WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 8, Issue 10, 1131-1138. Research Article ISSN 2277– 7105

PHARMACOGNOSTIC AND PHYSIOCHEMICAL STUDY OF *SAINDHAVADI BIDALAKA YOGA*- AN *AYURVEDIC* HERBOMINERAL FORMULATION FOR *ABHISHYANDA*(ACUTE-CONJUNCTIVITIS)

Dr. Chinmayee Choudhury*[1], Prof. Dr. Manjusha Rajagopala[2], Dr. Narayan Bavalatti[3], Dr. Pankaj Kundal[4]

[1]P. G. Scholar Dept. of Shalakya Tantra, [2]Head of the Dept. of Shalakya Tantra,
[3,4]Assistant Professor Dept. of Shalakya Tantra,
All India Institute of Ayurveda, New Delhi-110076.

Article Received on
28 June 2019,
Revised on 18 July 2019,
Accepted on 08 August 2019,
DOI: 10.20959/wjpr201910-15671

***Corresponding Author**
Dr. Chinmayee Choudhury
P. G. Scholar Dept. of Shalakya Tantra, All India Institute of Ayurveda, New Delhi-110076.

ABSTRACT

Abhishyanda (Acute conjunctivitis) is the root cause of all the eye diseases and for treating the same many formulations are explained in the classics one amongst is the *Saindhavadi Bidalaka*, which is mentioned in *Chakradatta* in context of *netra roga chikitsa.* The ingredients of *Saindhavadi Bidalaka* are *Saindhava lavana, Haritaki, Daruharidra, Gairika, and Rasanjana*. The ingriedients of the formulations are easily available in authentic form hence it was decided to take this formulation in the present study. Its contents have *Shothhara, Ropana, Prasadana, Vedanasthapana, Doshaghana & Chakshyusha* properties which relieves the *ama lakshana (acute condition)* of eye diseases. If a drug is not identified properly by their name, form, properties, action; and even if known but improperly administered – in both the situations cause fruitless or may even cause complications. So the selection of proper drug in the management of disease is very important. Before going to the clinical trial the drug should be authenticated to get reliable results. Thus *SAINDHAVADI BIDALAKA YOGA* was evaluated by pharmacognostical & physiochemical parameters. Pharmacognostical study showed the characteristics of all the ingredients present in the compound. Physiochemical analysis showed Loss on drying 2.3%w/w, pH 4.63, Total ash 38.67%w/w, Alcohol soluble extractive value 31.06%w/w and Water soluble extractive 40.73%w/w.

KEYWORDS: *Saindhavadi bidalaka yoga, Abhishyanda, Ash value,* Pharamacognostical study.

INTRODUCTION

Abhishyanda (Acute conjunctivitis) is the root cause of all the *netra roga*[1] *(eye disease)*, so one should treat the *Abhishyanda* as soon as possible. If it is not treated in proper time, it leads to severe complication like *Adhimantha* and *Hatadhimantha*.[2] *Saindhavadi Bidalaka yoga*[3] was selected which is mentioned in *Chakradatta* in context of *netra roga chikitsa*, indicated in all *netra roga*. As *Abhishyanda* is responsible for all the eye diseases, it was selected for present study. The ingredients of *Saindhavadi Bidalaka* yoga are *Saindhava lavana*,[4] *Haritaki*,[5] *Daruharidra*,[6] *Gairika*,[7] *and Rasanjana*.[8] All the ingredients are having *Vata-Pitta* shamaka, *Pitta-Rakta* shamaka effect, *Tridoshahara, Shotha hara, Vrana ropaka, Rakta shodhaka, Vedana sthapana and Chakshyusa* properties. More over all the ingredients are known for antibacterial & anti- inflammatory activity.

Acharya Charaka says that unknown drugs kill by destroying consciousness like poison, some by injuring vital organs like weapon, some by causing toxic reactions like fire & some kill instantly like thunderbolt, while, the perfectly understood drug is comparable to ambrosia".[9] So to get a reliable therapeutic efficacy of a drug, pharmacognostical & analytical study is mandatory. Phrmacognostical study helps in authentication and Analytical study provides standard to judge the quality, safety and efficacy of the drug.

Hence the formulation was analysed based on pharmacognostical and physiochemical parameters.

