

PHARMACOGNOSTICAL, ANALYTICAL STUDY AND HIGH-PERFORMANCE THIN LAYER CHROMATOGRAPHY (HPTLC) EVALUATION OF TRIKATU CHURNA

Swathi N.^{1*}, Anup B. Thakar², Harisha C. R.³ and V. J. Shukla⁴

¹2nd Year PG Scholar, Dept. of Panchakarma, IPGT&RA, Gujarat Ayurved University, Jamnagar.

²HOD, Dept. of Panchakarma, Director, I/c. Vice-chancellor, IPGT&RA, Gujarat Ayurved University, Jamnagar.

³HOD, Dept. of Pharmacognosy, IPGT&RA, Gujarat Ayurved University, Jamnagar.

⁴HOD, Dept. of Pharmaceutics IPGT&RA, Gujarat Ayurved University, Jamnagar.

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***Corresponding Author**

Dr. Swathi N.

2nd Year PG Scholar, Dept.
of Panchakarma,
IPGT&RA, Gujarat
Ayurved University,
Jamnagar.

ABSTRACT

Introduction: *Trikatu Churna* is a compound herbal formulation used widely to achieve *Deepana*, *Pachana* and *Vatanulomana* action. Efficacy of formulation depends on their genuineness of herbs used. The detailed pharmacognostical and pharmaceutical study of plant helps us to differentiate between closely related species of the same genus of the same family. It is also the first step to standardize a drug, which is the need of the day. **Materials and Method:** *Sukshma Churna* of *Trikatu* was evaluated for their pharmacognostic and pharmaceutical analysis. **Results and Discussion:** Pharmacognostic study showed the presence of contents such as simple starch grains and fibres of *Shunthi*, black debris of *Maricha*, Epicarp cells of *Pippali* etc.

Physico-chemical analysis showed that the loss on drying-7.96%, Ash value-5.29%, Water soluble extract-13.24%, Alcohol soluble extract-8.34% and pH 5.2. **Conclusion:** The pharmacognostical and phytochemical analysis of *Trikatu Churna* confirmed the purity and genuinity of the drug.

KEYWORDS: *Trikatu Churna*, Pharmacognostic, Physico-chemical analysis, HPTLC evaluation.

INTRODUCTION

Medicines are administered in different forms through different routes to obtain either *Shodhana* or *Shamana* effect. They are collectively known as *Upakrama*. *Deepana*, *Pachana* plays major role in the *Shodhana Upakrama*, for which *Trikatu Churna* is widely used. All the three drugs are having *Katu Rasa*, *Laghu Guna* and are *Vatakaphara* in nature. *Trikatu Churna* is indicated in *Shwasa*, *Kasa*, *Gulma*, *Meha*, *Sthoulya*, *Shleepada* and *Peenasa*.^[1]

Pharmacognosy is defined as the study of physical, chemical, biochemical and biological properties of potential drugs or drug substances of natural origin as well as the search of new drugs from natural sources.^[2] The Organoleptic characters of Ayurvedic drugs are very important and give the general idea regarding the genuinity of the sample. It is done with the help of *Panchagyanendriya Pariksha*, which includes sensory characters of drug. Pharmaceutics is the discipline of pharmacy that deals with the process of turning a new chemical entity into a medication to be used safely and effectively by patients.

Objectives: To analyze the pharmacognostic, phytochemical and HPTLC of *Trikatu Churna*.

MATERIALS AND METHODS

Collection and preparation of the drug: Fruit of *Pippali* and *Maricha* and Rhizome of *Shunthi* were collected from the Pharmacy of IPGT&RA, Jamnagar. The obtained drugs were shade dried. Drugs were made into fine powder with the help of mechanical grinder. Ingredients of *Trikatu Choorna* are summarized in Table 1.

Table 1: Ingredients of *trikatu churna*.

No.	Drug	Botanical source	Part used	Dosage
1.	<i>Shunthi</i>	<i>Zingiber officinale</i> Roscoe.	Rhizome	1 part
2.	<i>Maricha</i>	<i>Piper nigrum</i> Linn.	Fruit	1 part
3.	<i>Pippali</i>	<i>Piper longum</i> Linn.	Fruit	1 part

Organoleptic evaluation

Organoleptic characters of *Trikatu Churna* in dry form were scientifically studied as shown in Table 2.

