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PHARMACOGNOSTICAL AND PHARMACEUTICAL ANALYSIS OF *JIVANTYADI CHURNA*

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ABSTRACT
Bronchial Asthma is a disease characterized by an increased responsiveness of the airways to various stimuli. It manifests by widespread narrowing of the airways causing paroxysmal dyspnea,wheezing or cough. Ayurveda texts have described five types of *Shwasa Roga* and among these five, *Tamaka* is one. *Tamaka Shwasa* is a "*Swatantra*" *Vyadhi*. In *Ashtanga Hridayam & Astanga Sangraha*, the group of 18 drugs is mentioned for the management of the *Shwasa Roga* named as *Jivantyadi Churna*. **Methods**- Final product was subjected to Phrmacognostical and physico-chemical analysis such as microscopic study, loss on drying, ash value, pH etc. **Results**- Phrmacognostical study showed the presence of contents such as; annular vessels of Shati, simple trichome of Tulsi, rossels crystal of *Jivanti* etc. Preliminary physico-chemical analysis showed that the loss on drying value was found to be 8.4%, pH 7, Ash value 10%, Water soluble extract 6.8% etc. High Performance Thin Layer Chromatography (HPTLC) showed 4 and 2 spots at 254nm and 366nm respectively. **Conclusion**- The present work was carried out to standardize the finished product *Jivantyadi Churna* in terms of its identity, quality and purity. Pharmacognostical and Physico-chemical observations revealed the specific characters of all active constituents used in the preparation.

KEYWORDS: HPTLC, Pharmacogonosy, *Jivantyadi Churna*, pharmaceutical, *Tamaka Shwasa*.

INTRODUCTION
The prevalence of Bronchial Asthma an estimated 4 to 7 % of the people worldwide.[1] As stated by W.H.O, 350 million of global population are suffering from Bronchial Asthma, out of which 1/10th are Indians and the prevalence of asthma is increasing every where.it is one of the most important chronic conditions causing elementary school absenteeism in childhood.[2,3] *Tamaka Shwasa* is a "*Swatantra*" *Vyadhi* i.e. having its own etiological factor, patho-physiology and management. It is mentioned as *Yapya Vyadhi* in *Charaka Samhita*, while *Sushruta* considered it as *KrichchraSadhya Vyadhi. Tamaka Shwasa* is a disorder of *Praanavaha Srotas* while other *Srotasas* are also involved. The parallel disease entity in modern medicine to this disorder is Bronchial Asthma. In *Ashtanga Hridayam & Astanga Sangraha*, *Jivantyadi Churna*, the group of 18 drugs is mentioned for the management of the *Shwasa Roga* named as *Jivantyadi Churna*.[4] (Table 1) In the present day practice, among these 18 drugs most of the drugs are being used in different combinations. It prevent the attack of asthma due to anti-tussive, anti-inflammatory, mucolytic property etc. which is very useful to decrease the asthma prevelance. In the present study, the formulation is subjected to Pharmacognostical and pharmaceutical analysis. Preliminary organoleptic features and results of microscopy were verified and all the ingredients were proved to be authentic.

MATERIALS AND METHODS
Collection, Identification and Authentication of raw drugs
The raw materials were collected from the pharmacy of Gujarat Ayurved University, Jamnagar. All the raw drugswere identified and authenticated in the Pharmacogonosy Department, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

Preparation of the drug
As specific method of preparation is not mentioned for this drug, it was prepared as per common guidelines

described in classics and API for *Churna* formulation. Physico-chemical and qualitative analysis of the final product were carried out in the pharmaceutical chemistry laboratory of I.P.G.T & R.A., Gujarat Ayurved University, Jamnagar under expert guidance.

Pharmacognostical study
The Pharmacognostical study comprises of organoleptic study and microscopic study of finished product.

