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## Original Research Article

### PHARMACOGNOSTICAL AND PHYTOCHEMICAL SCREENING OF *JEEVANIYA CHURNA*

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## ABSTRACT

### Background

*Jeevaniya Churna* is a combination of herbal drugs having a numerous number of references in Ayurveda classics. But its qualitative data hasn't been explored thoroughly yet. It is mainly useful to treat gynaecological diseases, infertility, repeated abortion and in diseases where according to Ayurveda *Vata* and *Pitta Doshas* are vitiated.

### Aim

To develop pharmacognostical and pharmaceutical profile of *Jeevaniya Churna*.

### Material and Method

Study included preparation of *Jeevaniya Churna* following all SOPs using raw drugs, which were previously authenticated. Later, *Jeevaniya Churna* was subjected to pharmacognostical, physicochemical and high performance thin-layer chromatography (HPTLC) analysis as per standard protocols.

## Result and Discussion

The pharmacognostical study reveals the presence of crystal fibres, compound starch grains, lignified fibres, prismatic crystals, border pitted vessels, acicular crystal, pitted crystals, epidermal cells, etc. Pharmaceutical analysis showed that the loss on drying value was 3.63%, ash value was 5.3%w/w, water soluble extract was 18.24%, methanol soluble was 10.44%, acid insoluble ash 0.76%, and pH is 10. Methanolic extract of *Jeevaniya Churna* shows presence of alkaloids, flavonoids, phenols, tannin, sugar, steroids, saponin, cardiac glycosides and carbohydrates which can be hypothesized for its estrogenic activity. HPTLC fingerprinting profile of *Jeevaniya Churna* revealed 17 spots at 254 nm and 13 spots at 366nm.

## Conclusion

The present investigation will be helpful in assessing the pharmacognostical, phytochemical analysis and laying down pharmacopoeial standards for *Jeevaniya Churna*.

**Keyword:** - HPTLC, *Jeevaniya Churna*, Pharmacognosy, Phytochemical, *Yonivyapad*.

## INTRODUCTION

According to WHO, Infertility is a disease of the reproductive system defined as the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. Infertility is an increasing condition in society which has become a challenge to the gynaecologist. Based on the census reports of India 2001, 1991, 1981 researchers show that childlessness has increased by 50% since 1981. According to Ayurved, *Vandhyatva* is a condition which occurs as a complication of various diseases, different *Yonivyapadas*, *Jatharinis*, *Artavadushti*, *Beejadosh*, *Mithyaachara*, *Daiva*, etc are various contributory factors.<sup>[1]</sup>

Ayurveda is a life science for preservation of health and for management of various diseases. Group based classification of *Dravya* is well described in Ayurved classics i.e. Charaka Samhita, Sushruta Samhita and Ashtanga Hrudaya Samhita in separate chapters C.Su.4, S.Su.38, A.H.Su.15. respectively. The herbs listed in the group *Jeevaniya Churna* are those herbs that have life promoting action. They mainly enhances the “*Jeevana Karma*” in the body which is the main function of *Rakta Dhatu*.<sup>[2]</sup>

***Jivan + iya(pratyaga) = Jivaniya (Life) + (for the benefit)***

*Jeevaniya Churna* is mentioned by Acharya Sharangdhara as *Garbhasandhankrid* in *Madhyakhanda, Churnakalpana Adhyaya*.<sup>[3]</sup> In this combination, *Kakoli & Ksheerakakoli* were replaced with *Ashwagandha, Meda & Mahameda* were replaced with *Shatavari* and *Jivaka & Rhishabhaka* were replaced by *Vidarikanda* due to its unavailability.<sup>[4]</sup>

All of these plants have their natural habitats in Himalaya particularly the north-west Himalaya in J & K, Uttarakhand & Himachal Pradesh between elevations of 1500 and 4000m as their natural habitats are specific in ecological environment. As a result of this habitat, Jeevaniya *Gana Dravyas* has excellence in providing energy and strength.

