

INGREDIENTS IDENTIFICATION AND PHARMACEUTICAL ANALYSIS OF *TRIPHALA GHRITA*-A COMPOUND AYURVEDIC FORMULATION

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ABSTRACT

Myopia is a major public health problem pertaining to eye that entails substantial societal, personal, educational and economical impact. Myopia also known as short sightedness is dioptric condition of the eye in which with the accommodation at the rest incident parallel rays come to a focus anterior to the light sensitive layer of retina.^[1] Myopia progression is irreversible and methods for the correction of myopia are not without complications. A clinical study was conducted on this problem with *Triphala ghrita*. It was inferred from the results that it

has encouraging results in the treatment of Myopia. It was aimed to develop the pharmacognostical and phytochemical profile of *Triphala ghrita*. The pharmacognostical study of ingredients of *Triphala ghrita* shows the presence of Rosette crystal, epicarp cells, tannin content etc. Pharmaceutical analysis of *Triphala ghrita* showed that loss on drying 0.01%, Saponification value 199.94%, Specific gravity 0.09% Refractive index 1.464% and High Performance Thin Layer Chromatography at 254 nm resulted into 12 spots respectively. These parameters of pharmacognosy and pharmaceutical analysis can be used as baseline for future.

KEYWORDS: *Triphala ghrita*, HPTLC, Pharmacognosy, Physicochemical.

INTRODUCTION

Good vision is crucial for social and intellectual development of a person. Myopia is the state of refraction in which parallel rays of light are brought to focus in front of the retina of a resting eye.^[2] Myopia is measured by the spherical power in diopters of the diverging lens needed to focus light onto the retina, which can be expressed as the spherical equivalent or refraction in the least myopic meridian.^{[3] [4]} The clinical correlates of myopia include blurred distance of vision, eye rubbing, and squinting. Myopia is highly prevalent in our society, affecting at least 25% of the adult population in the United States^[5] and is even more common in Asian countries, affecting up to 84% of adolescents.^[6] As regards to prognosis low or moderate degree of simple myopia are not likely to progress Myopia closely resembles *Timira* involving first and second *Patala* in terms of symptoms, anatomical structures involved and the pathogenesis of the disease. *Akshi tarpana* is mentioned in the treatment of *Timira*. *Tarpana* is special method of drug administration, locally into the eye for the eye diseases, also provide *Vatashamaka* effect, nourishment to eyes and improves visual acuity. According to *Acharyas triphala* has *tridoshashamak* and *chaksushya* properties as well as *ghrita* itself has also *chaksushya* properties. *Triphala ghrita* have been described by *Acharya vagbhatta* in *Timira* chikitsa in the management of myopia. In the present study Mild improvement was observed in 55.56% patients and Moderate improvement was seen in 44.44% patients. No work has been carried out regarding the pharmacognostical and pharmaceutical standardization of this compound formulation. Lack of standardization of polyherbal formulations creates difficulty in validating the efficacy and maintaining quality standards of the product. Therefore, proper identification of raw materials at the basic level with the help of microscopic and morphological characteristics and adequate analytical methods are essential to ensure the quality and standardize the prepared medicine. With this background, *Triphala ghrita* was subjected for pharmacognostical and pharmaceutical analysis.

MATERIALS AND METHOD

Plant material

The raw drug materials were collected from the pharmacy department, IPGT & RA, GAU, Jamnagar. (Table-1).

Identification and authentication^[7]

The raw drugs are identified and authenticated which are used in *Triphala ghrita* microscopic evaluation was done in the pharmacognosy department, IPGT & RA, GAU, Jamnagar. The study includes organoleptic evaluation and microscopic evaluation.

Method of preparation of *Triphala ghrita*

The drugs enlisted in the table number 2 were taken and *Triphala ghrita* was prepared as per classics.

- *Kalka Dravyas* - 3 (*Aamalaki, Haritaki, Bibhitaki*) -Each 3 kg (Fine powder)
- *Drava dravyas* – *Go Dugdha* (Cow milk) -64 liter and water -64 liter
- *Kwath Dravyas*-3(*Aamalaki, Haritaki, bibhitaki*) –Each 330 gm
- Go-Ghrita - 8 Kg

It was prepared according to classical *ghrita Paka Kalpana*.

