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# PHARMACOGNOSTICAL, PHYSICOCHEMICAL AND HIGH-PERFORMANCE THIN LAYER CHROMATOGRAHY (HPTLC) EVALUATION OF *ERANDAMOOLADI KALKA CHOORNA*

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**ABSTRACT:**
Introduction: *Erandamooladi Niruha Basti* is mentioned in *Charaka Samhita* which is indicated in *Trika*, *Prishta Shoola* (low backache) and acts as *Maruta Nigraha.* Low backache is the most common ailment in today's busy life. *Erandamooladi Kalka* used in *Basti* contains 9 drugs in which most of the drugs are having *Ushna Veerya* and are *Shoolahara* in nature.
Method: *Sookshma Choorna* of *Erandamooladi Kalka* was evaluated for their pharmacognostic and pharmaceutical analysis.
Results: Pharmacognostic study showed the presence of contents such as cluster crystal of *Hapusha*, starch grains of *Musta*, spiral vessels of *Bala* etc. Physico-chemical analysis showed that the loss on drying 6.28%, Ash value 13.26%, Water soluble extract 19.34%, Alcohol soluble extract 4.24%, pH 7.0
Discussion and Conclusion: The pharmacognostical and phytochemical analysis of *Erandamooladi Kalka Choorna* confirmed the purity and genuinity of drug, which can be espoused for laying down the standards of it.
**Keywords:** *Erandamooladi Kalka Choorna,* Pharmacognostic, Phytochemical analysis, HPTLC

## INTRODUCTION

The most important musculoskeletal structure of the body is Spine. Lumbar spine is the major bearer of whole-body weight of an individual, that's why it is more prone to be affected. Factors like improper sitting and sleeping postures, long driving and jerking movements during travel are the chief contributing factors to produce musculoskeletal disorder. This disease not only inflicts pain but also causes difficulty in walking, daily routine activities and cut off the happy life of the patient.

*Erandamooladi Kalka* comprising of *Shatapushpa, Hapusha, Priyangu, Pippali, Yashtimadhu, Bala, Rasanjana, Indrayava* and *Musta*[1] having antispasmodic [2], anti-inflammatory[3], anti-oxidant[4] and analgesic[5] activities which serve both the purpose of curative as well as promotive.
Pharmacognosy can be defined as a branch of biosciences that deals with the knowledge and authentication of medicinal and related products of crude or primary type originated from both plants and animals in detail. 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. It is also the first step to standardize a drug. Standardization is the measurement for ensuring the quality control enabling the reproducibility of the formulation.

**Objectives:** To analyze the pharmacognostic, phytochemical and HPTLC of *Sookshma Choorna* of *Erandamooladi Kalka.*

## Materials and Methods:

### Collection and preparation of the drug:

Fruits of *Shatapushpa, Hapusha, Priyangu, Pippali,* root of *Yashtimadhu,* whole plant of *Bala,* root and stem of *Rasanjana,* seed of *Indrayava* and rhizome of *Musta* were collected from the Pharmacy of IPGT&RA, Jamnagar. The obtained drugs were shade dried and were made into fine powder with the help of mechanical grinder. Ingredients of *Erandamooladi Kalka Choorna* are summarized in Table 1.

**Table 1:** Ingredients of *Erandamooladi Kalka Choorna*

| | | | | |
|---|---|---|---|---|
| **1.** | *Shatapushpa* | *Foeniculum officinalis* | Fruit | 1 part |
| **2.** | *Hapusha* | *Juniperus communis* Linn. | Fruit | 1 part |
| **3.** | *Priyangu* | *Callicarpa macrophylla* Vahl. | Fruit | 1 part |
| **4.** | *Pippali* | *Piper longum* Linn. | Fruit | 1 part |
| **5.** | *Yasthimadhu* | *Glycyrrhiza glabra* Linn. | Root | 1 part |
| **6.** | *Bala* | *Sida cordifolia* Linn. | Whole plant | 1 part |
| **7.** | *Rasanjana* | *Berberis aristata* D.C. | Root, Stem | 1 part |
| **8.** | *Indrayava* | *Holarrhena antidysenterica* Linn. | Seed | 1 part |
| **9.** | *Musta* | *Cyperus rotundus* Linn. | Rhizome | 1 part |

**Organoleptic evaluation:**

Organoleptic characters such as color, touch, odor and taste of *Erandamooladi Kalka Choorna* in dry form were scientifically studied as shown in the Table 2.

