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Pharmacognostical and Pharmaceutical Evaluation of *Manjishthadi Ghanavati*: an Ayurvedic Herbomineral Formulation

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ABSTRACT

In the era of increasing demand for indigenous medicines, maintaining quality standards is the need of the hour. Standardisation of compound formulations is lagging behind because of absence of reference standards. *Manjishthadi Ghanavati* is an important Ayurvedic formulation containing *Manjishtha* (*Rubia cordifolia* Linn.), *Haritaki (Terminalia chebula* Retz.*), Amalaki (Emblica officinalis* Gaertn.*), Bibhitaki (Terminalia bellerica* Roxb.*), Katuki (Picrohriza kurroa* Royle. ex Benth), *Vacha* (*Acorus calamus* Linn.), *Daruharidra* (*Barberis aristata* DC) *Guduchi* (*Tinospora cordifolia* Willd.) and *Nimba* (*Azadirechta indica* A Juss.). All the constituents are available and prepared according to the reference present in *Sharangadhara Samhita Madhyama Khanda Chapter* 2/136. Hence the present study was undertaken to standardize the compound Ayurvedic formulation through Pharmacognostical and pharmaceutical evaluation. The sample was subjected for various phytochemical parameters like water soluble extractive (49.72%w/w), alcohol soluble extractive (41.28 % w/w), ash value (10 % w/w), loss on drying (10.85 % w/w), the pH (6.0), Hardness(4 $kg/cm^{2)}$ and Disintegration time (32 min.). The HPTLC, solvent system was Toluene: ethyl acetate (9:1), showed the presence of 7 spots at 254nm and 2 spots at 366nm. Thus, the physiochemical and microscopic characters achieved may provide guidelines for standardization of formulation *Manjishthadi Ghanavati.*

Keywords: HPTLC, *Manjishthadi Ghanavati*, Pharmacognostical, Physiochemical Evaluation.

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INTRODUCTION

Ayurveda is an Indian system of medicine with vast number of compound formulations for various disease entities. *Manjishthadi Ghanavati* is a group of 9 herbs [Table 1] mentioned in *Sharangadhara Samhita*, which is meant for curing *Rakta* and *Mamsa Vikritijanya Vikara. Acharya Sushruta* has mantioned *Rakta* and *Mamsa Dushti* in *Vartmagata Roga Samprapti. Praklinnavartma* is mentioned in *Vartmagata Roga* That's why *Vati* pacifice vitiated *Rakta* and *Mamsa Dhatu*, results in relief in symptoms and signs of disease. *Manjishthadi Ghanavati* is an *Ayurvedic* herbal preparation as mentioned in the *Sharangdhar Samhita* composed of medicinal plants of different botanical families but from Ayurvedic pharmacological point of view having similar properties which are effective in *Praklinnavartma* (Squamous Blepharitis). *Manjishthadi Ghanavati* contains *Manjishtha, Haritaki, Amalaki, Bibhitaki, Katuki, Vacha, Daruharidra, Guduchi* and *Nimba*. Since past many years *Ayurvedic* drugs are getting recognition worldwide. Maintaining the quality of a drug and looking at the effectiveness of the herbal formulation of the *Manjishthadi Ghanavati* is a high need in the light of scientific evaluation. But till date there is no scientific evaluation of *Manjishthadi Ghanavati*. In the present study the powder formulation of *Manjishthadi Ghanavati* was subjected to Pharmacognostical (microscopic), HPTLC, and pharmaceutical (evaluation of various physiochemical parameters) evaluation in order to prepare a preliminary profile of the formulation.

Table 1 Ingredients: *Manjisthadi Ghanavati*

No	Drug name	Botanical name	Part used	Part
1.	*Manjistha*	*Rubia cordifolia* Linn.	Root	1
2.	*Amalaki*	*Emblica officinalis* Gaertn.	Fruit	1
3.	*Haritaki*	*Terminalia chebula* Retz.	Fruit	1
4.	*Bibhitaki*	*Terminalia bellerica* Roxb.	Fruit	1
5.	*Katuki*	*Picrohriza kurroa* Royle.ex Benth	Root	1
6.	*Vacha*	*Acorus calamus* Linn.	Root	1
7.	*Daruharidra*	*Barberis aristata* DC	Root	1
8.	*Guduchi*	*Tinospora cordifolia* Willd.	Stem	1
9.	*Nimba*	*Azadirechta indica* A Juss.	Stem Bark	1

MATERIALS AND METHOD:

Method of preparation of *Manjishthadi Ghanavati* as per *Sharangathara Samhita.* For the present study the drugs of *Manjishthadi Ghanavati* were procured from Pharmacy of I.P.G.T. & R.A., Gujarat Ayurved University which was prepared as per the reference of *Sharangadhara Samhita.* (Ingredients in table 1).

