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PHARMACOGNOSTICAL AND PHYTOCHEMICAL STANDARIZATION OF B*HARANGYADI AVALEHA*-AN AYURVEDIC POLYHERBAL COMPOUND

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ABSTRACT

Bharangyadi avaleha ,An Ayurvedic formulation is recommended in management of various Respiratory disorders. Ayurveda texts have described five types of *Shwasa Roga* and among these five, *Tamaka* is one. The Present Study deals with Pharmacognostical identification of ingredients of *Bharangyadi avaleha* and its analytical analysis. In pharmacognostical study both macroscopic and microscopic analysis of raw drugs of *Bharangyadi avaleha* has done and revealed the quality of constituents of *Bharangyadi avaleha*. *Tamaka Shwasa* compared to Bronchial Asthma is Characterized by Wheezing, Breathlessness, Chest tightness and Coughing. *Bharangyadi avaleha* is taken from *Bhaishajya Ratnwali Shwas chikitsa prakarana*. The present work was carried out to standardarize the finished product *Bharangyadi avaleha* to confirm its identity, quality and purity. The pharmacognostical work reveals the presence of Annular vessel of *Shunthi*, Cluster crystal of *Bharangi*, Cork of *Bharangi*, Fibre of *Shunthi*, Group of stone cells of *Bharangi*, Oleoresin of *shunthi* and Simple Starch grain of *shunthi* etc. Physiochemical analysis shows water soluble extract is

81%w/w,methanol soluble extract is 83.5%w/w, ash value is .890%w/w pH is 6 and Loss on drying is 17.289%w/w.High Performance Thin Layer Chromatography (HPTLC) at 254nm and 366nm resulted into 3 and 2 spots respectively.

KEYWORDS: Bharangyadi Avaleha, Tamaka Shwasa; Pharmacognosy, HPTLC.

INTRODUCTION

Ayurveda described five types of *Shwasa roga* among these, *Tamak shwasa* is one. *Tamak Shwasa* is a "*Swatantra Vyadhi"* i.e. independent disease entity and having its own etiologic, pathophysiology and management. It is mentioned as *Yapya vyadhi* i.e. a disease of chronic nature.[1] *Tamaka Shwasa* is basically a disorder of *Pranavaha Srotasas* while other *srotasaas* are also vitiated.[2] In this condition *Vaayu* gets vitiated form its normalcy due to obstruction made by *Kapha*. This vitiation leads to severe episodes of breathlessness.[3] Bronchial Asthma is a chronic inflammatory condition of the lung airways resulting in episodic airflow obstruction.[4] The prevalence of Bronchial Asthma has increased continuously since the 1970s, and now affects an estimated 4 to 7% of the people worldwide.[5] This disease is more predominant in children and aged population. At the age of six to seven years, the prevalence ranges from 4-32%. Apart from being the leading cause of hospitalization for children, it is one of the most important chronic conditions causing elementary school absenteeism.[6,7] Childhood Bronchial Asthma has multifactor causation. Geographical location, environmental, racial as well as factors related to behaviors and life-styles are associated with the disease.[8,9,10] Several studies had identified the prevalence of childhood asthma among Indian children.[11,12] *Tamaka Shwasa* is common and prevalent worldwide, equally affecting both the sex in adult but in children male female ratio is 2:1. The paroxysm attack results in handicapped day and sleepless nights, thus disturbing normal lifestyle of the person. *Bharangyadi avaleha* is mentioned in *Bhaishajya Ratnawali Shwasa Chikitsa adhyaya. Bharangi and Nagar* are main imgredients of this *avaleha.* Pharmacognostic study gives the scientific information regarding the purity and quality of the plant drug. [13] Till date there is no reference regarding scientific analysis of *Bharangyadi avaleha* Pharmacognostically and Pharmaceutically.

MATERIALS AND METHODS

Collection, Identification and Authentification of Raw drug: Dried raw drugs viz; *Bharangi, Nagar* were procured from the Department of Pharmacy, IPGT & RA, GAU, Jamnagar. All the drugs were confirmed to be authentic and of good quality by the

Pharmacognosy Laboratory, IPGT & RA, GAU, Jamnagar. *Bharangyadi avaleha* was prepared as per classical reference and physiochemical analysis of the final product was carried out in the laboratory of IPGT & RA.

Method of Prepation of *Bharangyadi avaleha:* All the preauthentic raw drugs (Table 1) were taken for the preparation. *Bharangyadi avaleha* was prepared from the equal quantity of each *dravya* in powder form. The Classical formulation of the *Bhaishajya Ratnawali* in *Shwasa Chikitsa prakranam* in the form of *Churna*. But here the formulation is changed and is considered in the form of *Avaleha.*(Table 1)

Table. 1: Ingredients of *Bharangyadi Avaleha*.

