 2& 3 spots respectively.

KEYWORDS: Churna Ratnam, oligozoospermia, Pharmacognocy, Pharmaceutics, HPTLC.

INTRODUCTION

Fertility is an existential necessity from the time immemorial. It is only possible when the reproductive system works properly. The malfunction of the system causes infertility. *Ayurveda* explains that *Shukra Dosha* is one of the disease conditions, which finally results in infertility. *Ksheena Shukra* is one of the eight types of *Shukradushti* mentioned in the classics and is a *Vata Pittaja Vyadhi* The most common reason for infertility in male is inability to produce adequate number of healthy sperms leading to oligozoospermia i.e. decreased healthy sperm count per ejaculation. *Ksheena Shukra*is one of the major variety of *Shukra Dosha*, wherein, there will be diminished level of *Shukra*and ultimately leads to unproductiveness. *Churna Ratnam* is use for *Ksheenashukra*, till date no work has been done to standarise the *Churna Ratnam* through pharmacognostical and physio- chemical parameters, hence in the present study *Churna Ratnam* was subjected to pharmacognostical and pharmaceutical analysis.

AIM

To authenticate the *Churna Ratnam* as per pharmacopeial (Ayurvedic Formulatory of India and Ayurvedic Pharmacopeia of India) method. To evaluate the quality of drug.

MATERIALS AND METHODS

Drug material

All the raw drugs except were obtained from Pharmacy of Gujarat Ayurved University, Jamnagar. The ingredients and the part used are given in **(Table 1)**.

Table 1: Ingredients of *Churna Ratnam*[1]

No	Drug	Latine Name	Part use	Ratio
1	*Satavari*	*Asparagus Racemosus*	*Root*	1
2	*Aatmagupta*	*Mucuna Prurita*	*Seeds*	1
3	*Vidari*	*Pueraria Tuberosa*	*Tuber*	1
4	*Gokshur*	*Tribulas Terrestris*	*Panchanga*	1
5	*Ikshurak*	*Hygrophila Spinosa*	*Seeds*	1

6	*Bala*	*Sida Cordifolia*	*Seeds*	1
7	*Atibala*	*Abutilon Indicum*	*Root*	1
8	*Abhraka*	*Mica*	*Bhasma*	7
9	*Sarkara*	*Sugar cane*	-	28

Organoleptic Evaluation
Various parameters of the material such as colour, odour, touch and taste of the *Churna Ratnam* were observed and recorded.[2] **[Table 2].**

(Table 2): Organoleptic characters of *Churna Ratnam*

Characters	***Churna Ratnam***
Colour	Muddy Brown
Odour	Slightly Aerometic
Taste	Sweet Astringent
Consistency	Fine Powder

Microscopic Evaluation
Microscopic examination of material powder was carried out with and without staining, by powder microscopy to determine the chemical nature and microphotographs were taken using Carl Zeiss binocular microscope.[3]

Physico-chemical Analysis
Physico-chemical analyses were carried out by following the parameters. Physico-chemical analysis like loss on drying at 110°C[4], pH value[5], ash value[6], water soluble extractive[7], methanol soluble extractive[8] were recorded.

Table No 3: Preliminary Physico Chemical Parameters *Churna Ratnam:*

Sr.No	Parameters	ChurnaRatnam
1	Loss on Drying	2.25% w/w
2	Ash Value	19.50% w/w
3	Acid Insoluble Ash	11.75% w/w
4	Water Soluble Extract	104.70% w/w
5	Methanol Soluble Extract	14.31% w/w
6	pH	6.0

Preliminary Phytochemical Investigation
Preliminary phytochemical investigations are carried out by following standard procedure of API.[9]

High Performance Thin Layer Chromatography
HPTLC was performed as per the guidelines provided by API.[10] A CAMAG (Switzerland) HPTLC system equipped with a sample applicator Linomat V was used for application of samples. Methanol extract of *Churna Ratnam* was used for spotting. Toluene: Ethyl acetate: Acetic acid (7:2:1 v/v) was selected as solvent system. CAMAG TLC Scanner 3, Reprostar and Wincats 1.3.4 were used for scanning the plates. CAMAG twin trough glass chamber was used for developing the plates. The developed plate was visualized under visible day light, short UV (254 nm), long UV (366 nm) and after spraying with vanillin-sulphuric acid reagent and again observed in daylight. The Reference values were recorded.

