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Pharmaceutico Analytical Study of *Jatipatradi Churna*

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ABSTRACT

Oral thrush is an opportunistic infection of the oral cavity. It is common and underdiagnosed among the elders. It is also called as oral candidiasis and is a condition in which the fungus Candida albicans accumulates on the lining of mouth. Candida is a normal organism in our mouth, but sometimes it can overgrow and cause symptoms. The incidence of C Albicans is 45% in neonates, 45-65% in healthy children, 30-45% of healthy adults, 50-65% of people who wear removable dentures, 90% of patients with acute leukaemia and undergoing chemotherapy and 95% of HIV infected patients. Oral thrush causes creamy white lesions, usually on the tongue or inner cheeks. Sometimes oral thrush may spread to the roof of mouth, gums or tonsils, or the back of throat. *Jaatipatradi Choorna* is one of the formulations explained in *Yogaratnakara* in *Dantaroga Chikitsadhaya* containing the ingredients like *Jaatipatra, Punarnava, Gajapippali, Kushta, Vacha, Shunti, Ajamoda, Haritaki* and *Tila* which are having *Krimighna* and *Khandughna* property. Hence, this present study has been undertaken to prepare *Jaatipatradi Choorna* and subjecting it to standard analytical parameters of *Churna Kalpana.*

Key words: *Asanas, Obesity, Sthaulya, Shaileyadi Churna, Udvartana.*

INTRODUCTION

India has a huge heritage of traditional herbal medicine. The Ayurvedic system of medicine has described various herbal formulations in the treatment of diseases, which play an important role in modern health care and curing various ailments. Ayurveda in recent era is attracting global attention due to its holistic approach in the treatment of disease and with minimal adverse drug reaction. The invention of *Panchavidha Kashaya Kalpana* by *Acharya Agnivesha*, is really a revolutionary step in Ayurvedic Pharmaceutics.[1] Earlier people used to consume leaves, roots, tubers etc. in a raw form to appease hunger and to treat health problems. Later the invention of *Panchavidha Kashaya Kalpana* came into existence i.e., *Swarasa, Kalka, Kashaya, Hima* and *Phanta* being the fundamental preparation for all other preparation. To bring about the increased shelf life the *Upakalpanas* came into existence. *Churna* being the *Upakalpana* of *Kalka Kalpana* is defined as the dried fine powder of drug obtained after pounding in *Khalwa Yantra* (stone mortar) and filtering through cloth is known as *Churna*.[2] It is also referred as *Raja* and *Kshoda*. *Jaatipatradi Choorna* is one of the formulations explained in *Yogaratnakara*[3] in *Dantaroga Chikitsadhaya* containing the ingredients like *Jaatipatra, Punarnava, Gajapippali, Kushta, Vacha, Shunti, Ajamoda, Haritaki* and *Tila* which are having *Krimighna* and *Khandughna* property. *Jaatipatra* is

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attributed to have many medicinal properties. It's being used in treating the ailments of *Mukha Roga* and has the *Karmukata* of *Danta Drudata, Vruna Shodhana* and *Vruna Ropana.* Hence, this present study has been undertaken to prepare *Jaatipatradi Choorna* and subjecting it to standard analytical parameters of *Churna Kalpana.*

Objectives of the Study

1. To prepare *Jaatipatradi Choorna* according to classics.
2. Physico-chemical analysis of individual drugs and *Jaatipatradi Choorna*.

Materials and Methods

- The raw materials required for the preparation of the *Jatipatradi Choorna* were collected from reliable sources.
- Authentication of the ingredients was done from Dravyaguna Department of BVVS Ayurvedic Medical College, Bagalkot.
- Preparation of *Jatipatradi Churna* was carried out at the Pharmacy of BVVS Ayurvedic Medical College and Hospital, Bagalkot, Karnataka.
- The Antimicrobial Activity of the drug was carried out at the Maratha Mandal's Dental College and Research Institute, Belagavi. Karnataka.

