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Microscopic Identification and Pharmaceutical Analysis of *Patoladi Kwath*

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ABSTRACT

Introduction- *Patoladi Kwath* is herbal compound formulation mentioned in *Chakradatta Amlapitta Rogadhikara.* It contains *Patola*, *Dhanyak*, *Sunthi* and Musta. Whereas another indications of the formulation are *Mandagni, Jwara, Chhardi, Daha, Shoola, Ama* and diseases caused by provocation of *Tridosha.* **Materials & Methods-** *Patoladi Kwath* was subjected to Pharmacognostical and Physico-chemical analysis such as microscopic study, loss on drying, ash value etc. **Results & Discussion-** The Pharmacognostical study showed the presence of contents such as; spiral vessels of *Patola*, vittae cells of *Dhanyak*, starch grains of *Sunthi*, cork cells of *Musta* etc. The Pharmaceutical analysis showed that the loss on drying value 5.12%, pH Value 7.5, Alcohol soluble extract 8.4%, Ash value 5.9% etc. HPTLC study of *Patoladi Kwath* revealed 4 spots at 254 nm and at 366 nm each. **Conclusion-** The present work was carried out to standardize the finished product *Patoladi Kwath* 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.

Key Words: *Patoladi Kwath, Microsopic identification, Pharmaceutical analysis, Physico-chemical evaluation*

INTRODUCTION

Patoladi Kwath is herbal compound formulation mentioned in *Chakradatta Amlapitta Rogadhikara.* Here other indications of the formulation are also mentioned like *Mandagni, Jvara, Chhardi, Daha, Shoola, Ama* and diseases caused by the provocation of *Tridosha. Patoladi Kwath* has only 4 herbs in equal proportion – *Patola, Dhanyak, Sunthi and Musta*[1]. All these ingredients are helpful in *Tridosha Shamana* due to its *Katu, Tikta* and *Kashaya Rasa*; *Laghu, Snigdha guna*; Madhura V*ipaka.* All the drugs, i.e. *Patola*[2], *Sunthi*[3], *Dhanyaka*[4], *Musta*[5] have proved anti-inflammatory, antispasmodic, activity mainly for GIT and related to other systemic disorders as these drugs are having essential properties to deliver its potency to deeper *Dhatu* like *Mamsa*, *Meda* and *Majja* also[6].

In the present study, the formulation was 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 drugs for the preparation of *Patoladi Kwath* were procured from the concerned university's attached pharmacy. The ingredients & parts used in the preparation of the final product are listed below in Table-1.

Table 1 Ingredients of *Patoladi Kwath*

Sr. No.	Drugs	Botanical Name	Part to be used	Proportion
1	*Patola*	*Trichosanthes Dioca* Roxb.	Whole plant	1 Part
2	*Dhanyaka*	*Coriandrum sativum* Linn.	Fruit	1 Part
3	*Sunthi*	*Zingiber officinale* Roscoe	Tuber	1 Part
4	*Musta*	*Cyperus rotundus* Linn.	Tuber	1 Part

Preparation of drug:

The final product i.e. *Patoladi Kwath* was prepared in the pharmacy of the institute. All the raw drugs were taken in equal proportion and *Yavkuta* (coarse powder) was made.

Pharmacognostical study:

The Pharmacognostical study comprises of organoleptic study and microscopic identification of prepared drug[7].

Organoleptic study:

The Organoleptic characters of Ayurvedic drugs are very essential and prove the genuinity of the drug. Organoleptic parameters like taste, color, odor and touch[8] were scientifically studied in Pharmacognosy laboratory of the institute.

Microscopic study:

Patoladi Kwath was dissolved ablein water and microscopy of the sample was done without stain and after staining with Phloroglucinol + Hydrochloric Acid (HCl). Microscopic photographs of *Patoladi Kwath* were also taken under Corl-Zeiss trinocular microscope[9].