Table 2: Organoleptic characters of *trikatu churna*.

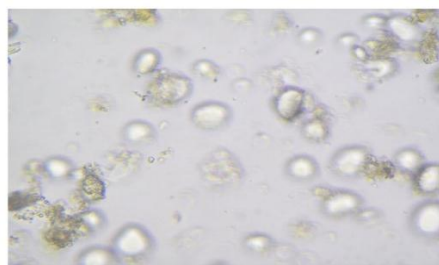
1.	Color	Greenish
2.	Touch	Fine
3.	Odour	Pungent, slight irritant
4.	Taste	Pungent, astringent

Microscopic characters

The microscopic characters of the mixture of powdered drugs are analysed under microscope showed various characteristics. The photo plates of the same are given in photo plate 1.



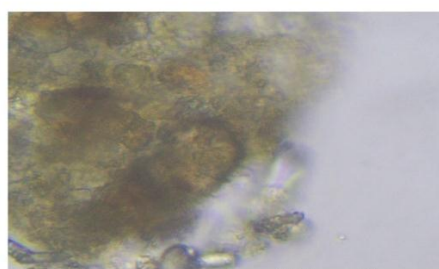
Trikatu Churna



Simple Starch grains of Shunthi



Black debris of Maricha



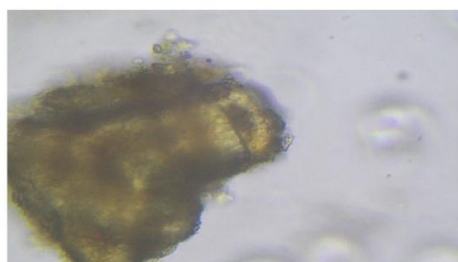
Mesocarp cells of Pippali



Epicarp cells of Maricha



Fibres of Shunthi



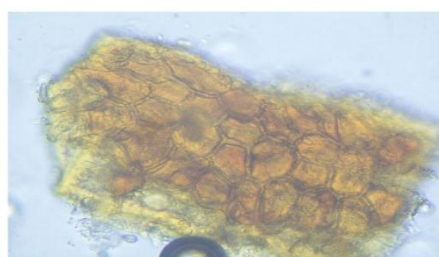
Group of stone cells of Maricha



Stone cell of Pippali



Lignified stone cells of Pippali



Epicarp cells of Pippali with oleoresin

Plate 1: Microphotographs of *trikatu churna*.

Table 3: Physico-chemical analysis of *trikatu churna*.

No.	Parameters/ Sample	Result
1.	Loss on drying ^[3]	7.96 % w/w
2.	Ash value ^[4]	5.29 % w/w
3.	Water soluble extract ^[5]	13.24 % w/w
4.	Methanol soluble extract ^[6]	8.34 % w/w
5.	pH value ^[7]	5.2

Table 4: HPTLC^[8] results of *trikatu churna*.

No.	Conditions	No. of Spots	Rf Values
1.	Short ultra violet (254nm.)	10 spots	0.04, 0.07, 0.09, 0.17, 0.23, 0.28, 0.43, 0.54, 0.57, 0.64
2.	Long ultra violet (366nm.)	6 spots	0.04, 0.07, 0.15, 0.45, 0.49, 0.54

RESULTS AND DISCUSSION

Medicinal plants play an important role in the field of Ayurveda. The drugs which are used medicinally requires detailed study prior to its use because the therapeutic efficacy absolutely depends on the quality of the plant used.^[9] Hence their proper identification is quite necessary. The present study was aimed at setting up a standard profile of *Trikatu Churna* which was prepared using pharmacognostically authenticated raw drugs followed by subjecting it to detailed pharmacognostical analysis as per standard protocol. The microscopic and macroscopic characteristics identified in dry powder form, assisted in the authentication of the drugs.

Analytical procedure helps in determination of the presence of the materials in terms of elements or compounds in the drug. It is commonly used in chemical, clinical and pharmaceutical research laboratories as a part of quality control measures. *Trikatu Churna* was subjected to various physico-chemical and HPTLC analysis in the Pharmaceutical Chemistry Laboratory. HPTLC results showed the presence of 10 spots at 254 nm. and 6 spots at 366nm.