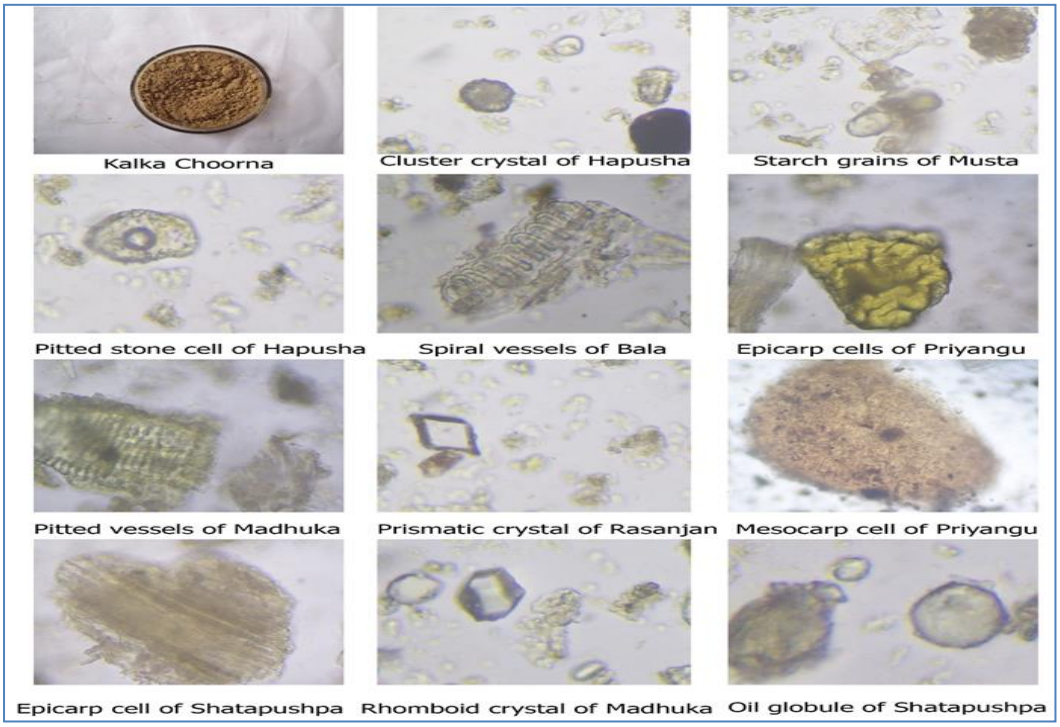
**Table 2:** Organoleptic Characters of *Erandamooladi Kalka Choorna*

| | | |
|---|---|---|
| **1.** | Color | Creamish green |
| **2.** | Touch | Fine |
| **3.** | Odor | Disagreeable |
| **4.** | Taste | Bitter, Astringent |

**Microscopic evaluation:**

The microscopic characters of the mixture of powdered drugs are analyzed with and without staining by powder microscopy which showed various characteristics. The photo plates of the same are given in plates 1 and 2 respectively.