The present communication deals with setting a standard pharmacognostical and pharmaceutical profile of *Jeevaniya Churna*. The pharmacokinetic action of the ingredients of *Jeevaniya Churna* as shown in Table 1

**Table 1: Pharmacokinetic action of the ingredients of *Jeevaniya Churna*<sup>[5]</sup>**

Name of drug	Latin Name	Part used	Ratio	Rasa	Guna	Virya
<i>Yashtimadhu</i>	<i>Glycyrrhiza glabra</i> Linn.	<i>Moola</i>	1	<i>Madhura</i>	<i>Guru,</i> <i>Snigdha</i>	<i>Sheeta</i>
<i>Vidari</i> : <i>Jiv</i> <i>aka</i> <i>Rishabhaka</i>	<i>Pueraria tuberosa</i> DC.	<i>Kanda</i>	2	<i>Madhura</i>	<i>Guru,</i> <i>Snigdha</i>	<i>Sheeta</i>
<i>Shatavari:</i> <i>Meda</i> <i>Mahameda</i>	<i>Asparagus racemosus</i> Willd.	<i>Moola</i>	2	<i>Tikta</i> <i>Madhura</i>	<i>Guru,</i> <i>Snigdha,</i>	<i>Sheeta</i>
<i>Ashwagandha</i> : <i>Kakoli, Kshira</i> <i>Kakoli</i>	<i>Withania Somnifera</i> Linn.	<i>Moola</i>	2	<i>Tikta</i> <i>Kashaya</i>	<i>Guru,</i> <i>Snigdha,</i>	<i>Ushna</i>
<i>Jivanti</i>	<i>Leptadenia reticular</i> Retz.	<i>Moola</i>	1	<i>Madhura</i>	<i>Laghu,</i> <i>Snigdha</i>	<i>Sheeta</i>
<i>Mudgaparni</i>	<i>Phaseolus trilobus</i> Ait.	<i>Pancha</i> <i>nga</i>	1	<i>Madhura</i> <i>Tikta</i>	<i>Laghu</i> <i>Ruksha</i>	<i>Sheeta</i>
<i>Mashaparni</i>	<i>Teramnus labialis</i> Spreng	<i>Pancha</i> <i>nga</i>	1	<i>Tikta</i> <i>Madhura</i>	<i>Laghu</i> <i>Ruksha</i>	<i>Sheeta</i>

Most of the drugs of *Jeevaniya Churna* have *Madhura Rasa, Madhura Vipaka, Sheeta Virya* and *Guru, Snigdha Gunas*. Due to these properties it reduces the vitiated *Vata* and *Pitta Doshas* in the body and purifies the *Rakta Dhatu*. All the drugs

possess life promoting action and so enhances *Jeevana Karma* in the body.

## MATERIAL AND METHODS

### Collection and Authentication of Raw Drugs

*Vidari, Shatavari, Ashwagandha, Mudgaparni, Mashaparni, Jivanti* and *Yashtimadhu* were procured from the Pharmacy, Gujarat Ayurved University, Jamnagar. Pharmacognostical authentication of all the raw drugs was done based on the morphological features, organoleptic characters and powder microscopy of individual drugs in the pharmacognosy laboratory of IPGT and RA, G.A.U Jamnagar. The API standards were used for authentication. [6]

### Pharmacognostical Analysis

Pharmacognostical analysis of *Jeevaniya Churna* based on organoleptic characters, i.e. colour, odour, taste and texture were recorded. Microscopic studies with and without stain to find out the lignified materials along with other cellular constituents was done. The micro photographs were taken under Carl Zeiss Trinocular microscope attached with camera. [7]

### Pharmaceutical Analysis

#### Physicochemical parameters

Physicochemical study of sample was carried out by using various physicochemical parameters as mentioned in Ayurvedic Pharmacopeia of India, 2001. *Jeevaniya Churna* used as a sample [8]

#### Qualitative tests [9]

Qualitative chemical tests were carried out for identifying various phytoconstituents present in methanolic fractions of *Jeevaniya Churna*.