Table No 1: Showing the ingredients of *Saindhavadi Bidalaka yoga.*

S.No	Name of Drug	Botanical Name	Parts used	Quantity
1	*Saindhava lavana*	*Rock salt*	*Salt*	1 part
2	*Daruharidra*	*Berberis aristata (DC)*	*Bark*	1 part
3	*Gairika*	*Haematite*	*Ore*	1 part
4	*Haritaki*	*Terminalia chebula (Retz)*	*Fruit*	1 part
5	*Rasanjana*	*Berberis aristata (DC)*	*Extract of Berberis aristata*	1 part

MATERIALS AND METHODS

Collection of drugs

Saindhavadi Bidalaka consists of 2 minaral drugs i.e. *Saindhava lavana and Gairika* and 3 herbal drugs i.e. *Haritaki Rasanjana & Daruharidra*. As powder microscopy of mineral drugs are not possible and *Rasanjana* is extract of *Druharidra* only, therefore powder microscopy of *Haritaki* and *Daruharidra* was done. The individual raw drugs of the formulation were

collected from Kharibauli market, Delhi and identified based on their morphological characteristics and authenticated in the department of Pharmacognosy, AIIA.

Drug Preparation

The herbo-mineral drugs were dried and powdered separately with the help of a mixer grinder and passed through the sieve number 80. For analytical study equal amount of each drugs were mixed but for pharmacognostical study the fine powder of *Haritaki* & *Daruharidra were taken* separately.

Pharmacognostical Study

Pharmacognostical study was based on powder microscopy characters.

Analytical study: it was based on organoleptic characters and physiochemical parameters. Both powder microscopy and physiochemical parameters for the test sample were determined as per API guidelines.

a) Powder Microscopy

Method of preparation

Microscopic analysis-

1) Sample preparation- 1gm of *Daruharidra* & *Haritaki* powder was separately dipped in the 10ml of water & centrifuged for 5 minutes to soften & sedimentation. Supernatant was discarded to obtain cleaned pellet.

2) Mounting- Suspended material of the sample was transferred to a clean glass micro slide & mounted with a drop of glycerine.

3) Observation –Slides were observed under compound microscope & captured images by using 10X & 40X magnifications.

4) Microscopic Evaluation- It was done for different sample images at different appearances. The sample appearance were matched with API.

b) Organoleptic parameters

The organoleptic character of *Ayurvedic* drugs are very important and give the general idea regarding the genuineness of the sample. Besides quality control measures *Rupa*(colour), *Rasa*(taste), *Gandha(*odour) and *Sparsha* (texture) pertaining to *Panchainanendriya Pariksha* are noted. These primary subtle parameters are important, the affirmation of which generates

confidence in patient as well as in the physician. The organoleptic parameters of *Saindhavadi Bidalaka* are given in Table No. 2.

c) Physico-chemical parameters of *Saindhavadi Bidalaka are given below*.

pH

10gm of test drug sample was measured and mixed with 100 ml of distilled water in a beaker. pH meter was standardized with the buffer solution of known pH i.e. 7 pH. The electrode was rinsed with distilled water and introduced into the test solution taken in a beaker. pH value of solution was read as per the indicator of the meter.

The pH value of *Saindhavadi Bidalaka* is given in Table No. 3.

Loss on drying

5gm of accurately weighed powdered drug was placed in a tarred evaporating dish. The dish was dried at 105^0C in oven for 5 hour and weighed. Drying and weighing was continued at one hour interval until difference between two successive weighing corresponds to not more than 0.25 per cent. Constant weight was reached when two consecutive weighing after drying for 30 minutes and cooling for 30 minutes in a desiccator, show not more than 0.01g difference. The value of loss on drying of *Saindhavadi Bidalaka* is given in Table No. 3.

Total Ash

2-3 gm of powdered drug was taken in a silica dish and incinerated at a temperature not exceeding 600^0C. Then it was cooled in a desiccator and weighed. The process was continued until two constant weights. With reference to the air dried plant material, the percentage of total ash was calculated.

The total Ash value of *Saindhavadi Bidalaka* is given in Table No. 3.

Water soluble extractive

About 5 gm of accurately weighed powdered drug was taken in a conical flask. 100 ml of distilled water was added to it, kept for 24 hour, shaking frequently during 6 hours & allow standing for eighteen hours. Next day it was filtered. 25 ml of filtrate was taken in a pre-weighed evaporating dish and was evaporated to constant weight in an oven and weighed at room temperature. From the weight of the residue, the water-soluble extractive percentage was calculated.

The water soluble extractive *Saindhavadi Bidalaka* is given in Table No. 3.