Pharmacognostical Evaluation

Morphological, organoleptic and microscopic evaluation on Raw drugs which are used in *Triphala ghrita* were conducted at Pharmacognostical laboratory of institute. The *ghrita* dissolve in small quantity of distilled water and studied with and without staining. Micro photographs of the slides were taken with Carl Zeiss trinocular microscope attached with camera.^{[8] [9]}

Organoleptic Study

Contents of *triphala ghrita* was evaluated for organoleptic characters like taste, odour and colour etc. (Table 2).

Pharmaceutical evaluation**Physico-chemical analysis**

Physico-chemical Parameters of *Triphala ghrita* like loss on drying, Specific gravity etc. were determined as per the API guideline. *Triphala ghrita* was further subjected to High Performance Thin Layer Chromatography (HPTLC) study.^[10]

HPTLC method

High Performance Thin layer chromatography (HPTLC) studies were carried out with acid hydrolysed methanolic extract on pre-coated silica gel GF 60254 aluminum plate as 5mm bands, 5mm apart and 1cm from the edge of the plates, by means of a Camag Linomate V

sample applicator fitted with a 100 μ L Hamilton syringe. The mobile phase used was Toluene: Ethyl acetate: Glacial acetic acid: Formic acid (5:5:1:0.5). The plates were developed in Camag twin trough chamber (20 x 10 cm²) and spots were detected in short U.V. (254 nm), Long U.V (366nm). Camag Scanner II (Ver. 3.14) and Cats soft ware (Ver. 3.17) were used for documentation.^[11]

RESULTS AND DISCUSSION

The *triphala ghrta*, used in this study showed very encouraging results, has been analyzed for pharmacognostical and analytical parameters, which is a step towards standardization of the drugs.

Microscopic study

Diagnostic microscopic characters of ingredients of *Triphala ghrta* showed that epicarp cells scleroids and Tannin content of 1 of Tannin content of *Haritaki* (*Terminalia Chebula Retz.*), Epicarp cells Simple trichome of, rosette crystal and scleroids of *Bibhitaki* (*Terminalia Belerica Roxb*) Silica deposition and Mesocarp cells of *Amlaki* (*Phyllanthus emblica Linn*) (Plate 1. 1-9).

Physicochemical tests

Pharmaceutical analysis of *Triphala ghrta* showed that loss on drying 0.01%, Acid value 5.664%, Iodine value 2.73%, Saponification value 199.94%, Specific gravity 0.09% Refractive index 1.464%. (Table-3).

HPTLC study results

Chromatographic study (HPTLC) was carried out under 254 and 366 nm UV to establish fingerprinting profile. *Triphala ghrta* showed 12 of spots at 254 nm with R_f values were recorded which may be responsible for expression of its pharmacological and clinical actions. Table 4. (Plate 2.).

Table 1: Ingredient of *Triphala ghrta*

Sr No.	Drugs	Botanical Name	Proportion
1	<i>Aamalaki</i>	<i>Phyllanthus emblica Linn</i>	1 Part
2	<i>Haritaki</i>	<i>Terminalia chebula Retz.</i>	1 Part
3	<i>Bibhitaki</i>	<i>Terminalia Belerica Roxb.</i>	1 Part
4	<i>Milk</i>	-	21.3 Part
5	<i>Water</i>	-	21.3 Part