#### HPTLC [10]

**Instrumentation:** A CAMAG HPTLC system (Muttensz, Switzerland) equipped with a sample applicator TLC auto sampler 4, twin trough plate development chamber, TLC Scanner 3, win CATS software version 1.4.4. and Hamilton (Reno, Nevada, USA) Syringe.

**HPTLC method:** 5µl of extract was loaded on E. Merck aluminium plate pre coated with silica gel 60 F<sub>254</sub> of 0.2 mm thickness and the plate was developed in Toluene: Ethyl acetate (9:1) in twin trough chamber previously saturated with solvent system. After development densitometric scan was performed with a Camag TLC scanner III in reflectance absorbance mode at 254 and 366 nm under control of Win CATS Software (V 1.2.1. Camag) (Stahl, 1969). The plate was then dipped in sulphuric acid reagent and heated in a hot air oven at 105°C until the colour of the spots appeared and profile photo was documented under white light.

**Results and Discussion:****Pharmacognostical**

**Organoleptic characters:** The organoleptic characteristics were as shown in Table. 2

**Table 2: Organoleptic characters of *Jeevaniya Churna***

Drug name	Organoleptic characteristic			
	Colour	Odour	Taste	Touch
<i>Jeevaniya Churna</i>	Creamish Yellow	Sweet	Sweet	Fine

**Microscopic characters**

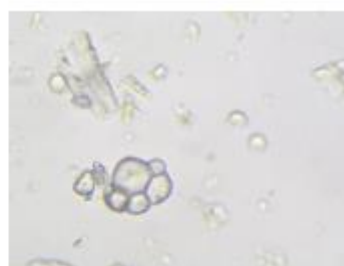
Powder microscopy of *Jeevaniya Churna* showed the striking characters of all individual 7 drugs of *Jeevaniya* drugs. The data was shown in Figure 1 and Figure 2.



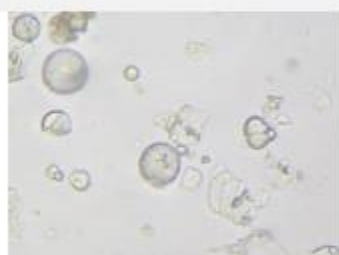
a.



b.



c.



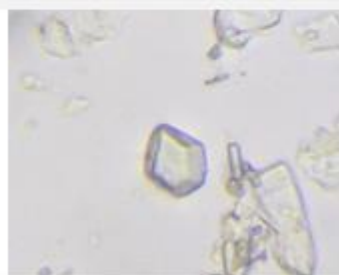
d.



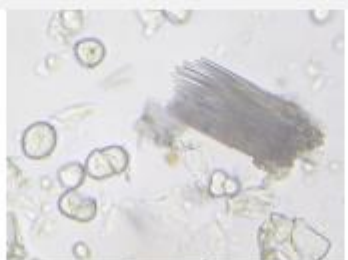
e.



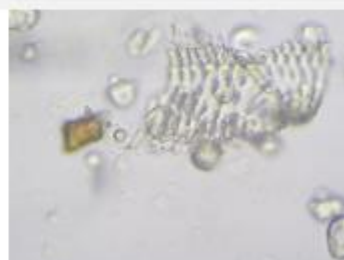
f.



g.