Physico-chemical analysis:

Patoladi Kwath was analyzed using various standard physicochemical parameters such as Loss on drying, water-soluble extract, alcohol soluble extract etc[10].

High Performance Thin Layer Chromatography (HPTLC):

HPTLC was performed as per the guideline provided by API. For recognizing in HPTLC, Methanolic extract of the sample was used. HPTLC was performed using Toluene + Ethyl acetate + Acetic acid (14:4:2) solvent system and observed under visible light. The color and retention factor (R_f) values of resolved spots were noted[11].

RESULTS AND DISCUSSION

Organoleptic characters of *Patoladi Kwath*:

Organoleptic characters of *Patoladi Kwath* such as color, odor, taste, etc. examined by sensory organs and results are as shown below in Table-2.

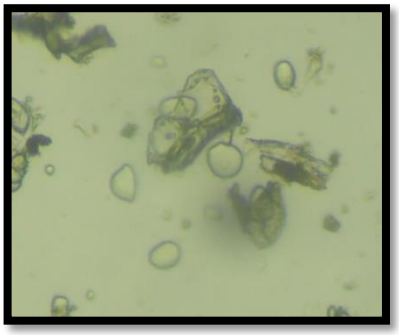
Microscopic characters of *Patoladi Kwath*:

Table 2 Organoleptic characters of *Patoladi Kwath*

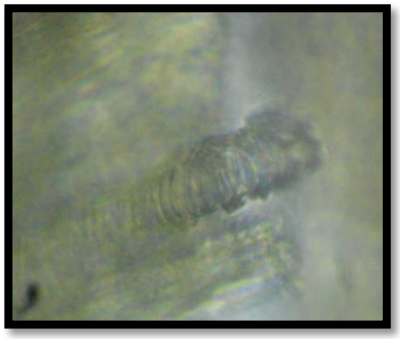
Sr. No.	Characters	Results
1	Colour	Buff
2	Odour	Slightly aromatic

3	Taste	Astringent bitter
4	Touch	Coarse

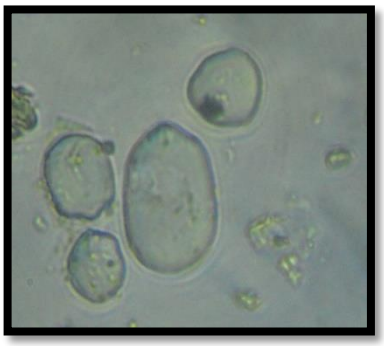
Diagnostic characters of *Patoladi Kwath* were observed under the microscope and the presence of all ingredients showed their different characters which are depicted in Figure-1, Plate 1-16.