Ingredients of *Jatipatradi* Churna

Table 1: Showing ingredients of *Jatipatradi Churna*

SN	Ingredient	Botanical Name	Part used	Quantity
1.	*Jatipatra*	*Jasminum grandiflorum* Linn	Leaf	200gm
2.	*Punarnava*	*Boerhavia diffusa*	Root	200gm
3.	*Gajapippali*	*Scindapsus officinalis*	Fruit	200gm
4.	*Badara Twak*	*Ziziphus mauritiana*	Bark	200gm
5.	*Kusta*	*Saussurea lappa*	Rhizome	200gm
6.	*Vacha*	*Acorus calamus* Linn	Root	200gm
7.	*Shunti*	*Zingiber officinale*	Rhizome	200gm
8.	*Ajamoda*	*Trachyspermum ammi*	Fruit	200gm
9.	*Haritaki*	*Terminalia chebula*	Fruit	200gm
10.	*Tila*	*Sesamum indicum*	Seed	200gm

Pharmaceutical Procedure[4]

Each drug was identified, collected and authenticated individually. Each drug was taken separately in the *Ulukhala Yantra* and pounded to reduce in its particle size and then put in the pulveriser to make *Sookshma* (fine) *Choorna*. The fine *Churnas* of all the drugs like *Jatipatra, Punarnava, Gajapippali, Badara Twak, Kusta, Vacha, Shunti, Ajamoda, Haritaki* and *Tila* were taken in 100gm quantity each in a large stainless-steel vessel. It was then completely mixed. To attain homogenous mixture, it was put in grinder and collected. Obtained *Jatipatradi Choorna* was weighed and then packed in air tight plastic containers.

Standard operating procedure of preparation of *Churna* (Powder)

Collection

↓

Identification and authentication of raw drugs

↓

Drying

↓

Finely pounding in Pulveriser

↓

Finely powdered drug should pass through sieve number 85

↓

Weigh each ingredient separately

↓

Mixing in the specified proportion

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↓

Packing in air tight containers

↓

Labeling and

↓

Storage

Analytical methods[5]

1. Organoleptic Characteristics: The colour, odour and texture of *Jaatipatradi Choorna* was assessed.
2. Physicochemical analysis: *Jaatipatradi Choorna* was analysed for loss on drying, extractive values, ash values, pH as per the standard method prescribed in Ayurvedic Pharmacopeia of India (API).
3. Phytochemical analysis: *Jaatipatradi Choorna* was analysed for preliminary phytochemical analysis as prescribed in Ayurvedic Pharmacopeia of India (API).
4. HPTLC study: This study was carried out for *Jaatipatradi Choorna*.

Table 2: Organoleptic characters of *Jatipatradi Churna*

SN	*Jatipatradi Churna*	Results
1.	Form	*Churna*
2.	Colour	Light brown
3.	Taste	Sour, pungent & Bitter
4.	Odour	Characteristic

Table 3: Physicochemical analysis of *Jatipatradi Churna.*

SN	Tests	Results
1.	Moisture content	2.385%
2.	Total Ash Value	9.045%
3.	Acid insoluble Ash	2.833%
4.	Water soluble extractive	4.456%
5.	Alcohol soluble extractive	5.594%
6.	pH	6.3

Table 4: Preliminary Phytochemical study of *Jatipatradi Churna.*

SN	Test	Aqueous	Alcoholic
1.	Test for Carbohydrates	Positive	Positive
2.	Test for Reducing sugar	Positive	Positive
3.	Test for Monosaccharide	Positive	Positive
4.	Test for Pentose sugar	Negative	Negative
5.	Test for Non Reducing Sugar	Negative	Negative
6.	Test for Hexose Sugar	Negative	Positive
7.	Test for Protein	Positive	Positive
8.	Test for Amino Acids	Positive	Positive
9.	Test for Steroids	Negative	Positive
10.	Test for Flavonoids	Positive	Positive
11.	Test for Alkaloids	Positive	Positive
12.	Test for Tannins	Positive	Negative

TLC report

Tests	Results
TLC: Alcohol Extract	Rf Values
Mobile Phase - Toluene Ethyl acetate	Short Wave: 0.07, 0.11, 0.15, 0.57, 0.66, 0.77
Ratio: 7:3	Long Wave: 0.07, 0.11, 0.17, 0.22, 0.25, 0.28, 0.38, 0.45, 0.53, 0.59, 0.67, 0.79, 0.89, 0.92