Organoleptic Study
The Organoleptic characters of *Ayurvedic* drugs are very important and give the general idea regarding the genuinity of the sample. Organoleptic parameters like Taste, Colour, odour and touch were scientifically studied in Pharmacognosy laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar, Gujarat, India.[5]

Microscopic Study
Jivantyadi Churna was powdered and dissolved with water and microscopy of the sample was done without stain and after staining with Phloroglucinol + HCl. Microphotographs of *Jivantyadi Churna* was also taken under Corl-zeisstrinocular microscope.[6]

Physico-chemical analysis
Jivantyadi Churna was analyzed using various standard physico-chemical parameters such as loss on drying, water soluble extract, alcohol soluble extract etc.[7]

High Performance Thin Layer Chromatography (HPTLC)
HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using Toluene + Ethylacetate + Acetic acid (7:2:1) solvent system and observed under visible light. The colour and Rf values of resolved spots were noted.[8]

RESULTS AND DISCUSSION

Organoleptic characters of *Jivantyadi Churna*
Organoleptic characters contents of *Jivantyadi Churna* like colour, taste, touch, Odor were recorded and shown in **Table- 2**.

Microscopic Study
Diagnostic characters of *Jivantyadi Churna* under the microscope showed annular vessels of *Shati*, simple trichome of *Tulsi* Rossels crystal of *Jivanti*, starch grain of *Shati* tannin content of *Agaru* Starch grain of *Jivanti*, pitted vessels of *Tulsi* etc. All these are showed in

Plate no 1.

PHARMACEUTICAL EVALUATION

Physico-chemical analysis
Physico-chemical analysis of *Jivantyadi Churna* revealed the value of loss on drying was 8.4%, Ash value 10% w/w, water soluble extraction 6.8 % Alcohol soluble extraction 9.14 %, pH Value 7 are shown in **Table –3.**

HPTLC Study
The chromatographic study (HPTLC) was carried out under 254 and 366 nm UV to establish fingerprinting profile. It showed 4 spots at 254 nm and 2 spots at 366 nm with Rf values were recorded which may be responsible for expression of its pharmacological and clinical actions. **Plate 2, Table – 4.**

Table1. Contents of *Jivantyadi Churna.*

Sr.No.	Drug name	Botanical name	Part to be used/ *Shushka*	Ratio
1	*Jivanti*	*Leptadenia reticulata* W & R	*Shushka Panchanga*	1 part
2	*Nagarmotha*	*Cyperus rotandus* Linn.	*Shushka Kanda*	1 part
3	*Tulsi*	*Ocimum sanctum* Linn.	*Shushka Panchanga*	1 part
4	*Dalchini*	*Cinnamomnm Cassia* (L.)	*Shushka Twaka*	1 part
5	*Badi elaichi*	*Amomum Subulatum* Roxb.	*Shushka Phala*	1 part
6	*Chhoti elaichi*	*Elettaria Cardamomum* Maton.	*Shushka Phala*	1 part
7	*Pushkaramoola*	*Inula racemosa.* Hook. F	*Shushka Moola*	1 part
8	*Chanda*	*Angelica Archangeica* Linn	*Shushka Moola*	1 part
9	*Bhumyamalaki*	*Phyllanthus Fraternus* L.	*Shushka Panchanga*	1 part
10	*Agaru*	*Acquilaria agallocha* Roxb.	*Shushka Kashtha*	1 part
11	*Bharangi*	*Clerodendrum Serratum* Linn.	*Shushka Kanda Twaka*	1 part
12	*Shunthi*	*Zingiber Officinale* Roscope.	*Shushka Kanda*	1 part
13	*Shugandhabala*	*Pavonia odorata* Willd.	*Shusshka Moola*	1 part
14	*Karkatshringi*	*Pistacia integerrima* Stew.	*Shushka Shrigakar Kosha*	1 part
15	*Kachura*	*Curcuma Zedoaria* Rosc.	*Shushka Kanda*	1 part
16	*Pippalimoola*	*Piper longum* Linn.	*Shushka Moola*	1 part
17	*Nagakeshar*	*Ochrocarpu Longifolius* Benth & Hook.F.	*Shushka Pushapa*	1 part
18	*Choraka*	*Angelica glauca* Edgew.	*Shushka Moola*	1 part

❖ ***Chanda, Choraka* are not available in present era, so their substitutes will be used as given below:**

Main Drug	Substitute	Botanical name of substitute drug	Part to be used/ *Shushka*	Ratio
Chanda	***Shati***	*Hedychium spicatum.* Ham ex smith	*Shushka Kanda*	1 part
Choraka	***Talishpatra***	*Abies webbiana* Lindl.	*Shushka Patra*	1 part