Table 2: Organoleptic characters of *Triphala ghrita*

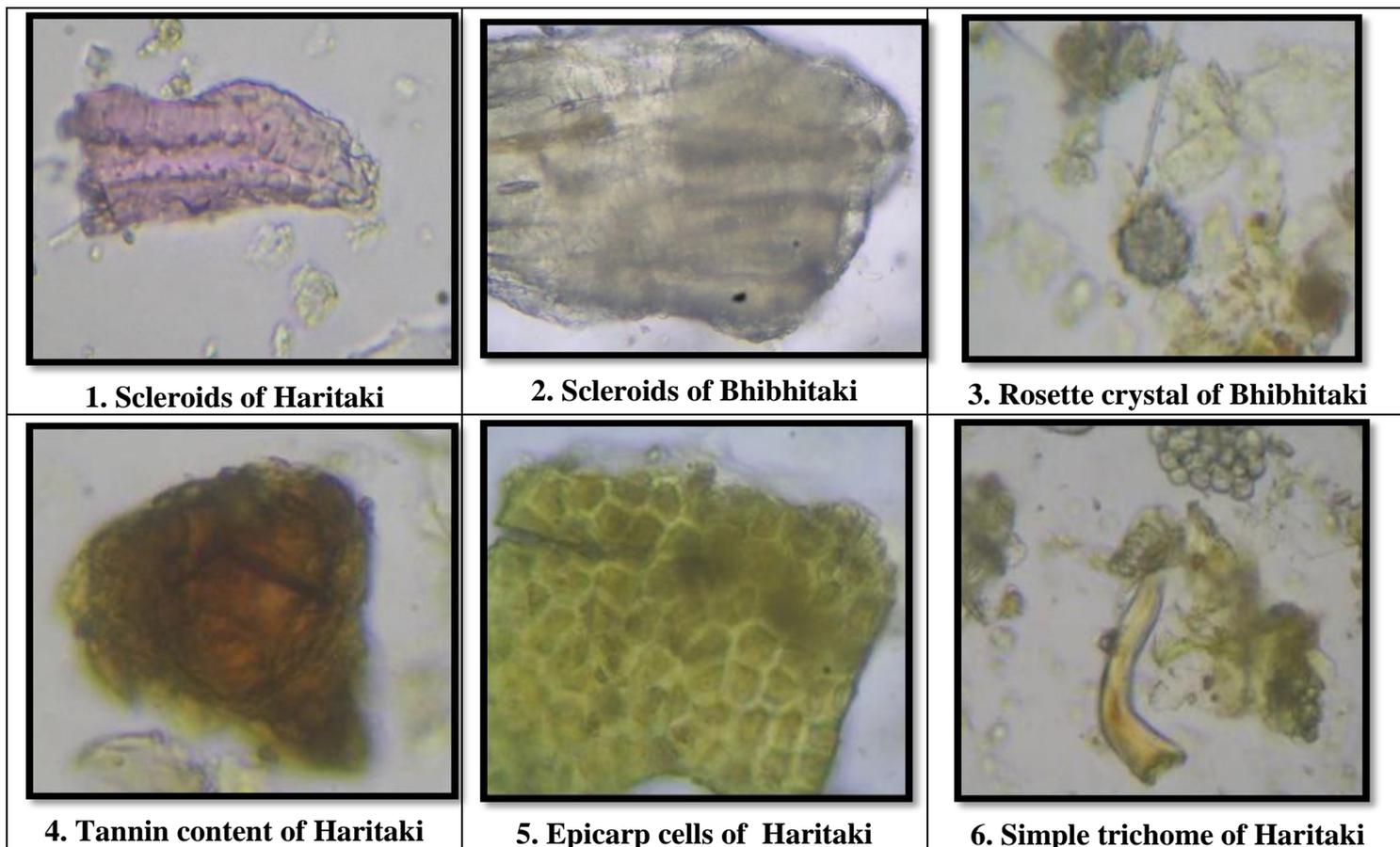
Sr. no	Various parameters	<i>Triphala ghrita</i>
1	Colour	Yellow
2	Odour	Aromatic
3	Taste	Kashaya, Tikta
4	Touch	Smooth
5	Texture	Soft

Table 3: Physico-chemical parameters of *Triphala ghrita*

Serial no.	Analytical Parameter	<i>Triphala ghrita</i>
1.	Loss on Drying	0.01%
2.	Acid value	5.6554%
3.	Iodine value	2.7295%
4.	Saponification value	199.94%
5.	Specific gravity	0.09%
6.	Refractive index	1.464%

Table 4: High performance thin layer chromatography (HPTLC)