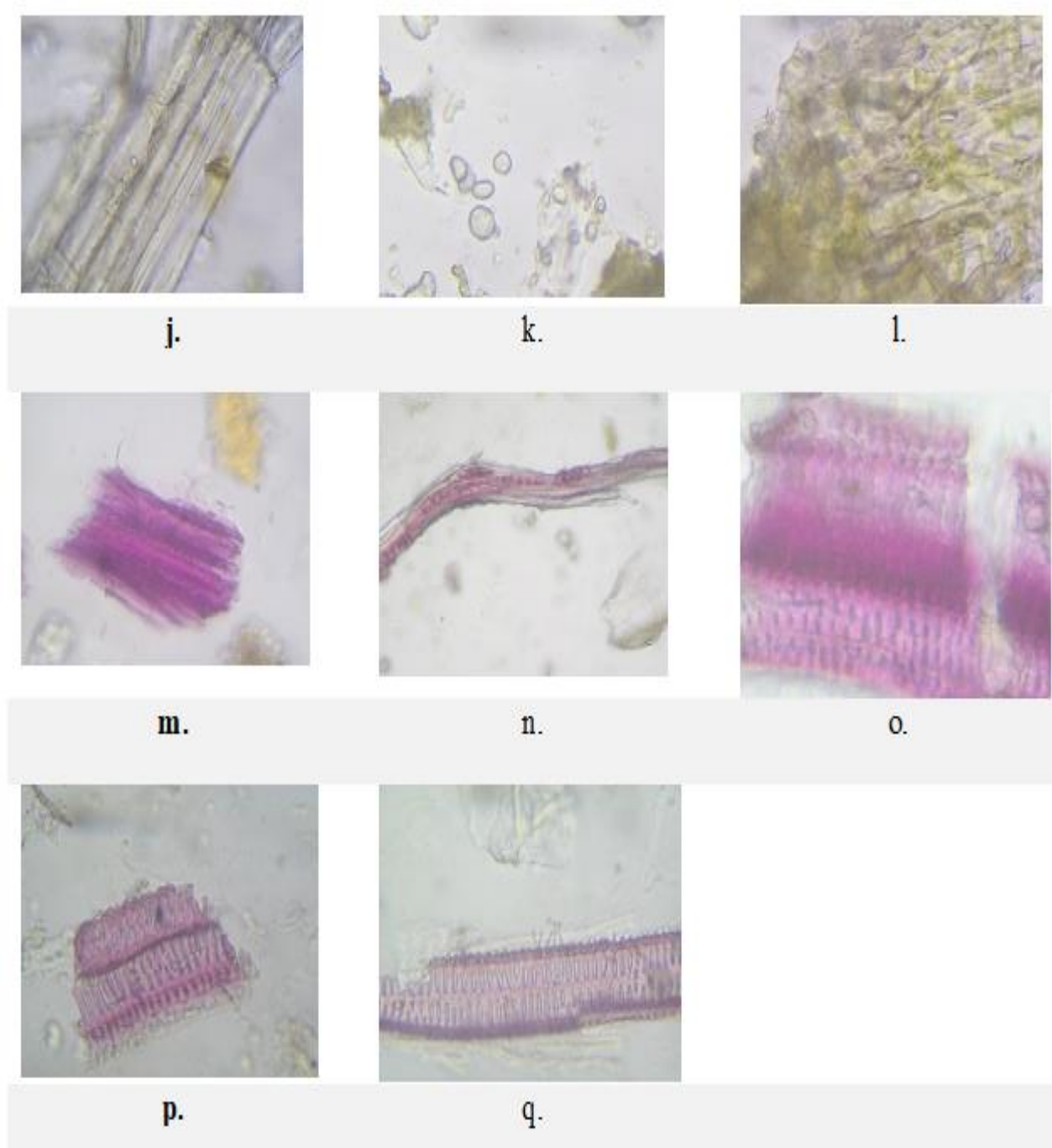
h.



i.

**Figure 1: Pharmacognostical profile of *Jeevaniya Churna***

In this, **a.** represents *Jeevaniya Churna*, **b.** represents crystal fibres of *Yashtimadhu*, **c.** represents compound starch grains of *Vidari*, **d.** represents simple starch grains with hylem of *Mudgaparni*, **e.** represents pollen grain of *Mudgaparni*, **f.** represents starch grain of *Maashaparni*, **g.** represents prismatic crystals of *Jivanti*, **h.** represents acicular crystals of *Shatavari*, **i.** represents pitted crystals of *Yashtimadhu*.



