Research Article

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ANALYTICAL STUDY ON *HARITKYADI LEPA (VIDALAKA)* AND *BILWADI KWATH (SEKA KARMA)*: AYURVEDIC FORMULATIONS

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ABSTRACT

The present study has been undertaken to demonstrate safety profile for local application of Haritkyadi Lepa (Vidalaka) and Bilwadi kwath for Seka karma in one of the ocular diseases i.e. Shushkakshipaka and to develop the physicochemical profiles of both. Pharmacodynamics of both formulations has been established according to classical texts after their preparations. Organoleptic parameters along with physico-chemical analysis have been also studied. Both samples are also gone through microbiological limit test (MLT) for the estimation of bacterial count. Thin layer chromatography (TLC) of Haritkyadi Lepa as well as of Rasanjana is also studied. Physico-chemical analysis of Haritkyadi lepa reveals pH 5.33, total Ash % 2.1%, water soluble extractive 40.13% and alcohol soluble extractive 11.44% whereas that of Bilwadi kwatha are 3.46, 10.21%, 22.91%, 11.21% respectively. Organoleptic profile of lepa discloses its reddish-brown color, pleasant odor with semi-solid touch and texture while kwatha is a brown colored fine coarse powder with pleasant odor. MLT shows absence of *Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa* and *Salmonella* species. TLC results shows presence of active compounds. Pharmacodynamics of lepa has dominant properties of kashaya rasa, laghu guna, ushna virya, katu-madhura vipaka and Pitta-kapha dosha shamakta. Bilwadi kwatha has tikta rasa, laghu-ruksha guna, katu vipaka and Vata-kapha dosha shamkta properties. Organoleptic properties indicate safety for local application. MLT determines established specification for microbial quality of both products. Both formulations show magnificent results of physico-chemical analysis which will be advantageous for further researches regarding its efficacy and safety profile.

Keywords: Haritkyadi Lepa, Shushkakshipaka, Bilwadi kwath, Rasanjana.

INTRODUCTION

Acharya Sharngadhar has given significant perspective in the netraroga chikitsa by adding two new kriyakalpa procedures namely pindi and vidalaka[1]. Vidalaka (Lepa) is a paste form of herbal drugs which is applied locally over the closed eyelids excluding eyelashes[2]. It is indicated in various ocular disease conditions like toda, bheda, daha etc[3]. For vidalaka, he has mentioned various lepa, among which Haritkyadi Lepa is likely to be very useful as it is prescribed for sarvanetramaye[4]. The drugs for formation of paste i.e. haritaki, saidhava lavana, gairika and rasanjana are prepared in powder form and mixed with normal water in equal quantity ratio. These four drugs have properties like shothhara, netrarogagna, dahashamaka and tridoshashamaka.

Secondly, Seka karma is a kriyakalpa procedure in which instillation of medicated kwatha is done on closed and relaxed eyes continuously from the height of four Angulas for a fixed time period[5]. Bilwadi Kwath is recommended for Seka Karma having eight ingredients namely Bilwa, Shyonaka, Agnimantha, Patla, Gambhari, Brahati, Erund and Shighru[6]. These contents have Shothhara, Vednasthapana, Krimigna, Dahaprashmanam, Kandugna, Raktashodhaka, Krimisaraka, Shoolprashmanam and Chakshushya properties[7]. Keeping all these points in mind both formulations were prepared, and this paper presents the analytical study of both formulations which may serve as supporting literature for future formulation and to maintain standard quality of formulation.

MATERIAL AND METHODS

Aims and objectives

- To analyze the physico-chemical and organoleptic characters of drugs.
- To find out the TLC profile of Haritkyadilepa and rasanjana prepared by classical and modified methods.

Collection of raw materials

The raw drugs for the study (Table 1 and 2) were procured from Hansa Pharmacy Sidcul, Haridwar, Uttarakhand. The final products of Haritkyadi Lepa and Bilwadi kwath were prepared in the Hansa Pharmacy Sidcul, Haridwar, Uttarakhand.

Identification and Authentication

The raw drugs were identified and authentication is done by PG Department of Dravya Guna, Rishikul campus, Haridwar. The minerals for Haritkyadi Lepa after preparation were identified by PG Department of Rasa Shashtra and Bhaishjya Kalpana, Rishikul Campus, Haridwar.

Method of Preparation
Haritkyadi Lepa

Fruit of Haritaki and raw Saindhavalavana was made fine course powder in 1:1 ratio, while raw Gairika was made fried with Goghrita (Ghrita-bhrinjana process). Rasajana was prepared as Gana- satva of root of Daruharidra by the process of making kwath of it, and heated slowly till the gana- satva formation, filtered and then dried up (Pictures 1-7). All the four ingredients were taken in equal quantity and Haritkyadi Lepa was prepared.