Table 2: Organoleptic parameters of *Jivantyadi Churna.*

Serial no.	Character	Observed
1	Colour	Light Brown
2	Odour	Characteristic sweet
3	Taste	Bitter
4	Touch	Fine

Table 3: Physico-chemical analysis of *Jivantyadi Churna.*

Serial no.	Test	Result
1	Loss on drying	8.4 %w/w
2	Ash value	10 %w/w
3	Water soluble extract	6.8 %w/w
4	Alcohol soluble extract	9.14 %w/w
5	pH	7

Table 4: HPTLC Study of *Jivantyadi Churna.*

Wave Length	Number of spots	Rf values
254nm	4	0.02, 0.12, 0.16, 0.24
366nm	2	0.02, 0.16

Plate no 1.

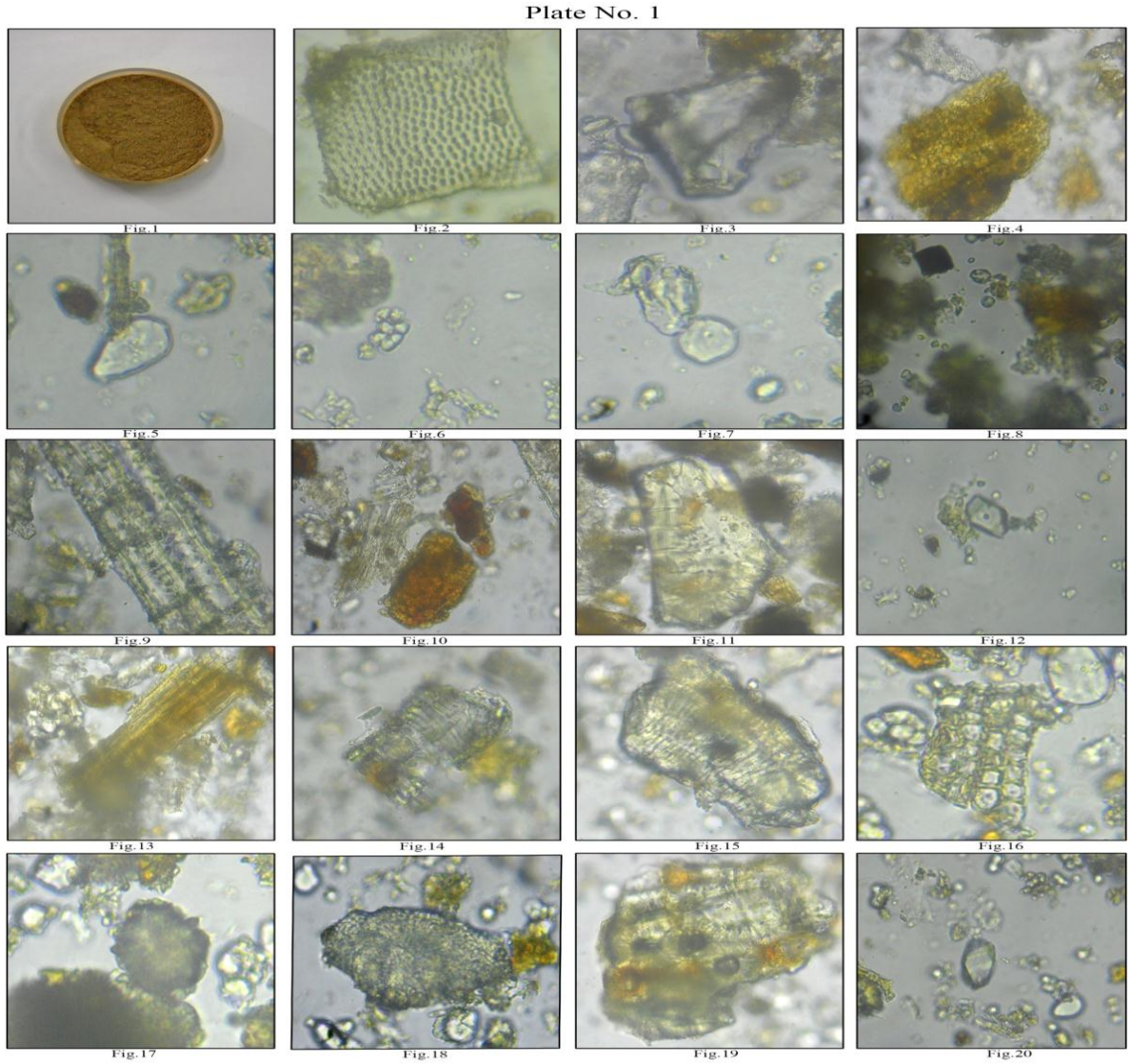


Plate No.2

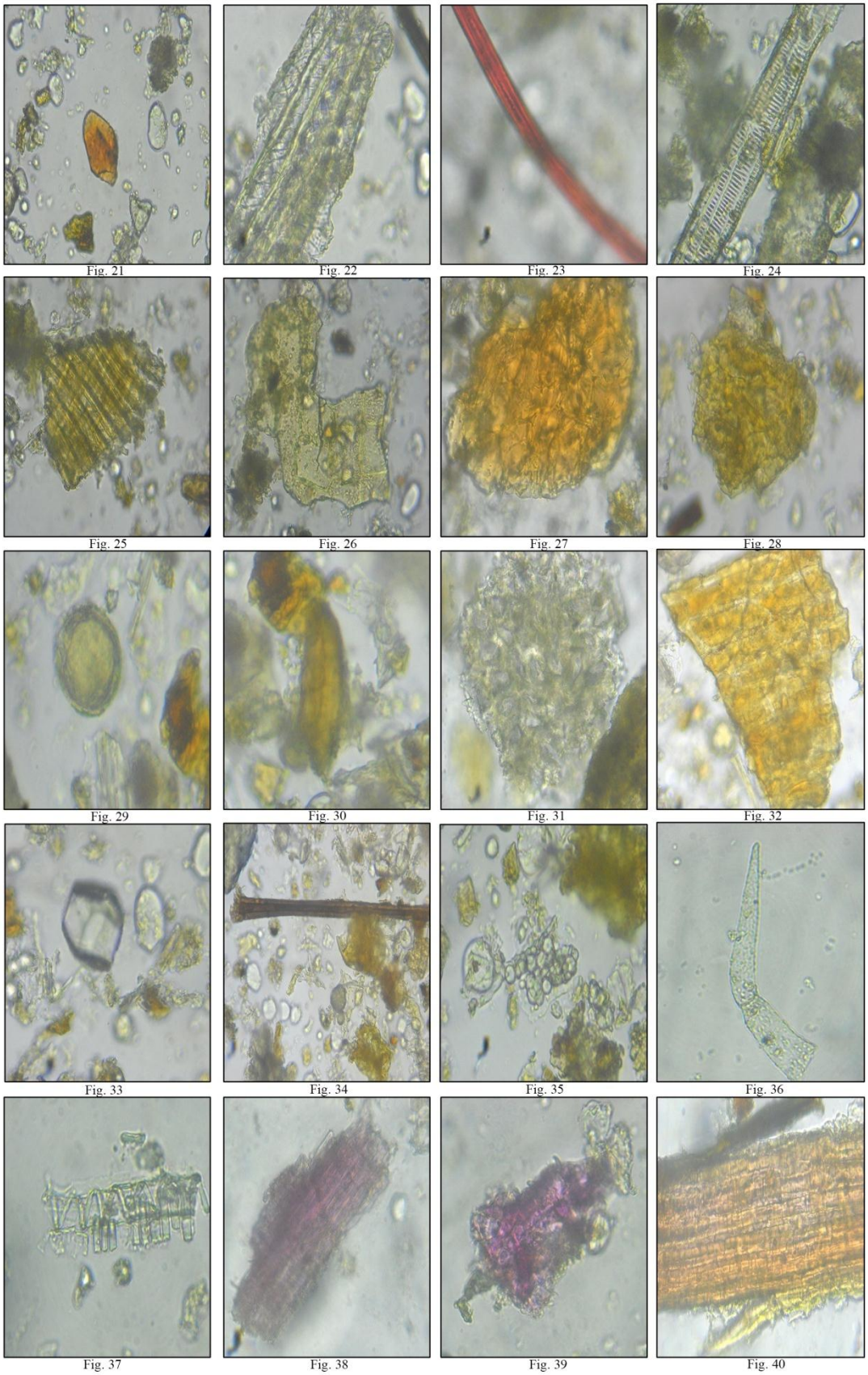


Fig. 21 Fig. 22 Fig. 23 Fig. 24

Fig. 25 Fig. 26 Fig. 27 Fig. 28

Fig. 29 Fig. 30 Fig. 31 Fig. 32

Fig. 33 Fig. 34 Fig. 35 Fig. 36

Fig. 37 Fig. 38 Fig. 39 Fig. 40

Plate No. 3

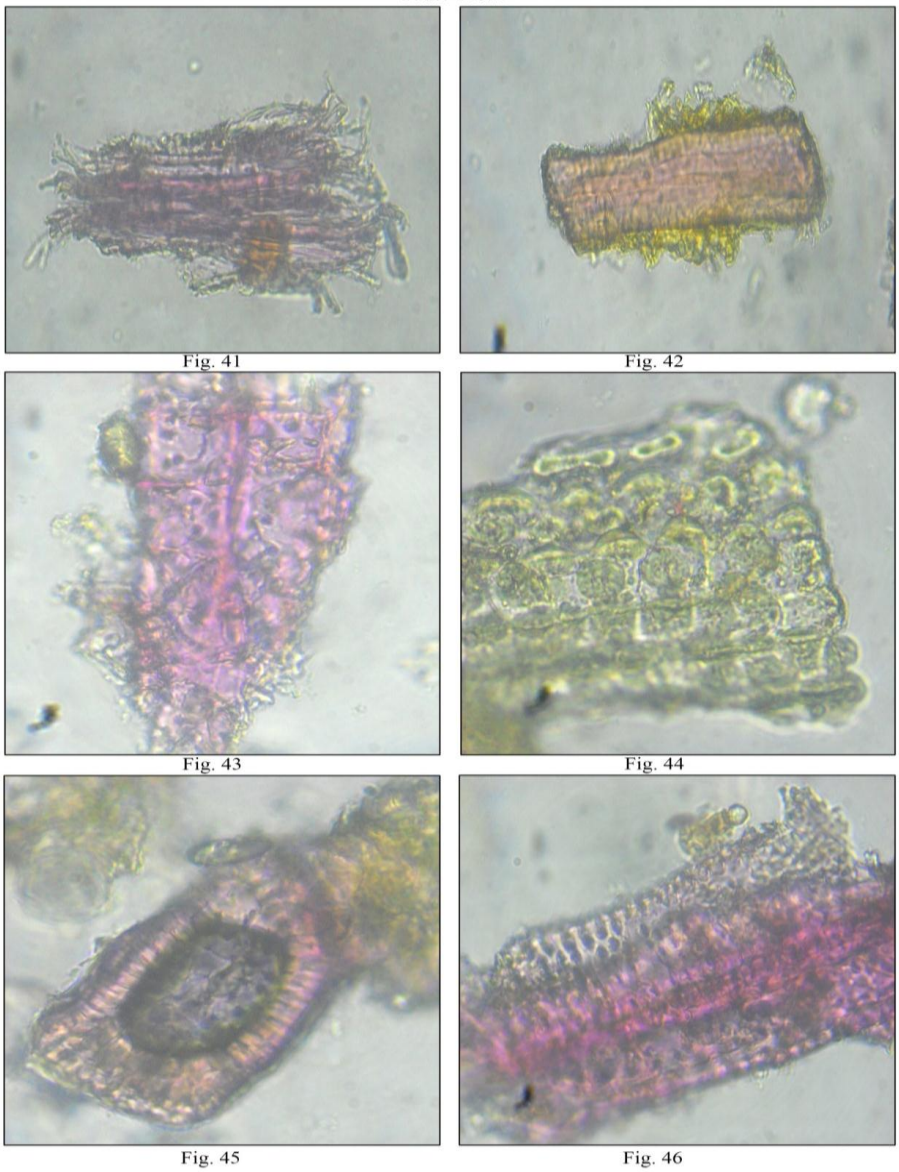


Fig. 41 Fig. 42

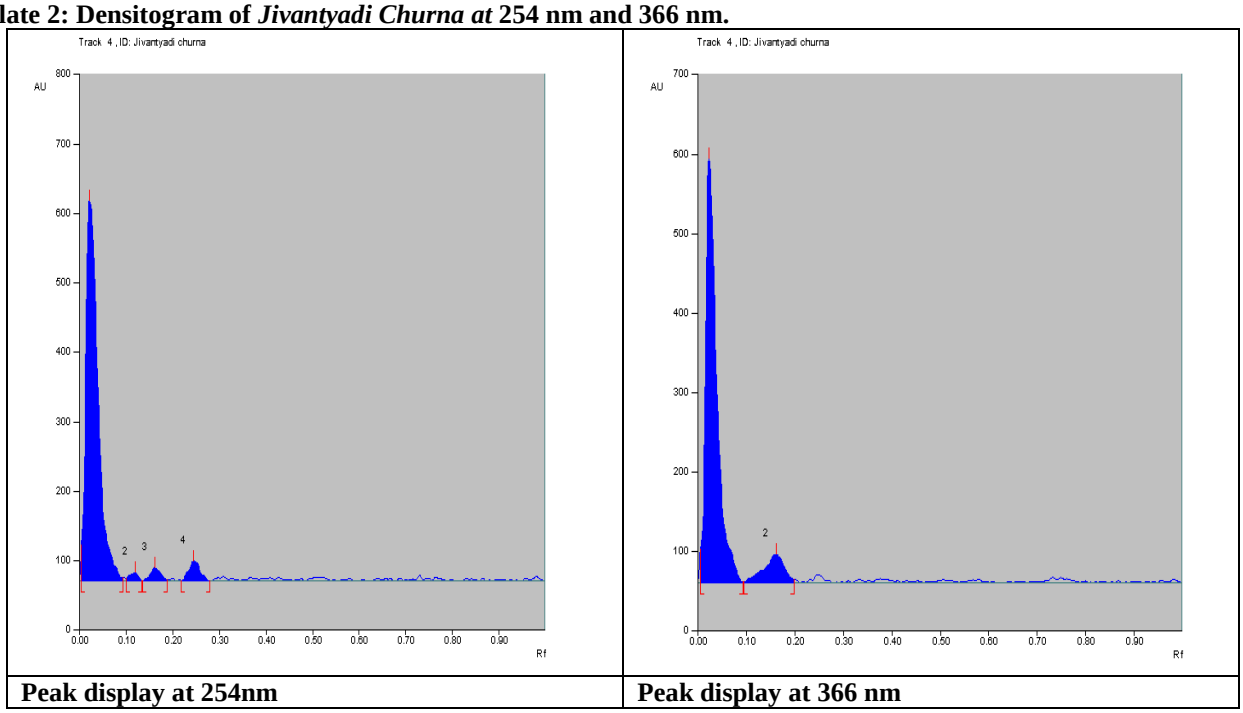
Fig. 43 Fig. 44

Fig. 45 Fig. 46

Powder Microscopy
Fig.1– Powder sample.
Fig.2– Boarded pitted vessel of *Pushkaramoola.*
Fig.3–Silica deposition of *nagarmotha.*
Fig.4–Yellow colouring matter with all globules of *nagakeshar.*
Fig.5–Oval shape starch grain of *shunthi.*
Fig.6–Small group of starch grain of *kachura.*
Fig.7–Circular shape starch grain of *nagarmotha.*
Fig.8–Animal excreta (black debris) of *Karkatshringi.*
Fig.9–Group of fibre of *pushkaramoola.*
Fig.10–Brown contain of *dalchini.*
Fig.11–Stone cells with *Agaru.*
Fig.12–Prismatic crystal of *jivanti.*
Fig.13–Fibre with yellow contain of *shunthi.*
Fig.14–Scalariform vessel of *shati.*
Fig.15–Group of sclereids of *Karkatshringi.*
Fig.16–Cork cells of *pippalimoola.*
Fig.17–Rosette crystal of *bharangi.*
Fig.18–Group of starch cell *Shugandhabala.*
Fig.19–Group of stone cells of *pippalimoola*.
Fig.20–Rhomboid crystal of *jivanti.*

