WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 4, 734-740. Research Article ISSN 2277– 7105

STANDARDIZATION OF CHITRAKA VATI THROUGH PHARMACOGNOSTICAL & PHYSICOCHEMICAL ANALYSIS

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Article Received on
14 Feb. 2017,

Revised on 05 March 2017,
Accepted on 25 March 2017

DOI: 10.20959/wjpr20174-8278

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ABSTRACT

Ayurveda has given much importance to the *Agni* i.e. digestive power. *Agnimandhya* (indigestion) is one of most common pathological condition giving rise to appearance of many symptoms like *Udara Gaurava* (heaviness in abdomen), *Alasya* (laziness) etc. and also is a root cause for manifestation of many diseases. The present study deals with the standardization of *Chitraka Vati* through the pharmacognostical and pharmaceutical standards. The trial drug *Chitraka Vati* was subjected to authentication by subjecting it to above analysis as per standard procedures and the observations were systematically recorded. Pharmacognostical findings like Crystal fibre, Fragments of boarder pitted vessels, Lignified fibre, Pitted scleroid, Rhomboidal crystal of calcium oxalate, Scleroid group, Starch grains-simple and compound with hilum of *Chitraka*. Organoleptic features of coarse powder were harmonized with API. The water soluble extract was 15% w/w, alchohol soluble extract 10%, ash value 2.57%, Ph value 4.5. After the analysis of the various pharmacognostical and pharmaceutical analysis of *Chitraka Vati* it was concluded that the formulation meets the minimum qualitative standards as reported in the API at a preliminary level.

KEYWORDS: *Agnimandya*, *Chitraka Vati*, Pharmacognostical, Pharmaceutical.

INTRODUCTION

Medicinal plants are the local heritage with universal importance. Medicinal plants are the main constituents of many drugs of Indian system of medicine.[1] Natural products play a

vital role in drug development in the pharmaceutical industry.[2] Nature has been a huge source of medicinal plants from thousands of years and a number of modern drugs have been isolated from natural sources, particularly from herbal plants. A variety of medicinal plants have been used in daily routine to treat diseases all over the world years ago. There has been a significant increasing digestion problems in 21st century due to changing dietary habits and faulty Lifestyle. It is a root cause for manifestation of many diseases.[3] *Pitta Dosha* particularly *Pachaka Pitta* is one of the main factor which is responsible for normal functioning of the *Jatharagni*.[4] When *Pachaka Pitta* is vitiated its hampers the normal process of digestion and *Jatharagni* also. This condition called as *Agnimandhya* (indigestion).

For this condition diseases *Chitraka Vati* has been selected because *Chitraka* having *Katu Rasa, Ladhu Ruksha Guna, Ushana Virya* and *Katu Vipaka* and properties like *Dipana(*appetizing*), Pachana*(digestive)etc. The first explanation of its therapeutic use has been documented in *Charaka Samhita* for the treatment of *Grahani*, a gastro-intestinal disorder.[5] This formulation exhibits *Dipana* (appetizing) and *Pachana* (digestive) activities by virtue *Vayu* and *Agni Mahabhuta* in its *Panchmahabhuatika* configuration. It has been also recommended in *Grahani Chikitsa* by different *Ayurvedic Acharyas*.[6][7] Its main content is *Chitraka* (*Plumbago zeylanica*) which is considered to be good appetizer.[8] This formulation specifically works in various types of gastric disorders including anorexia, indigestion, nausea, diarrhea etc.

In this regard present work was carried out to evaluate and standardize the pharmacognostical as well as pharmaceutical properties of *Chitraka Vati*.

MATERIALS AND METHODS

Collection of Raw Drugs

The raw drug of Chitraka (Plumbago zeylanica) was collected from Pharmacy of Gujarat Ayurved University, Jamnagar. The ingredients & parts used in the preparation of the final product are listed in the table.

Composition of *Chitraka Vati*

Sr.no	Sanskrit name	Botanical name	Family	Part used
1	*Chitraka Vati*	*Plumbago zeylanica* Linn.	Plumbaginaceae	**Roots**

Preparation of tablet

All the ingredients were taken in same proportion and *Vati* (tablet) were prepared as per the standards mentioned in the Ayurvedic Pharmacopoeia of India.[9] These *Vatis* were crushed, dried and passed through a no. 20 sieve. The formulation was then compressed in a single – punch tablet press with a target weight of 500 mg.

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.[10]

Macroscopic Study

Chitraka consists of dried mature root of *Plumbago zeylanica* Linn. (family: Plumbaginaceae), a large perennial shrub found throughout India and occasionally cultivated in gardens. Roots 30 cm or more in length, 6 mm or more in diameter as also as short stout pieces, including root stocks reddish to deep brown, scars of rootlets present, bark thin and brown, odour disagreeable, taste acrid.