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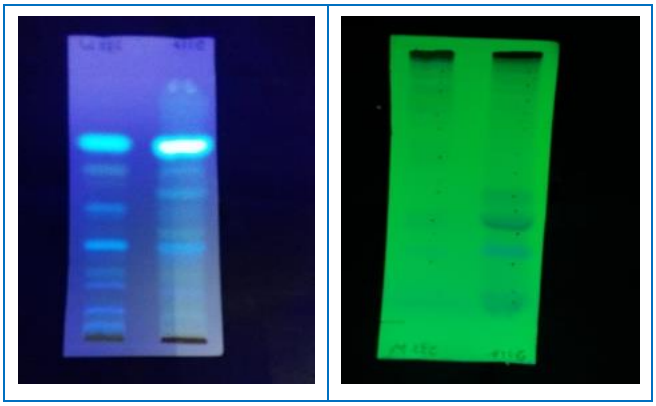
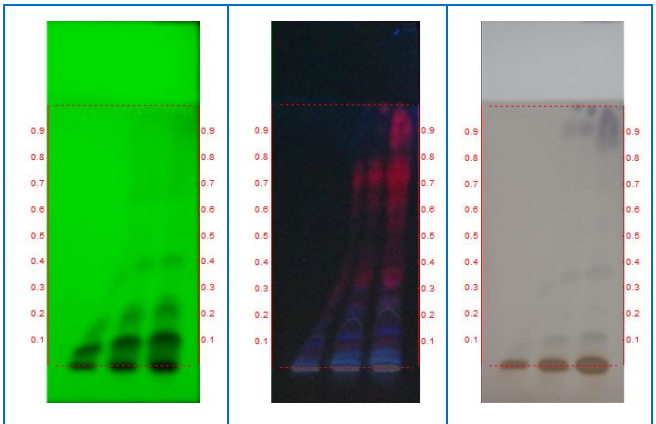
Tests	Results
TLC: Water Extract	Rf Values
Mobile Phase-Toluene Ethyl acetate	Short Wave: 0.08, 0.11, 0.15, 0.17, 0.23, 0.29, 0.42, 0.63, 0.67, 0.77
Ratio: 7:3	Long Wave: 0.05, 0.10, 0.14, 0.22, 0.28, 0.39, 0.47, 0.52, 0.63, 0.67, 0.78



HPTLC

1g of *Jatipatradi Choorna* was suspended in 10ml of alcohol. 3, 6 and 9µl of the above extracts were applied on a pre-coated silica gel F254 on aluminium plates to a band width of 7 mm using Linomat 5 TLC applicator. The plate was developed in Toluene: Ethyl acetate (4.0 : 1.0). The developed plates were visualized under short UV, long UV and then derivatised with vanillin sulphuric acid and scanned under UV 254nm, 366nm and 620nm (After derivatisation). Rf, colour of the spots and densitometric scan were recorded.

Figure 1: TLC photo documentation of Ethanol extract of *Jatipatradi Choorna*



At Short UV	At long UV	After derivatisation

track 1 - Ethanol extract of *Jatipatradi Choorna* – 3 µl

track 2 - Ethanol extract of *Jatipatradi Choorna* – 6µl

track 3 - Ethanol extract of *Jatipatradi Choorna* – 9 µl

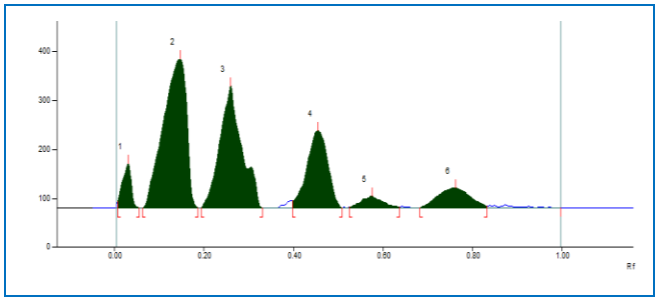
Solvent system : Toluene : Ethyl acetate (4:1)