Instrumental Conditions
Application mode: Camag Linomat V, development chamber: Camag twin trough chamber, plate: Pre coated Silica Gel GF 254 plate, chamber saturation: 30 min, development time: 30 min, development distance: 10 cm, scanner: Camag scanner III**,** detection: Deuterium lamp and mercury lamp, data System: Win CATS software.

OBSERVATIONS AND RESULTS
Pharmacognostic Study: The powder microscopy of *Churna Ratnam* confirmed the features of Asciculacristals of *Satavari*, Black debris of *Abhrak*, Components starch grains of *Vidari*, Fibers of *Atibala*, Group of stone cells of *Kokilaksha*, Hypodermal cells of *Vidari*, Lignified annular vessels of *Satavari*, Lignified fibers of *Gokshur*, Lignified shifted cells of *Bala*, Pittete vessels of *Ashwagandha*, Steroids of *Atibala*, Stone cell of *Gokshur*which are depicted in **[Fig 1].** were properly studied and results are depicted in the Table No.3.10.

Analytical Study
Results of the analytical study of *ChurnaRatnam* as follows.

Physico-chemical Constants

High Performance Thin Layer Chromatography (HPTLC)

In HPTLC, in short UV-254 nm, maximum 2 spots were observed in *Churna Ratnam*. Similarly in long UV-366nm, maximum 3 spots were observed also **[Table 4] [Fig 2].**

Table No.4: HPTLC Results of *ChurnaRatnam:*

Sample	Detection Condition	No. of spots	Rf value
ChurnaRatnam	254 nm	2	0.01, 0.73
	366nm	3	0.01, 0.17, 0.84

Nature of adsorbed components, if with different polarity, formerly total number of components and respective Reference values also differs. In short, nature of different matrix modulates both the studied parameters.