**Plate 1 and 2: Microphotographs of *Erandamooladi Kalka Choorna*:**



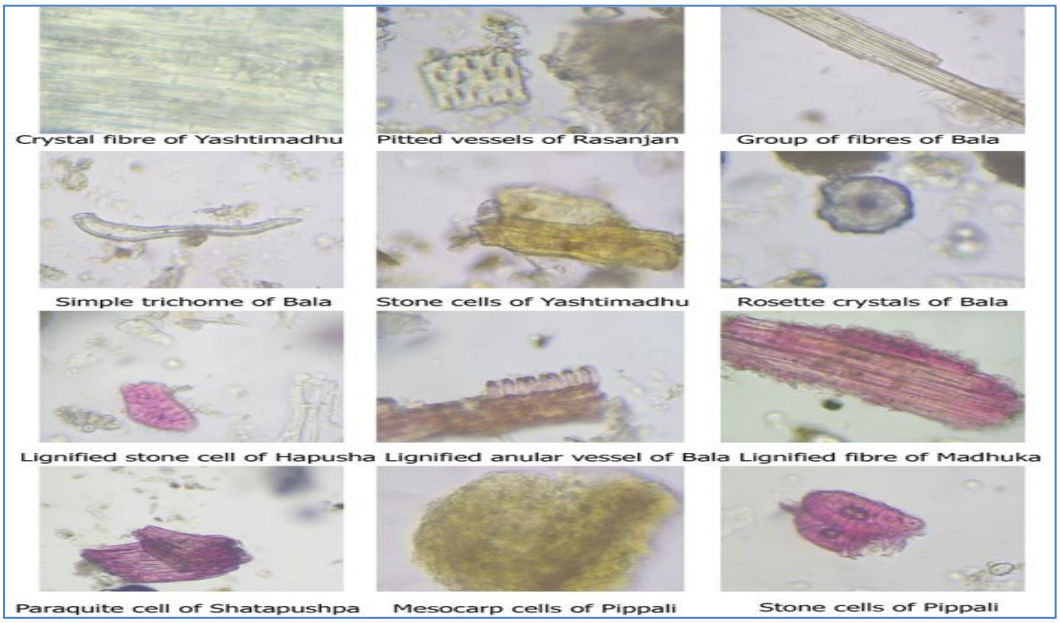



**Table 3:** Physico-chemical analysis of *Erandamooladi Kalka Choorna*

| No. | Parameters/ Sample | Result |
|---|---|---|
| **1.** | Loss on drying [6] | 6.28 % w/w |
| **2.** | Ash value [7] | 13.26 % w/w |
| **3.** | Water soluble extract [8] | 19.34 % w/w |
| **4.** | Methanol soluble extract [9] | 4.24 % w/w |
| **5.** | pH value [10] | 7.0 |

**High Performance Thin Layer Chromatography (HPTLC) [11]:** HPTLC is a sophisticated and automated form of TLC. It allows for the analysis of a broad number of compounds both efficiently and cost effectively.

**Principle of HPTLC:** Principle remains the same as of TLC i.e. adsorption. One or more compounds are spotted on a thin layer of adsorbent coated on a chromatographic plate. The mobile phase solvent flows through because of capillary action (against gravitational force). The component with more affinity towards stationary phase travels faster. Thus, the components are separated on a thin layer chromatographic plate based on the affinity of the components towards the stationary phase.

**Steps involved in HPTLC:**

1. Selection of chromatographic layer.
2. Sample and standard preparation.
3. Layer pre-washing and pre-conditioning.
4. Application of sample and standard.
5. Chromatographic development.
6. Detection of spots.
7. Scanning.
8. Documentation of chromatic plate.

**Table 4:** HPTLC results of *Erandamooladi Kalka Choorna*

| No. | Conditions | No. of Spots | Rf Values |
|---|---|---|---|
| 1. | Short ultra violet (254nm.) | 6 spots | 0.05, 0.11, 0.21, 0.57, 0.65, 0.66 |
| 2. | Long ultra violet (366nm.) | 1 spot | 0.05 |