Alcohol soluble extractive

5 gm of powdered drug mixed with 100ml of methanol in a conical flask. It was closely tightened and kept for 24 hour, shaking frequently during 6 hours & allows standing for eighteen hours. 25 ml of filtrate was taken in a pre-weighed evaporating dish and was evaporated to constant weight in an oven and weighed at room temperature. With reference to the air-dried drug, the percentage of alcohol-soluble extractive was calculated. The alcohol extractive value of *Saindhavadi Bidalaka* is given in Table No. 3.

RESULTS

Powder Microscopy

The powder of *Daruharidra* shows - Prismatic crystals of calcium oxalate, Fibre--Sclereids, Stone cells and Fibres.

The powder of *Haritaki* shows- Fibers, calcium oxalate crystal, epidermis & stone cells.

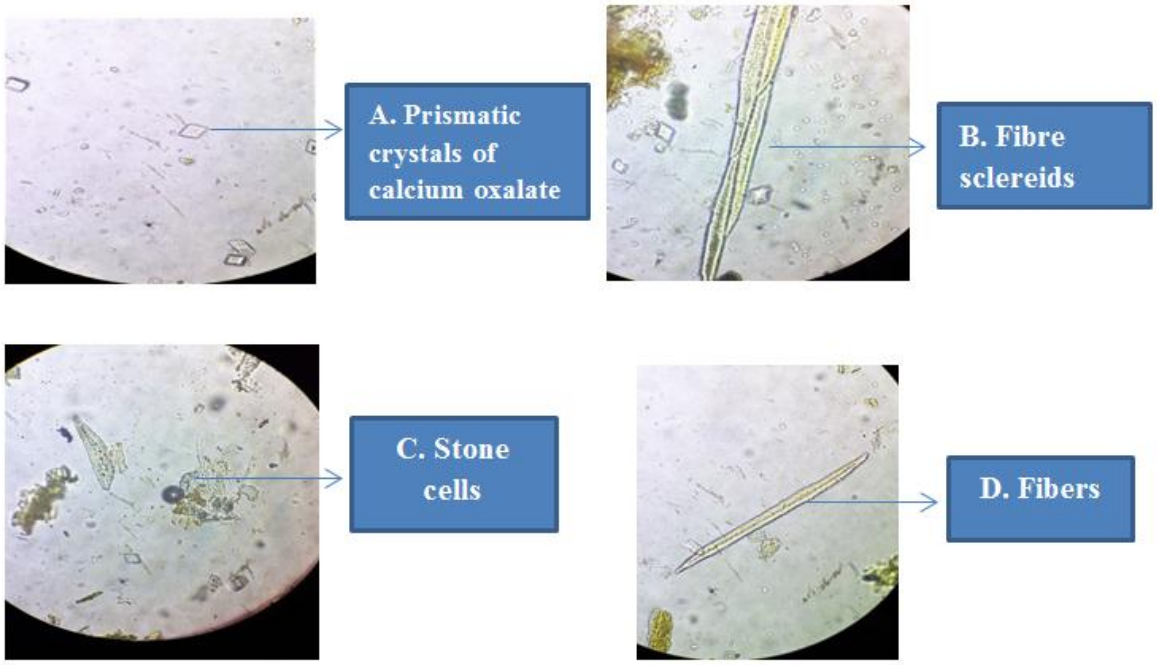

Fig No. 1: Powder Microscopy of *Daruharidra (Stem).*

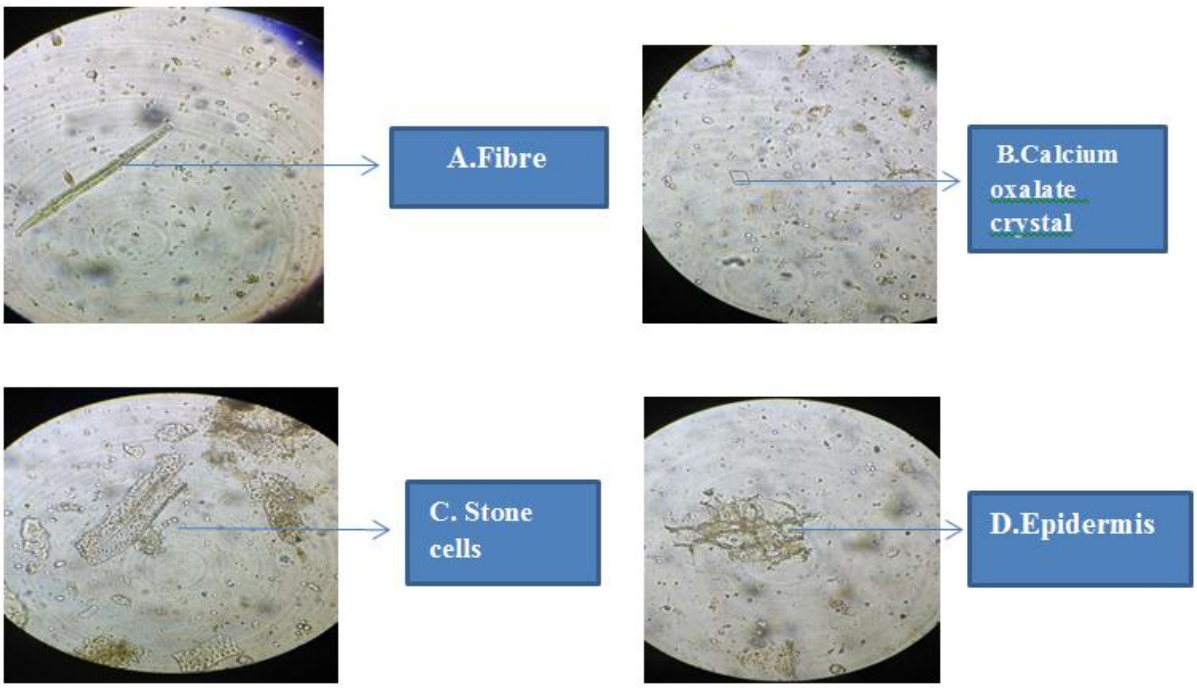

Fig No. 2: Powder microscopic of *Haritaki(fruit)*.

Table No. 2: Organoleptic Parameters.

S.no.	Parameters	Observation
1.	Color	Brown
2.	Odour	Characteristic, Aromatic
3.	Taste	Bitter and salty
4.	Texture	Smooth

Table No 3: Physico- Chemical Parameters.

S.no.	Parameter	1st reading	2nd reading	3rd reading	Mean
1	Ph	4.62	4.67	4.60	4.63
2	Loss on drying	2.6%	1.8%	2.6%	2.3%
3.	Total Ash	38.52%	39.5%	38	38.67%
4.	Alcohol soluble Extractive value	27.2%	32%	34%	31.06%
5.	Water soluble Extractive value	39%	43.2%	40%	40.73%

DISCUSSION

Standardization of herbal formulation is essential to assess quality of drugs which is based on identification, physiochemical, phytochemical parameters. Before going to the clinical trial the formulation should properly authenticated and quality standards should be assessed. Because the lack of quality standards has resulted in mild to serious adverse effects ranging from hepato toxicity to death.[10] Hence, herbal ingredients require tools for determining