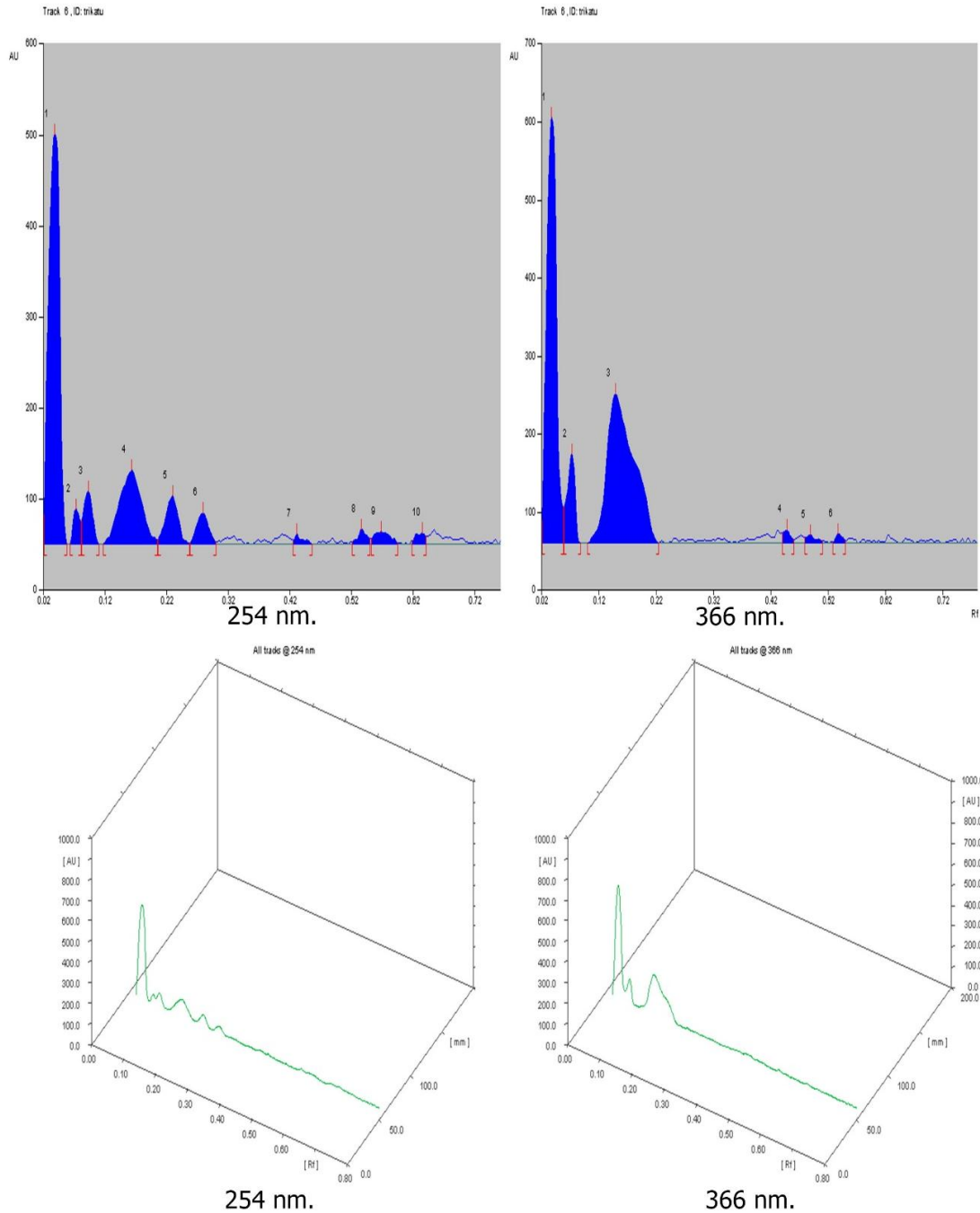


Plate 2: Densitogram and 3D Graph of *trikatu churna*.

CONCLUSION

Quality control of herbal formulation is very much necessary to assess the purity and safety of the drug. The pharmacognostical and phytochemical analysis of *Trikatu Churna* confirmed the purity and safety of the drug. Further studies may be carried out on the basis of observation made and results of experimental studies. This study may be beneficial for future researchers and can be used as a reference standard in the further quality control researches.

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