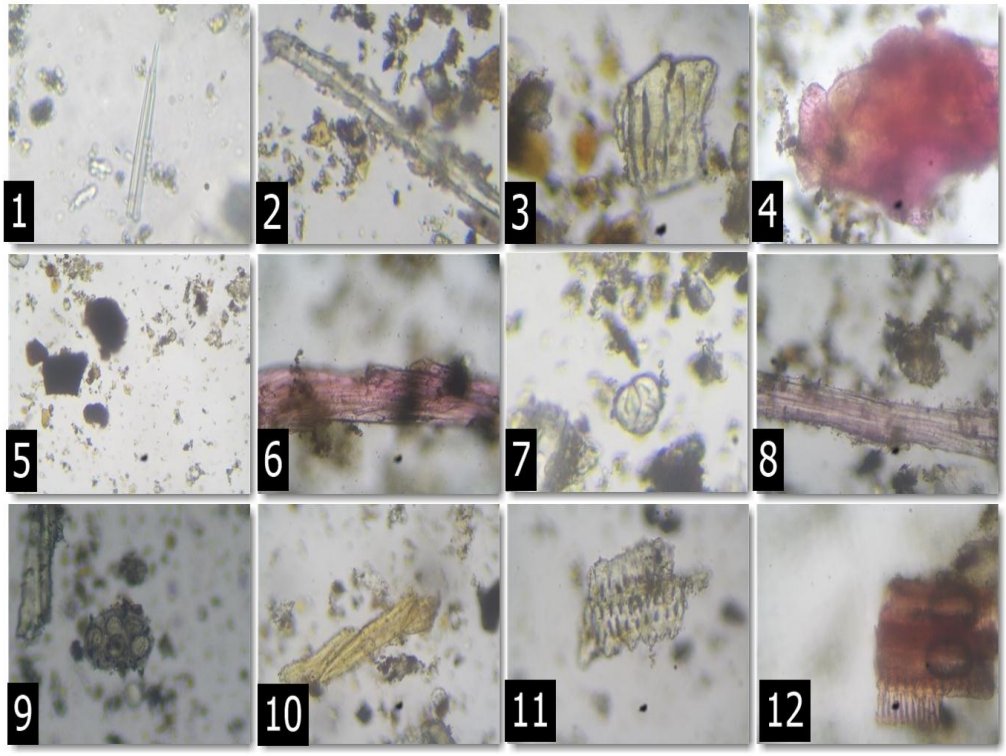

Figure 1: Microscopic characters of *Churna Ratnam*

1) Asciculacristals of *Satavari,* 2)Black debris of *Abhraka,* 3) Components starch grains of *Vidari,* 4) Fibers of *Atibala,* 5) Group of stone cells of *Kokilaksha,* 6) Hypodermal cells of *Vidari,* 7) Lignified annular vessels of *Satavari,* 8) Lignified fibers of *Gokshura,* 9) Lignified shifted cells of *Bala,* 10) Pittete vessels of *Ashwagandha,* 11)Steroids of *Atibala,* 12) Stone cell of *Gokshura.*

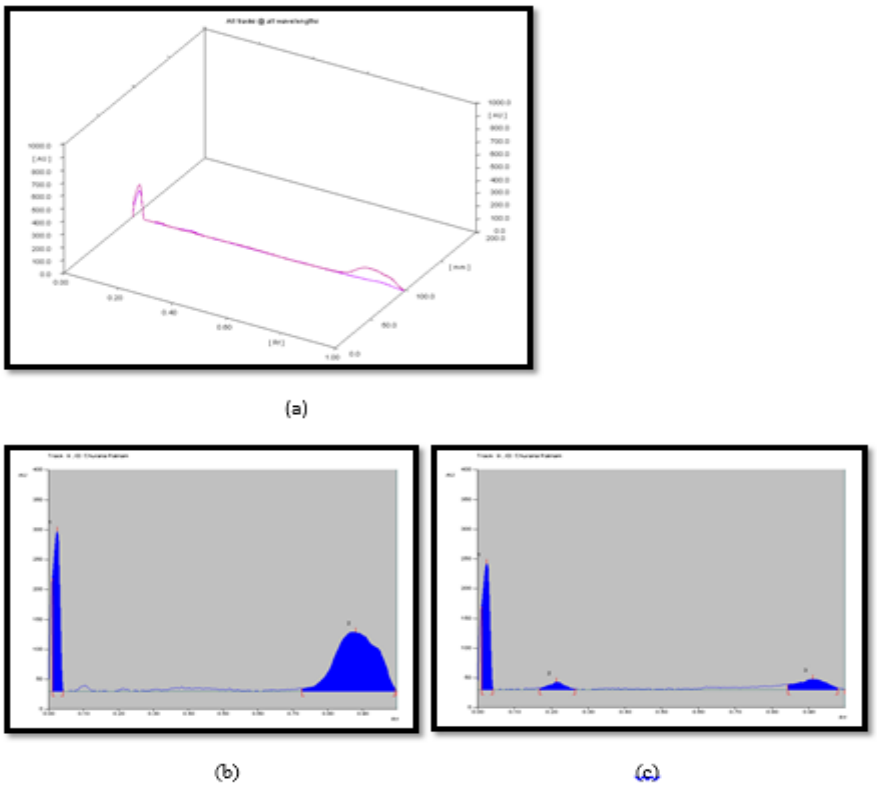

Figure-2: HPTLC study of Churna Ratnam

(a) 3D Graph: 254nm & 366nm of *Churna Ratnam*, (b) Chromatographic results (Peak display) of *Churna Ratnam*at Short ultra violet (254 nm), (c) Chromatographic results (Peak display) of *Churna Ratnam* Long ultra violet (366 nm).

DISCUSSION AND CONCLUSION

Results obtained in physicochemical parameters of *Churna Ratnam* are within limit mentioned by Ayurvedic Pharmacopoeia of India. HPTLC profile of *Churna Ratnam* showed similar in number of spots. This profile can be used for the identification of the medicinally important formulation of *Churna Ratnam*. Present work can be considered as the first step towards identifying the followed methods through HPTLC analysis. This is a preliminary analysis and meticulous nature along with the depiction is to be carried‑out.

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