Sample	No.spot		Rf value
<i>Triphala ghrita</i>	12	Observed under short UV Light (254 nm)	0.02,0.07,0.13,0.19,0.23,0.26,0.32,0.48,0.58,0.64,0.74,0.77

Pate.1. Photomicrographs of *Triphala ghrita*

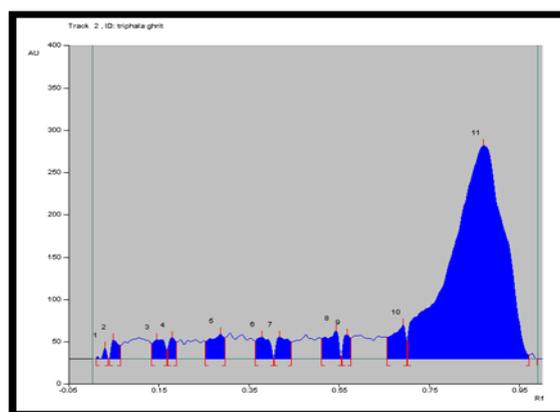
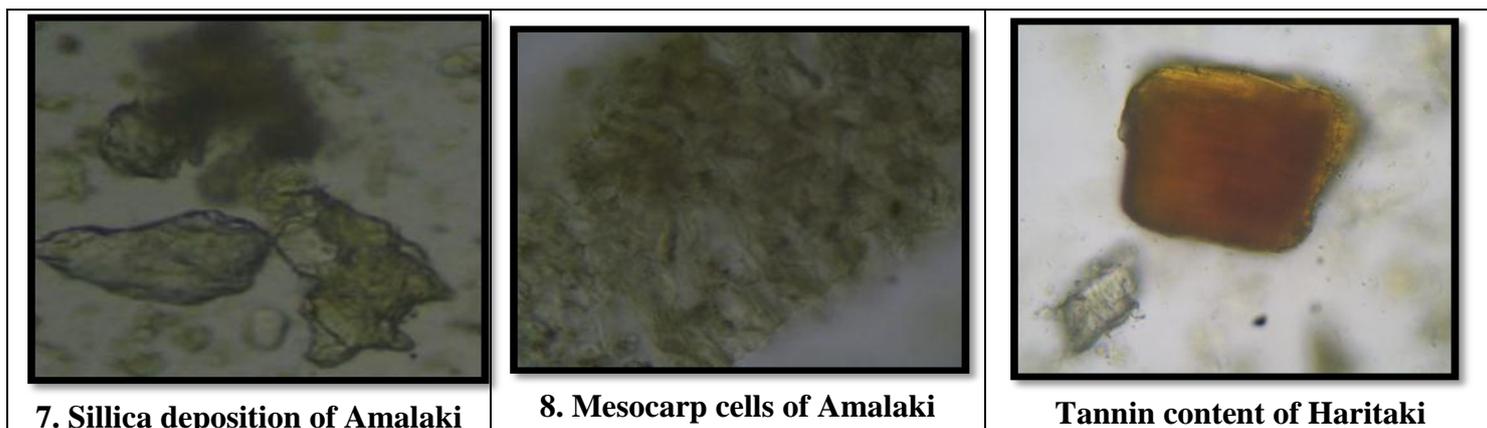


Plate. 2. Observed under short UV Light (254nm) *Triphala ghrita*

CONCLUSION

Pharmacognosy and phytochemical evaluation of *Triphala Ghrita* was performed which is a potent medicine in the management of *Myopia*. Preliminary Organoleptic features and results of powder microscopy shows the ingredients which were used confirm the genuinity and quality of *Triphala Ghrita*. All the ingredients were proved to be authentic and compared with the parameters mentioned in API (Ayurvedic Pharmacopeia of India). In phytochemical analysis, water soluble & alcohol soluble extract, pH, Ash value was assessed.

Though the groundwork requisites for the standardization of *Triphala Ghrita* are covered in the current study, additional important analysis investigations are required for the identification of all the active chemical constituents of the test drug to substantiate the clinical efficacy.

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