Sr. No	Drugs	Scientific mane	Part use	Ratio
1	Bharangi	Clerodendrum serratumLinn	Mula	1 part
2	Nagar	Zingiber officinaleRosc.	Kanda	1 part

Pharmacognostical evaluation

Pharmacognostical evalution of *Bharangyadi avaleha* based on Organoleptic characters i.e. texture, colour, taste and Odour were recorded.Small quantity of *Bharangyadi avaleha* dissolved in distill water and filtered through filter paper then filterate is dried and place on Slide,first observed in plane water and then stained with Phluroglucinol and concenterated HCL to study the character of the drug.The micro-photographs were taken by using corl-zeiss Trinocular Microscope with Camera.[14]

Physico-chemical Analysis

Bharangyadi avaleha was analyzed using various standard physicochemical parameters such as loss on drying,ash value,water soluble extract,methanol soluble extract pH value,Reducing,Nonreducing,Total sugar selected as parameters Organoleptic parameters,Physiochemical analysis,investigations were carried out by following standard procedure. High thin layer chromatography (HPTLC) Studies were carried out with acid hydrolised methanolic extract on pre-coated silica gel GF 60254 aluminium 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 100µL Hamilton syringe.The moble 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 10cm^2) and spots were detected in short U.V. (254nm), Long U.V.(366nm) .Camag Scanner II (Ver. 3.17) were used for documentation.

RESULT AND DISCUSSION

Pharmacognostical study

Organoleptic characters of *Bharangyadi avaleha* like texture,colour,taste and odour are described in the **Table 2.** Microscopic study of *Bharangyadi avaleha* showed Annular vessel of *shunthi*, Cluster crystal of *Bharangi*, Cork of *Bharangi*, Fibre of *Shunthi*, Group of stone cells of *Bharangi*, Lignified fibre of *Bharangi*, Lignified stone cells of *Bharangi*, Oleoresin of *Shunthi*, Pitted scleroid of *Bharangi*, Simple starch grain of *Shunthi*, Tannin content of *Bharangi*, Scleroids of *Bharangi*, Stone cells of *Bharangi*. **(Figure 1).**

Table 2. Organoleptic characters of *Bharangyadi avaleha.*

Sr No.	Physical appearance	*Bharangyadi avaleha*
1.	**Color**	Blackish brown
2.	**Odour**	Aromatic
3.	**Taste**	Sweet spicy
4.	**Touch**	Smooth