identity, purity and quality. In powder microscopy**,** the powder of *Daruharidra* shows- Prismatic crystals of calcium oxalate, Fibre--Sclereids, Stone cells and Fibres & the powder of *Haritaki* shows- Fibers, calcium oxalate crystal, epidermis & stone cells. The result of powder microscopy which is important to identify and authenticate drug is comparable with API. Thus plant was authentic. In organoleptic parameters, the colour of the powder was brown, aromatic in odour, bitter & salty in taste and smooth in texture. In physiochemical parameters, the pH of the drug was 4.63 indicating its acidic nature. The moisture content assessed by Loss on drying was also low suggestive of better stability and less chances of contamination of micro- organism. The water soluble extractive value was more than alcohol soluble extractive value that means this compound was more soluble in water than alcohol. The total Ash was 38.67% indicated that this compound contains carbonates, phosphates, silicates etc.

CONCLUSION

Standardization is a measurement for ensuring the quality control enabling the reproducibility of the formulation. Standardization of drugs means confirmation of its identity, determination of its quality, purity & detection of nature of adulterant by various parameters like pharmacognostical study, physiochemical parameters and phyto chemical parameters. On pharmacognostical study - *Haritaki* & *Daruharidra* present in *Saindhavadi Bidalaka Yoga*, were confirmed on the basis of standard given in the Ayurvedic Pharmacopiea of India. Physiochemical analysis of *SAINDHAVADI BIDALAKA* showed Loss on drying 2.3%w/w, pH 4.63, Total ash 38.67%w/w, Alcohol soluble extractive value 31.06%w/w and Water soluble extractive 40.73%w/w. As these values are not given in API, so it can be used as standard for future study.

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