Microscopic Study

Chitraka Vati was dissolved with water and microscopy of the sample was done without stain and after staining with Phloroglucinol + HCl. Microphotographs of *Chitraka Vati* was also taken under Corl-zeiss trinocular microscope.[11]

Analytical Study

Chitraka Vati was analyzed with appropriate protocols for standard physic-chemical parameters such as aqueous extractive, alcohol extractive, pH, hardness, uniformity of weight, disintegration time, loss on drying as per CCRAS recommendations at the Pharmaceutical chemistry lab, IPGT & RA.[12][13][14]

RESULTS

Organoleptic characters of *Chitraka Vati*

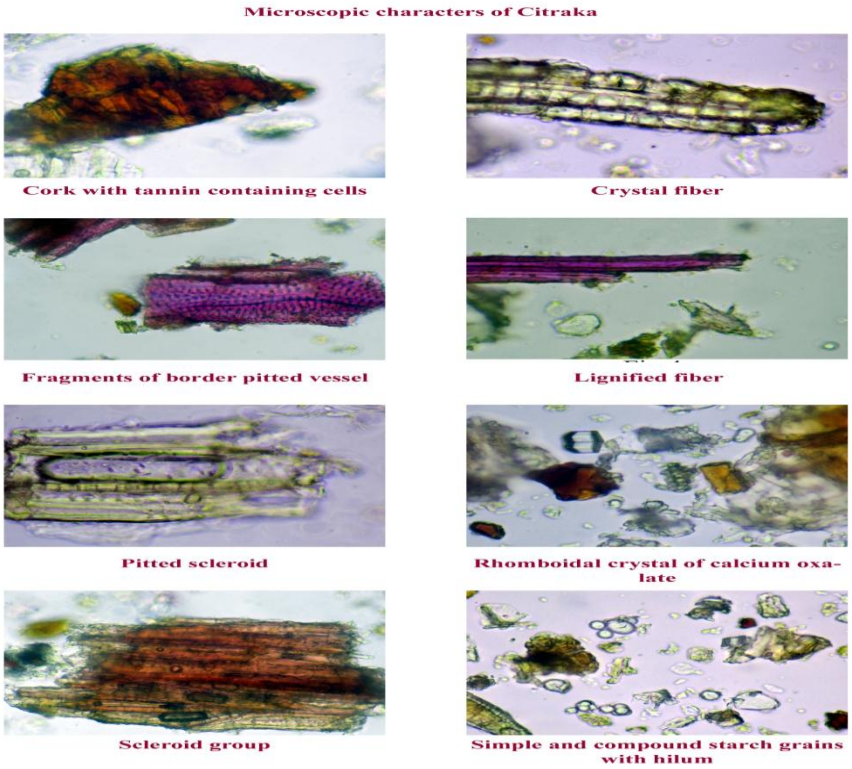
Organoleptic characters of *Chitraka Vati* such as color, odour, taste etc were examined by sensory organs and results are as shown in below table.

Organoleptic Study of *Chitraka*

Name	***Chitraka* (*Plumbago zeylanica Linn.*)**
Colour	Light brown
Odour	Characteristic
Taste	Pungent
Touch	Coarse
Sound	Present

Microscopic characters of *Chitraka Vati*

Diagnostic characters of *Chitraka Vati* were observed under the microscope and showed different characters of *Chitraka*, these are Cork with tanin containing cells, Crystal fibre, Fragments of boarder pitted vessels, Lignified fibre, Pitted scleroid, Rhomboidal crystal of calcium oxalate, Scleroid group, Starch grains-simple and compound with hilum. (Plate 1. Fig. 1-8).



Physicochemical parameters of *Chitraka Vati*

The results for Physicochemical parameters of *Chitraka Vati* such as ash value, water soluble extract, alcohol soluble extract, pH etc. are show in Table.

Physicochemical parameters of *Chitraka Vati*

Sr. No.	Test performed	Result obtained
1	Loss of drying at 100 ^{o}C	10 % w/w
2	Ash value	2.57 % (not more than 3 API)
3	Ph	4.5
4	Disintegration time	5 min.
5	Tablet Hardness	3.32 kg/cm2
6	Average wt.of *Vati* Highest wt. Lowest wt.	475 mg 596 mg 393 mg
7	Water soluble extract	15 % w/w
8	Alcohol soluble extract	10 % w/w

DISCUSSION

Medicinal plants are having great part of the *Ayurvedic* treatment as raw materials therefore the correct identification of those plants are quite necessary. The *Ayurvedic* system of medicine is facing another major problem that is quality control of crude drugs. To get the full therapeutic impact of the drugs it should be remained free from adulterants and thus the quality of the drugs can be lift up to the adequate standard. For this, proper identification of the plant excluding with the adulterant microscopically and morphologically is necessary.[15]

The present study was undertaken to standardize *Chitraka Vati*, hence the material was subjected to minimum pharmacognostical and pharmaceutical analysis. Pharmacognostical evaluation of *Chitraka Vati* showed that all the observed characters which are from ingredient used in the formulations showed that genuinity and purity of the finished product. Physico-Chemical parameters of *Chitraka Vati* like Loss on Drying, Ash Value, Acid insoluble ash, Water soluble extract, Methanol soluble extract, pH Value all were found to be within the normal range.

CONCLUSION

Pharmacognostical and pharmaceutical analysis of *Chitraka Vati* showed the definite characters of ingredients which were used in the preparation. Pharmacognostical results confirm the ingredients at a preliminary level. Though the groundwork for the standardization of *Chitraka Vati* was sheltered in this study, further important analysis and investigations are

essential for advance identification of all the active chemical constituents. The result of this study may be supportive as the reference for the further research work. This formulation is very useful in various gastric disorders including anorexia, indigestion, nausea, diarrhea etc.

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