The considered drugs Table 1 taken in equal proportions were properly dried and pulverized into a coarse powder. All these 9 drugs were used to prepare ¼ *Kwatha* (decoction) as per the classical method. Further heat was given to make that *Kwatha* in to *Ghana*. Then, powder of all these 9 drugs was added as per requirement to make the *Vati* of 500 mg each. On the next day, *Vati* were packed in air‐tight packing. The whole process of *Vati* preparation was done at the Pharmacy under sterile environment.

Pharmacognostical evaluation:

Various characters like colour, odour, taste and touch are recorded by using sensory organs. Powder microscopy of the finished product was done without stain and after staining with Phloroglucinol + HCl micro photographs were taken under Carl- Zeiss Trinocular microscope attached with camera. By Powder microscopy observed the characters, determined the chemical nature of the cell wall along with the form and chemical nature of the content of the cells.

Physico-chemical evaluation:

Manjishthadi Ghanavati was subjected to physicochemical study in order to develop analytical profiles. In this phase following parameter were carried out -Loss on drying at 1100C, pH value, ash value, water soluble extractive, alcohol soluble extractive.

High performance thin layer chromatography:

In HPTLC study of *Manjishthadi Ghanavati*, methanol extract of *Manjishthadi Ghanavati* was spotted on pre-coated silica gel GF 60254 Aluminium plate by mean of Camag Linomate V sample applicator fitted with a 100µl Hamilton syringe. The mobile phase consisted of Toluene: Ethyl acetate a ratio of 9:1 v/v. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance in absorbance mode at 254 and 366 nm under control of Win CATS Software (V1.2.1.Camag). Then, the plate was sprayed with Vanillin Sulphuric acid followed by heating and then visualized in daylight.

RESULTS AND DISCUSSION

PHARMACOGNOSTICAL STUDY:

Organoleptic Characters:

Blackish in colour, *Triphala* odour, Astringent bitter in taste, Hard in touch and soft in texture. (Table 2).

Table 2: Organoleptic Characteristics of *Manjisthadi Ghanavati*

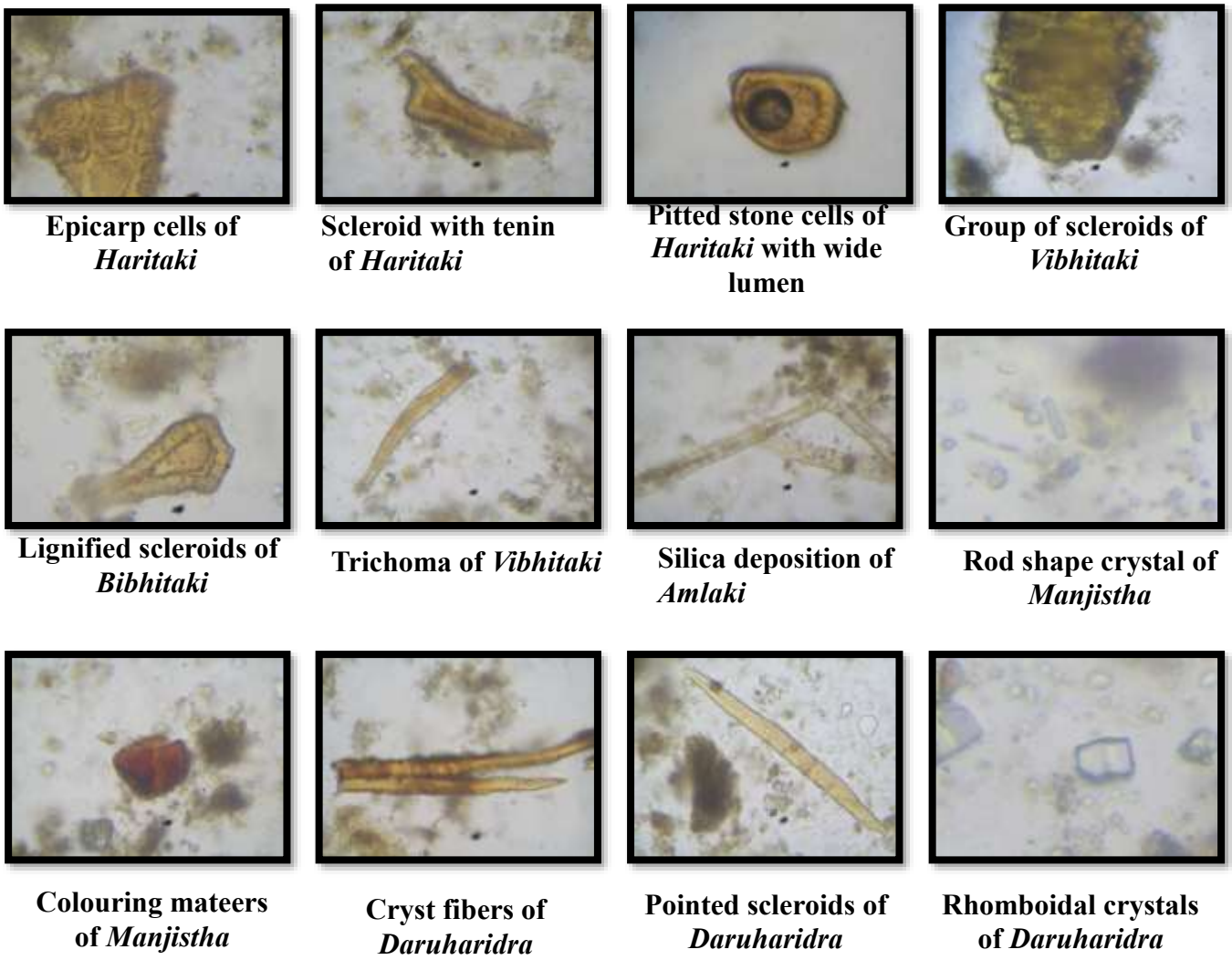
Sr. No.	Characteristics	Results
1	Colour	Blackish
2	Odour	*Triphala* smell