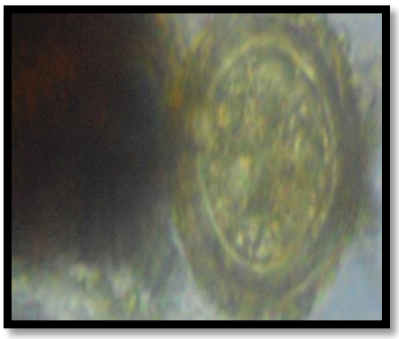
1. Starch grains of *Sunthi*



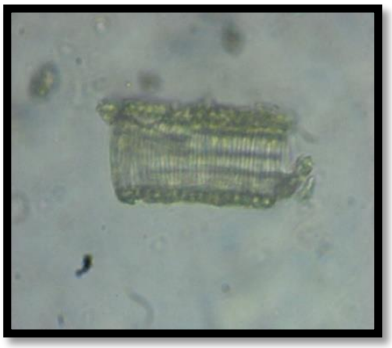
2. Spiral vessles of *Patola*



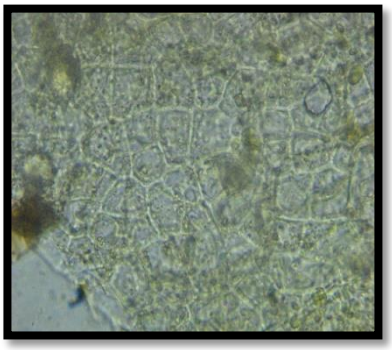
3. Starch grains of *Musta*



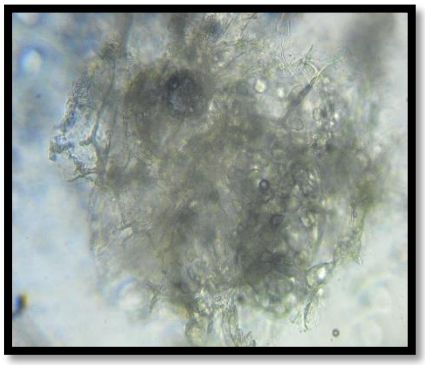
4.Vittae cells of *Dhanyak*



5.Scleriform vessles of *Sunthi*



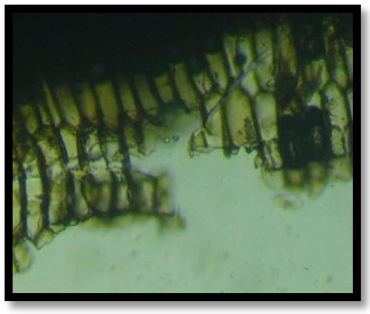
6.Epidermal cells of *Patola*



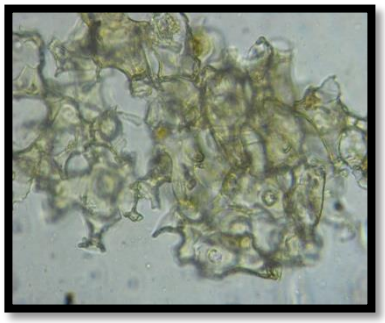
7. Parenchymal cells along with starch grains of *Sunthi*