Table 1: R_f values of all the sample of Ethanol extract of *Jatipatradi Choorna*

At Short UV	At long UV	After derivatisation
-	0.03 (F. blue)	-
-	0.05 (F. blue)	-
0.12 (D. green)	0.12 (F. blue)	-
-	0.15 (F. blue)	0.15 (Purple)
0.22 (D. green)	-	-
-	0.25 (F. blue)	-
-	0.34 (F. red)	-
-	-	0.37 (Purple)
0.41 (D. green)	-	-
-	-	0.42 (Purple)
-	0.51 (F. red)	0.51 (Purple)
-	0.62 (F. red)	-
-	0.73 (F. red)	-
-	0.92 (F. red)	0.92 (Purple)

***F-fluorescent**

Figure 2. HPTLC photo documentation of Ethanol extract of *Jatipatradi Choorna*



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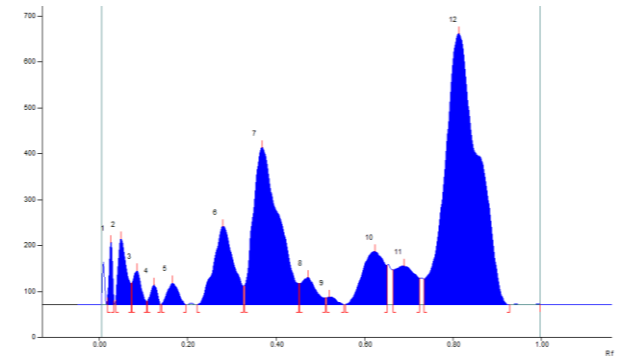
Track 3, ID: Jatipatradi churna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	12.4 AU	0.03 Rf	90.7 AU	10.44 %	0.05 Rf	0.1 AU	1287.2 AU	4.33 %
2	0.06 Rf	0.2 AU	0.15 Rf	304.5 AU	35.02 %	0.19 Rf	0.3 AU	11387.4 AU	38.29 %
3	0.19 Rf	0.5 AU	0.26 Rf	250.0 AU	28.75 %	0.33 Rf	0.0 AU	8833.6 AU	29.71 %
4	0.40 Rf	14.4 AU	0.45 Rf	158.5 AU	18.23 %	0.51 Rf	0.4 AU	5293.1 AU	17.80 %
5	0.53 Rf	1.9 AU	0.58 Rf	24.5 AU	2.82 %	0.64 Rf	2.2 AU	817.2 AU	2.75 %
6	0.68 Rf	0.0 AU	0.76 Rf	41.2 AU	4.74 %	0.83 Rf	4.0 AU	2119.2 AU	7.13 %