**Figure 2: Pharmacognostical profile of Jeevaniya Churna**

In this, **j.** represents fibres of *Jivanti*, **k.** represents starch grain of *Ashwagandha*, **l.** represents epidermal cells of *Mudgaparni*, **m.** represents stained lignified fibres of *Jivanti*, **n.** represents stained lignified fibres of *Yashtimadhu*, **o.** represents stained pitted vessels of *Ashwagandha*, **p.** represents stained lignified pitted raisins of *Yashtimadhu*, **q.** represents stained annular raisins of *Shatavari*.

**Pharmaceutical Study**

*Jeevaniya Churna* was analysed using various standard physicochemical parameters at the modern pharmaceutical chemistry laboratory, IPGT & RA, Jamnagar. The pharmaceutical parameters such as water extractive value, alcohol extractive value, pH, total ash, acid-insoluble ash, loss on drying and qualitative test were found within the permissible limits for *Churna*. The physicochemical parameter of *Jeevaniya Churna* was shown in table no.3

**Table 3: Physicochemical parameter of Jeevaniya Churna**

Parameters	Results
Foreign matter (w/w)	NA
Loss on Drying at 105°C (% c)	3.63%
Ash value at 450°C (% w/w)	5.3% w/w
Water extractive value (% w/w)	18.24%
Methanol extractive value (% w/w)	10.44%
Acid insoluble ash	0.76%
pH	10

**Qualitative Analysis:** The Results of qualitative test was performed on methanolic extract of *Jeevaniya Churna* was shown in Table 4.

**Table 4.: Qualitative test of Jeevaniya Churna**

Sr. No.	Parameter	Test	Methanolic Extract
1	Alkaloids	Dragendroff Test	+
2	Flavonoids	Lead Acetate Test	+
3	Phenols	Lead Acetate Test	+

4	Tannin	Lead Acetate Test	+
5	Sugar	Fehlings Test	+
6	Steroids	Salkowski Test	+
7	Saponin	Foam Test	+
8	Fats And Oils	Filter Paper Test	-
9	Cardiac Glycosides	Keller Killani Test	+
10	Protein	Biuret Test	-
11	Amino Acid	Ninhydrin Test	-
12	Carbohydrates	Molish Test	+

‘+’ shows present, ‘-’ Shows absent.