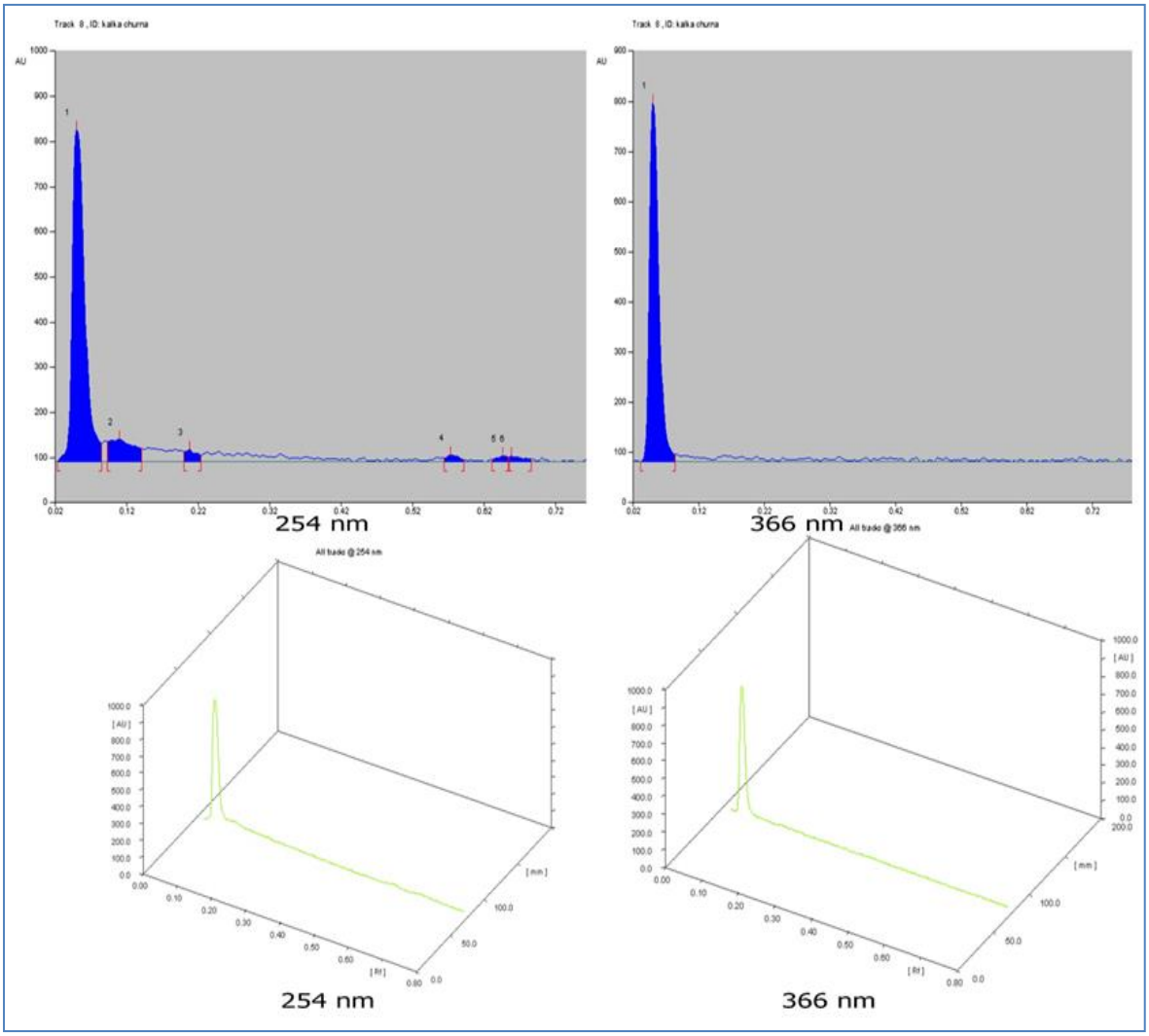



**Plate 3: Densitogram and 3D Graph of *Erandamooladi Kalka Choorna***

**Results and Discussion:**

Quality control of herbal formulation is very much necessary which reflects the purity and quality of the drugs. Epicarp cells of *Shatapushpa*, Spiral vessels of *Bala*, Prismatic crystals of *Rasanjana*, Mesocarp cells of *Priyangu* etc. are observed in the ingredients of *Kalka Choorna* under microscope. HPTLC results showed the presence of 6 spots at 254nm. and 1 spot at 366nm. Analytical constants such as loss on drying, ash value, water and methanol soluble extracts, pH value and HPTLC are the useful parameters to ascertain the quality of drugs. To standardize a new drug, strictly following the parameters of pharmacognosy and phytochemistry are very much essential. The pharmacognostic and pharmaceutical analysis assisted in the authentication of the drugs used in the *Kalka Choorna* of *Erandamooladi Niruha Basti*.

**Conclusion:**

The isolation of each drug from the finished product is tedious and time consuming. Here, overall result of *Kalka Choorna* indicates that the formulation meets the maximum qualitative standards based on physico-chemical parameters. The results of the present study may be beneficial as a reference standard in the further quality control researches. The tests are simple and easy to carry out and give valuable information about the genuineness and purity of drugs.

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