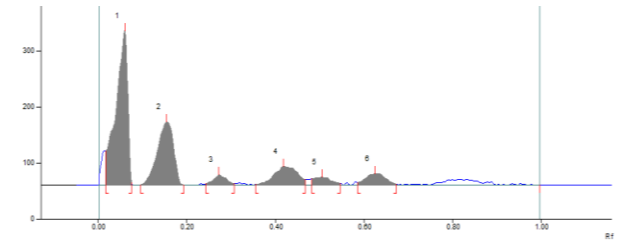
At 254nm



Track 3, ID: Jatipatradi churna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	15.2 AU	0.03 Rf	135.6 AU	7.43 %	0.03 Rf	8.3 AU	765.9 AU	1.18 %
2	0.04 Rf	9.3 AU	0.05 Rf	143.8 AU	7.88 %	0.07 Rf	46.2 AU	1957.3 AU	3.02 %
3	0.07 Rf	47.2 AU	0.09 Rf	74.3 AU	4.07 %	0.11 Rf	7.1 AU	974.7 AU	1.50 %
4	0.11 Rf	7.9 AU	0.12 Rf	43.3 AU	2.37 %	0.14 Rf	1.1 AU	463.3 AU	0.71 %
5	0.14 Rf	0.8 AU	0.17 Rf	47.2 AU	2.59 %	0.20 Rf	0.0 AU	838.8 AU	1.29 %
6	0.22 Rf	0.1 AU	0.28 Rf	170.9 AU	9.37 %	0.33 Rf	40.1 AU	5528.5 AU	8.52 %
7	0.33 Rf	41.3 AU	0.37 Rf	342.8 AU	18.79 %	0.45 Rf	46.2 AU	14186.4 AU	21.86 %
8	0.45 Rf	46.2 AU	0.47 Rf	59.3 AU	3.25 %	0.51 Rf	14.5 AU	1472.8 AU	2.27 %
9	0.51 Rf	15.0 AU	0.52 Rf	16.8 AU	0.92 %	0.55 Rf	0.1 AU	263.5 AU	0.41 %
10	0.56 Rf	0.3 AU	0.62 Rf	116.0 AU	6.36 %	0.65 Rf	86.5 AU	4159.9 AU	6.41 %
11	0.67 Rf	76.1 AU	0.69 Rf	84.0 AU	4.60 %	0.73 Rf	58.2 AU	2867.4 AU	4.42 %
12	0.74 Rf	56.5 AU	0.81 Rf	590.6 AU	32.37 %	0.93 Rf	0.0 AU	31405.8 AU	48.40 %

At 366nm



Track 3, ID: Jatipatradi churna

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	60.5 AU	0.06 Rf	274.9 AU	58.01 %	0.08 Rf	3.7 AU	5249.8 AU	47.88 %
2	0.10 Rf	0.1 AU	0.15 Rf	112.4 AU	23.72 %	0.19 Rf	0.1 AU	2964.5 AU	27.04 %
3	0.24 Rf	2.3 AU	0.27 Rf	18.4 AU	3.88 %	0.31 Rf	2.3 AU	391.0 AU	3.57 %
4	0.36 Rf	0.8 AU	0.42 Rf	32.9 AU	6.93 %	0.47 Rf	9.9 AU	1268.6 AU	11.57 %
5	0.48 Rf	11.0 AU	0.51 Rf	14.4 AU	3.05 %	0.55 Rf	3.4 AU	414.0 AU	3.78 %
6	0.59 Rf	4.2 AU	0.63 Rf	20.9 AU	4.40 %	0.67 Rf	1.7 AU	675.6 AU	6.16 %

After derivatisation at 620nm

Remarks

The given sample has been analytically standardized as per standard testing protocol. Results of *Jatipatradi Choorna* samples HPTLC photo documentation, densitometric scan, R_f values are presented in respective tables and figures.

Discussion

On reviewing over the drugs of *Jatipatradi Choorna*, it is seen to contain *Katu* and *Tikta Rasa Pradhanata*. It is *Shresta Krimighna, Shodhana, Vedanastapaka, Shothahara, Shoolaprashamana* and with its *Veerya* being *Ushna*, it is *Kapha Vata Shamaka*. *Tikta Rasa* has *Pitta Shamaka* property and helps in removing the debris and helps in improving and maintaining the oral hygiene. The *Kashaya Rasa* helps in reducing the burning sensation.

Physico-chemical parameters of *Jatipatradi Choorna* were suggestive of the quality of *Jatipatradi Choorna* and increased shelf life. Moisture content of drug is one of the important factors to determine shelf life. Moisture content of drug is one of the important factors to determine shelf life. Drugs which are hygroscopic in nature tend to get deteriorated because of high moisture content i.e., higher the moisture content greater the chances of drug to get spoiled. Phytochemical analysis results showed presence of both primary and secondary metabolites viz. Carbohydrates, reducing sugars, hexose sugars, tannins, phenolic compounds, alkaloids and Saponin glycosides. Some drugs also showed presence of flavonoids, steroids, anthraquinone, cardiac glycosides, fats and oils. pH of *Jatipatradi Choorna* was 6.3 (with 10 % aqueous solution) which is a weak basic i.e., *Jatipatradi Choorna* is mucosa friendly, does not cause harm to the oral mucosa and maintains integrity of oral mucosa.

Conclusion

Thus, the *Jatipatradi Choorna* was being prepared by following the SOP and was analysed. The analytical parameters were within the parameters mentioned in the API and were suggestive of the genuinely of the raw

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material used and the quality of the end product obtained.

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