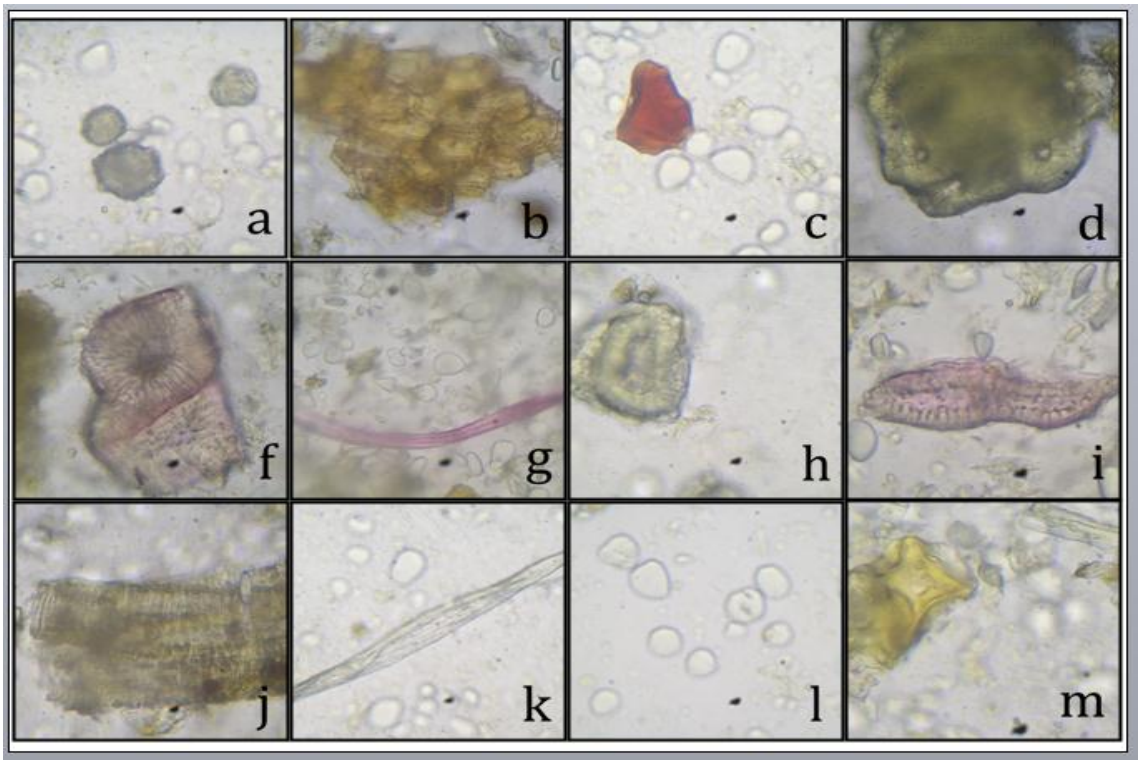

Figure. 1: Microscopic characters of *Bharangyadi avaleha.*

(a) Cluster crystals of *Bharangi,* (b) Cork of *Bharangi,* (c) Tannin content of *Bharangi,* (d) Group of stone cells of *Bharangi,* (e) Lignified stone cells of *Bharangi,* (f) Lignified fibre of Bharangi, (g) Stone cells of *Bharangi,* (h) Pitted scleroid of *Bharangi,* (i) Annular vessel of *Shunthi,*(j) Fibre of *Shunthi,* (k) Simple starch grain of *Shunthi,* (l) Oleoresin of *Shunthi*

Physio-chemical analysis: Physiochemical test **(Table 3)** of *Bharangyadi avaleha* revealed loss on drying 17.289%w/w,water soluble extract 81%w/w,Methanol soluble extract 83.5%,Ash value .890%,pH value 6 and reducing sugar,Nonreducing sugar and Total parameters were found 30.34%,8.89%,36.74% respectively.

Table. 3: Results of Physicochemical analysis of both the samples.

Sr No.	Test name	Group B results (*Bharangyadi Avaleha*)
1.	**Loss on drying**	17.289%w/w
2.	**Water soluble extracts**	81.0%w/w
3.	**Methanol soluble extracts**	83.5%w/w
4.	**Ash value**	.890%w/w
5.	**pH value**	6
6.	**Sugar Content**	
	a. Reducing Sugar	30.08% w/w
	b. Non-Reducing Sugar	12.49% w/w
	c. Total Sugar	41.75% w/w

HPTLC Results: On performing HPTLC,visual observation under UV light showed few spots but no analyzing under densitometer much more was observed and at 254nm the chromatograph showed 3 peaks and at 366nm respectively **(Figure 3).**3 peaks were found at Rf value .02,.73,.86 in 254 nm wavelength while at 366nm wavelength 2 weaks were found at Rf value .02 and .92**(Table 4).**

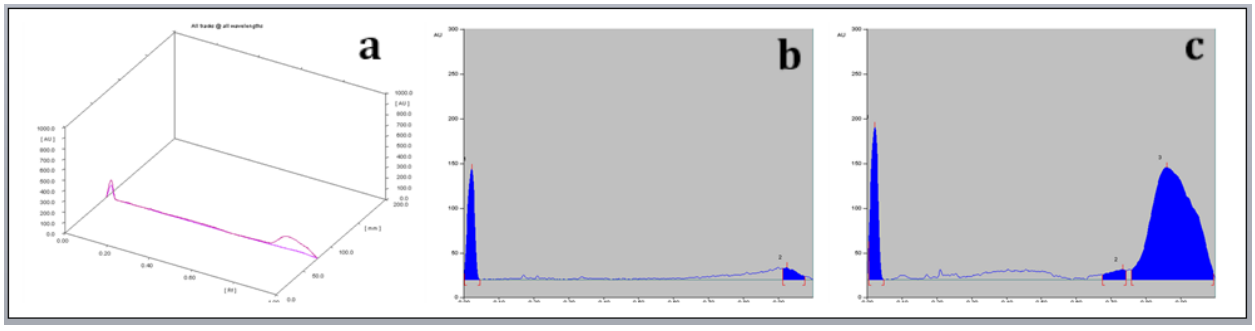

Figure. 3: Results of HPTLC.

(a) 3D Graph: 254nm & 366nm of *Bharangyadi avaleha,* (b) Chromatographic results (Peak display) of Short ultra violet (254nm), (c) Chromatographic results (Peak display) of *Bharangyadi avaleha* Long ultra violet (366nm).

(b) Table. 4: Results of HPTLC Study.

Rf values	254nm	366nm
	.02,.73,.86	.02,.92

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CONCLUSION

Bharangyadi avaleha is a potent drug in the management of disease *Tamaka Shwasa*.Organoleptic features and transverse section microscopy of the individual drugs results confirm the genuisity and no adulteration were found.For Authentication,All the ingredients were compared with the parameters mentioned in API (Ayurvedic Pharmacopia of India). No major changes were found during Pharmaceutical Study. The Results of this Study may be used as the refence standard in further research undertaking of its kind.

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