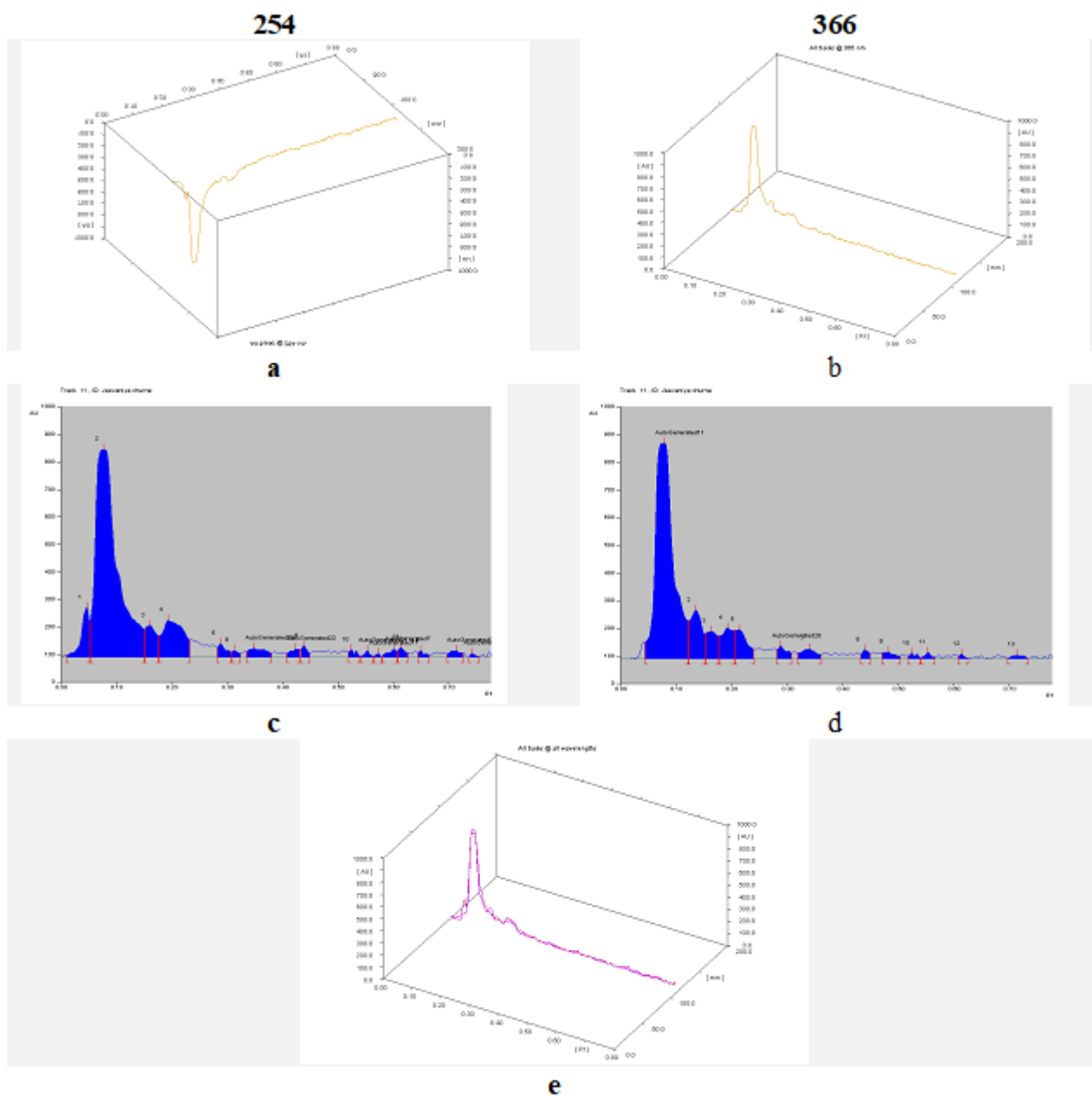
### HPTLC Study

The HPTLC profile of *Jeevaniya Churna* was shown in the Figure 2.

**Table 5: HPTLC profile of *Jeevaniya Churna***

Conditions		<b>R<sub>f</sub> values <i>Jeevaniya Churna</i></b>
Short ultra violet (254 nm)	17	0.05,0.08,0.16,0.19,0.29,0.31,0.35,0.42, 0.44,0.52,0.55,0.57,0.60,0.61,0.65,0.71,0.74
Long ultra violet (366 nm)	13	0.08,0.14,0.16,0.19,0.21,0.29,0.34,0.44, 0.48,0.52,0.55,0.61,0.71





**Figure 2: HPTLC profile of Jeevaniya Churna.**

Here, **a** represents 3D graph at 254 nm , **b** represents 3D graph at 366 nm, **c** represents peak display at 254 nm , **d** represents peak display at 366 nm, **e** represents multiple wavelength 3D graph.

**CONCLUSION**

Herbal based remedies serve as an important means of therapeutic medical treatment. The people are turning to usage of medicinal plants and phyto-chemicals in health care. India has one of the oldest cultural traditional uses of its herbal plants since vedic period. Ayurveda, Unani, Siddha and other traditional systems of medicine are the ancient systems of medicine and utilize numerous numbers of medicinal plants. Pharmacognostical, Phytochemical screening, biological screening of randomly collected plants and their phytochemical examination have proved to be helpful in discovering the new drugs. Pharmacognostical

evaluation of *Jeevaniya Churna* illustrated the specific characters of ingredients which were used in the preparation. The physicochemical evaluation of *Jeevaniya Churna* revealed that the standard quality and purity of drug. Phytochemical studies on the extracts of *Jeevaniya Churna* showed presence of alkaloids, flavonoids, phenols, tannin, sugar, steroids, saponin, cardiac glycosides, carbohydrates which can be hypothesized for its estrogenic activity. This information may be further useful for research activity or therapeutic use of the drug.

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