8. Trichomes of *Patola*

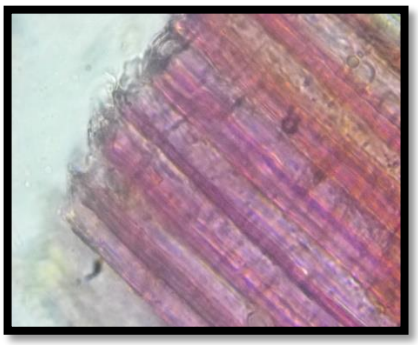
9. Simple fibres of *Sunthi*



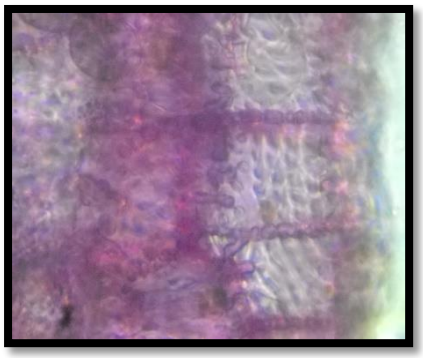
10. Cork cells of *Musta*



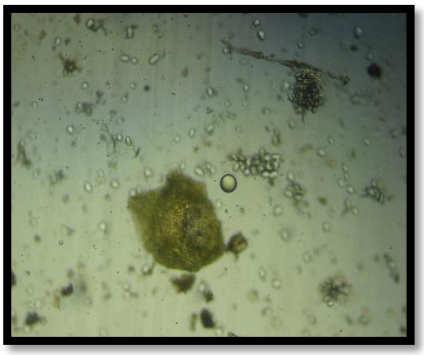
11. Oil globules of *Dhanyak*



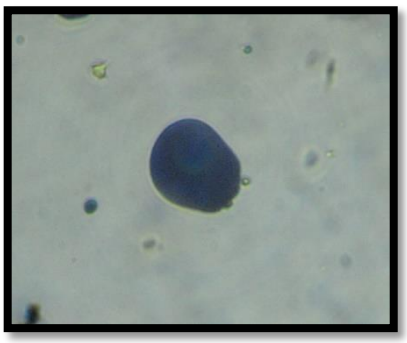
12. Lignified vessles of *Musta*



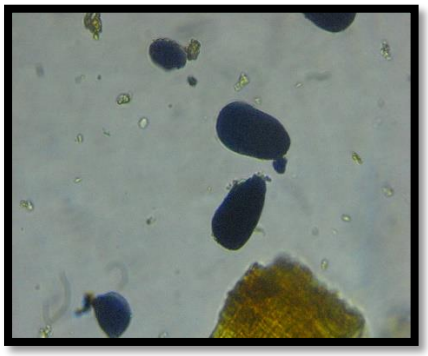
13. Lignified bordered pitted vessles of *Musta*



14. Parenchymal cells along with oil globules of *Dhanyak*



15. Iodine stained starch grains of *Musta*



16. Iodine stained starch grains of *Sunthi*

Figure 1 Microscopic characters of *Patoladi Kwath*

Physico-chemical parameters of *Patoladi Kwath*:

Physico-chemical parameters of *Patoladi Kwath* such as ash value, water-soluble extract, alcohol soluble extract, pH etc. results are shown in Table-3.

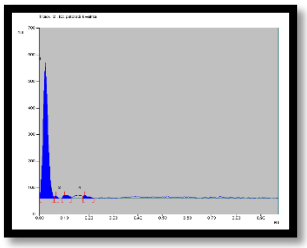
HPTLC study:

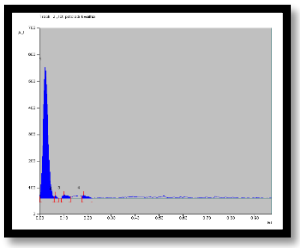
Chromatogram shows 4 prominent spots at 254nm and at 366nm each with maximum R_f value 0.05, 0.13, 0.55, 0.89 and 0.05, 0.09, 0.13, 0.21 accordingly (Figure-2**)** and three dimensional densitogram is also shown. (Figure-3)

Table 3 Physicochemical parameters of *Patoladi Kwath*

Sr. No.	Test	Result
1.	Loss on Drying	5.12 %
2	Ash Value	5.09 % w/w
3	Water soluble extract	15 %
4	Alcohol (Methanol) soluble extract	8.4 % w/w
5	pH (5% Aqueous extract)	7.5
6	Particle size	
	Above 60 mesh	80.56%
	60-85 mesh	4.01%
	85-120 mesh	3.29%
	Below 120 mesh	12.28%

%=percentage, %w/w=percentage weight by weight





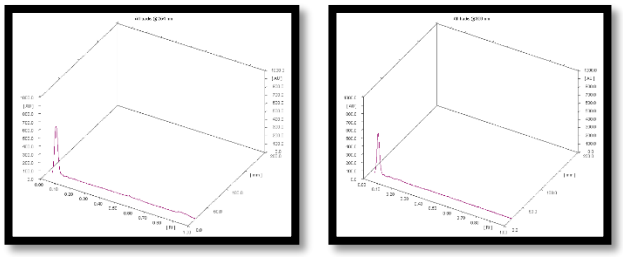
Peak display at 254 nm Peak display at 366 nm

Figure 2 Densitogram of *Patoladi Kwath at* 254 nm and 366 nm (*nm=nanometer)

CONCLUSION

To assess the safety, purity and universal acceptability of any formulation for the particular disease quality control analysis is really necessary.

Standardization is a measurement for ensuring the quality control enabling the reproducibility of the formulation. The pharmacognostical and physicochemical analysis of *Patoladi Kwath* confirmed the purity and validation of the drug. Further studies may be carried out on this formulation based on the observation made and the results of experimental studies. This study may be beneficial for future researchers and can be used as a reference standard in further quality control researchers.



254 nm 366 nm

Figure 3 Three-dimensional HPTLC (3D) Densitogram

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