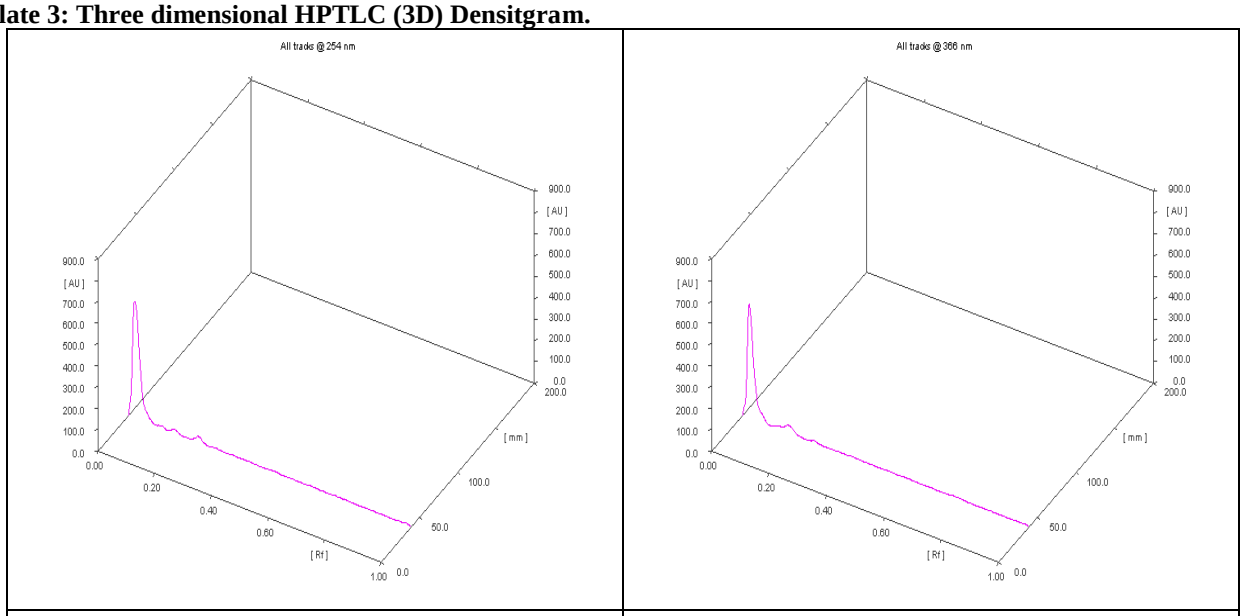
Plate No. 2
Powder Microscopy
Fig.21–Oleoresin contain of *shati.*
Fig.22–Fibre and vessels of *pippalimoola.*
Fig.23–Fibre of *jivanti.*
Fig.24– Boarded pitted vessel of *bhumyamalaki.*
Fig.25–Hypodermis of *badi elaichi.*
Fig.26–Epicarp cells with oil globule of *ela.*
Fig.27–Cork cells of brown cells of *pushkaramoola.*
Fig.28–Starch grain and brown contain of *shati.*
Fig.29–Pollen grain of *nagakeshar.*
Fig.30–Ergastic cells of *Karkatshringi.*
Fig.31–Parechyma cells of *nagarmotha.*
Fig.32–Brown contain of *karkartshringi.*
Fig. 33–Prismatic crystal of *pushkarmoola.*
Fig. 34–Fibre with brown contain of *talishpatra.*
Fig. 35–Group of small starch grain of *Badi elaichi*
Fig. 36–Trichome of *Tulsi*
Fig.37–Spiral vessel of *Bhumyamalaki*
Fig.38–Lignified group of fibre of *pushkaramoola*
Fig.39–Lignified stone cells of *dalchini*
Fig.40–Lignified group of septated fibre of *bharangi*
Plate No. 3
Powder Microscopy
Fig.41–Lignified fibre of *jivanti*
Fig.42– Lignified pitted stone cell of *jivanti*
Fig.43– Lignified pitted stone cell of *agaru*
Fig.44–Epicarp cell of *badi elaichi*
Fig.45– Lignified pitted stone cell of *dalchini*
Fig.46– scalariform and pitted vessel of *shati*

Plate 2: Densitogram of *Jivantyadi Churna at* 254 nm and 366 nm.



Peak display at 254nm	Peak display at 366 nm

Plate 3: Three dimensional HPTLC (3D) Densitgram.



254nm	366nm

CONCLUSION

The pharmacognostical and physico chemical analysis of *Jivantyadi Churna* confirmed the purity and genuinety of the drug. Further studies may be carried out on it on the basis of observation made and results of experimental studies. As pharmacognostical and physico-chemical profiles of *Jivantyadi Churna* are available this study may be beneficial for future researchers and can be used as a reference standard in the further quality control researchers.

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