3	Taste	Astringent Bitter
4	Touch	Hard
5	Texture	Soft

Microscopic Characters of *Manjishthadi Ghanavati*:

Diagnostic characters of *Manjishthadi Ghana Vati* were observed under the microscope were stone cells and scleroid of *Haritaki*. Group of scleroids and trichome of *Bibhitaki*. Fibers and Silica deposition of *Amalaki*. Trichome, starch grain, border pitted vessels, coloring matters of *Manjistha*. Starch grain and trichome of *Daruharidra*. Collenchyma cells of *Guduchi*. Crystal fibre and rhomboidal crystals of *Nimba*. Oil globule and scalariform vessels of *Vacha*. Details of which are depicted in plate no: 1

Microscopic characters of *Manjishthadi GhanaVati*



Epicarp cells of *Haritaki*

Scleroid with tenin of *Haritaki*

Pitted stone cells of *Haritaki* with wide lumen

Group of scleroids of *Vibhitaki*

Lignified scleroids of *Bibhitaki*

Trichoma of *Vibhitaki*

Silica deposition of *Amlaki*

Rod shape crystal of *Manjistha*

Colouring mateers of *Manjistha*

Cryst fibers of *Daruharidra*

Pointed scleroids of *Daruharidra*

Rhomboidal crystals of *Daruharidra*

Plate 1. Microscopic characters of *Manjishthadi Ghanavati*

Physicochemical analysis:

Results of physicochemical analysis i.e. loss on drying, ash value, water soluble extract, alcohol soluble extract and pH are shown in Table 3.

Table 3: Physico-chemical parameters:

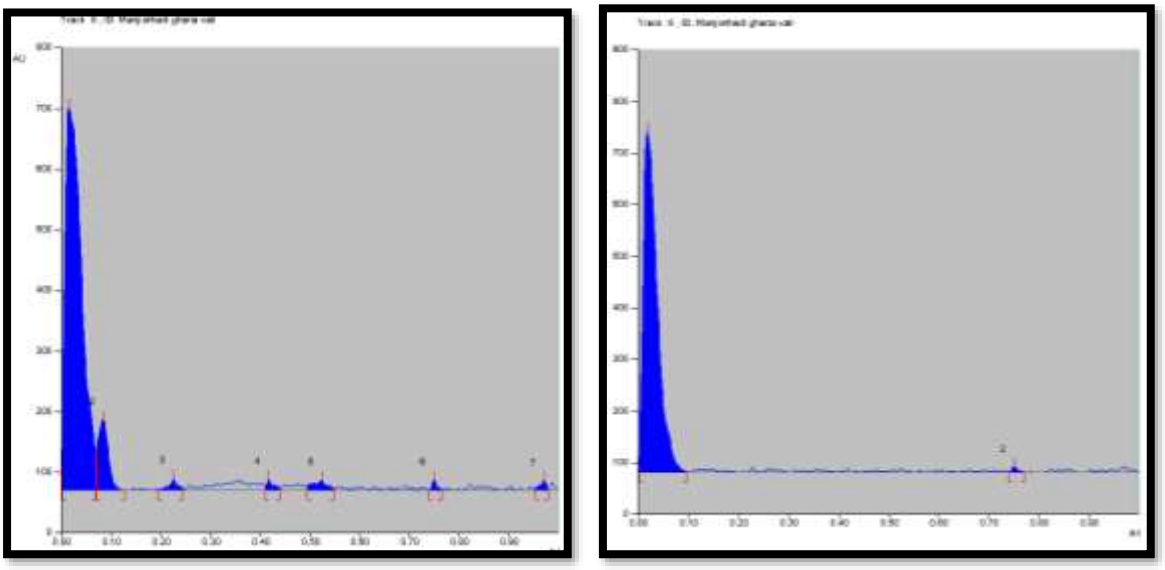
Sr.No.	Parameters	Value
1	Loss on Drying	10.85 % w/w
2	Ash Value	10 % w/w
3	Acid Insoluble Ash	0.19 % w/w
4	Water Soluble Extract	49.72% w/w
5	Methanol Soluble Extract	41.28 % w/w
6	Ph	6.0
7	Hardness	4 kg/cm^2
8	Disintegration time	32 min

High performance thin layer chromatography (HPTLC):

The color and Rf values of resolved spots of HPTLC were noted. (Table 4) (Plate no. 2)

Table 4: Rf values obtained by HPTLC

Sample	Detection Condition	No. of spots	Rf value
Manjishthadi Ghana Vati	254 nm	7	0.02, 0.08, 0.23, 0.42, 0.52, 0.75, 0.97
	366nm	2	0.02, 0.75



Peak display at 254 nm **Peak display at 366 nm**

Plate 2. HPTLC of *Manjishthadi Ghanavati*

DISCUSSION:

Pharmacognostical evaluation showed that organoleptic characters of the sample was Blackish in colour, *Triphala* odour, Astringent bitter in taste, Hard in touch and soft in texture. Microscopical study showed that presence of simple stone cells and scleroid of *Haritaki*. Group of scleroids and trichome of *Bibhitaki*. Fibers and Silica deposition of *Amalaki*. Trichome, starch grain, border pitted vessels, coloring matters of *Manjistha*. Starch grain and trichome of *Daruharidra*. Collenchyma cells of *Guduchi*. Crystal fibre and Rhomboidal crystals of *Nimba*. Oil globule and scalariform vessels of *Vacha* shows that all the ingredients were present in the finished product and also proven that the purity of the finished product. Physicochemical values obtained in the present research work for *Manjishthadi Ghanavati* may be useful in similar future research works. The HPTLC showed that 7 and 2 spots at 254nm and 366nm each.

CONCLUSION:

Study on *Manjishthadi Ghanavati* is a step towards pharmacognostical, physico-chemical standardization of poly herbal formulation in *Vati* form. As there is no published information available on pharmacognostical and physico-chemical profiles of *Manjishthadi Ghanavati*, this preliminary information can be used for reference in future for similar research works.

REFERENCES

1. Vaidya Jadavji Trikamaji Acharya. Sushruta Samhita, Uttara Tantra Chp. 3/4, Chaukhambha Vishvabharati, Varanasi, 2010:599.
2. Jadavji Trikamaji Acharya. Sushruta Samhita, Uttara Tantra Chp. 3/7, Chaukhambha Vishvabharati, Varanasi, 2010:599.
3. Srikantha Murthy KR, Sharangdhara Samhita (English Translation), Madhyama Khanda Chp.2/138, Chaukhambha Orientalia, Varanasi, 2012:237.
4. Identification of Novel Anti inflammatory Agents from Ayurvedic Medicine for Prevention of Chronic Diseases: "Reverse Pharmacology" and "Bedside to Bench" Approach. Curr Drug Targets, 2011; 12(11): 1595-1653. http://dx.doi.org/10.2174/138945011798109464.
5. Wallis TE. Text book of Pharmacognosy. 5th ed. New Delhi: CBS Publishers & Distributors., 2002; 123- 32: 210-5.
6. Anonymous. The Ayurvedic Pharmacopoeia of India. part 2, vol 2, Appendices 1st ed. New Delhi: Govt. of India Publication, 2008; 233-5.

7. Stahl E; Thin-layer chromatography a laboratory hand book .2nd edition. Springer-Verlag New York, 1969; p 125 -133.