Pictures of preparing Rasanjana (1-7)

Freshly prepared 'Rasanjana'

Bilwadi Kwatha

All the eight contents were taken in equal ratio and grinded as Kwatha particles and is prepared with the process of classical Kwatha preparation. The kwatha particles are added with 4 parts of water and heated mildly. When the quantity is reduced to 1/4th of its original volume, it is filtered in a stainless-steel vessel with a help of a clean cotton cloth. Thus, Bilwadi Kwatha is prepared.

Pharmacodynamics of Haritkyadi Lepa and Bilwadi Kwath

The mode of action of and their physiological effect can be better disclosed by the properties of physiochemical factors of their contents i.e. rasa, guna, virya, vipaka and Dosha-shamakta. (Table 3 and Table 4)

Analytical study

The final products of Haritkyadi Lepa and Bilwadi Kwath were analyzed by implementing a number of analytical parameters.

Organoleptic study

Haritkyadi Lepa and Bilwadi kwatha were evaluated for organoleptic characteristics for numerous sensory characters like color, odor, smell etc. (Table 5)

Pharmaceutical Evaluation

Physico-chemical analysis

It is carried out by performing various analysis tests for both formulations having parameters such as description, pH (10% aqueous solution), total ash (%w/w) water and alcohol soluble extractive (%w/w). These parameters were determined as per the API guideline (Table 6). Firstly, Rasanjana and then Haritkyadi Lepa after preparation are further subjected to Thin Layer chromatography (TLC) study (Figure 1 and 2)

Microbiological Limit Test

This test reveals total bacterial count and total yeast and mould count in cfu/g. Also reveals any presence of other specific pathogen. (Table 7)

RESULTS

Table 1: Raw drugs of Haritkyadi Lepa

Name of Drug	Latin Name	Part used	Ratio	Form
Haritaki	*Terminalia chebula*	Fruit	1 Part	Choorna
Saidhava Lavana	Sodium chloride	Whole	1 part	Raw form
Gairika	Iron oxide (sometime contains titanium and magnesium)	Whole	1 part	Ghrita- bhranjita
Rasanjana	Extract of *Berberis aristata*	Root	1 part	Gana-satva

Table 2: Raw drugs of Bilwadi kwath

Name of Drug	Latin Name	Part used	Ratio	Form
Bilwa	*Aegle marmelos*	Bark	1 Part	Kwatha
Shyonaka	*Oroxylum indicum*	Bark	1 part	Kwatha
Agnimantha	*Premna mucronata*	Bark	1 part	Kwatha
Patla	*Stereospermum suaveolens*	Bark	1 part	Kwatha
Gambhari	*Gmelina arborea*	Bark	1 part	Kwatha
Brahati	*Solanum indicum*	Bark	1 part	Kwatha
Erund	*Ricinus communis*	Bark	1 part	Kwatha
Shighru	*Moringa oleifera*	Bark	1 part	Kwatha

Table 3: Pharmacodynamics of Haritkyadilepa

Dravya	Rasa	Guna	Virya	Vipaka	DoshaShamkta
Haritaki	Panchrasa (LavanaVarjit), Kashaya Pradhana	Ruksha, Laghu	Ushna	Madhura	Tridosha Shamaka
Saindhavalavana	Lavana, Madhura	Kinchita Guru, Snigdha, Teekshna	Ushna	Katu	Tridosha Shamaka
Gairika	Kshaya- Madhura	Snigdha	Sheeta	Madhura	Pitta-Kapha Shamaka
Rasanjana	Tikta, Kshaya	Laghu, Ruksha	Ushna	Katu	Kapha-Pitta Shamaka

Table 4: Pharmacodynamics of Bilwadi Kwatha

Dravya	Rasa	Guna	Virya	Vipaka	Dosha Shamkta
Bilwa	Kshaya, Tikta	Laghu , Ruksha	Ushna	Katu	Kapha-Vata Shamaka
Shyonaka	Madhura, Tikta, Kshaya	Laghu , Ruksha	Ushna	Katu	Kapha-Vata Shamaka
Agnimantha	Tikta, Katu, Kshaya, Madhura	Laghu , Ruksha	Ushna	Katu	Kapha-Vata Shamaka
Patla	Tikta, Kshaya	Laghu , Ruksha	Ushna	Katu	Tridosha Shamaka
Gambhari	Tikta,Kashaya, Madhura	Guru	Ushna	Katu	Tridosha Shamaka
Brahati	Katu, Tikta	Laghu, Ruksha,Tikshna	Ushna	Katu	Kapha-Vata Shamaka
Erund	Madhura, Anurasa-Katu, Kshaya	Snigdha, Teekshna, Sookshama	Ushna	Madhura	Kapha-Vata Shamaka
Shighru	Katu (kshariya), Tikta	Laghu, Ruksha, Teekshna	Ushna	Katu	Kapha-Vata Shamaka

Table 5: Organoleptic parameters of Haritkyadi Lepa and Bilwadi Kwatha

Properties	Haritkyadi Lepa	Bilwadi Kwatha
Color	Reddish brown	Brown
Odor	Pleasant	Pleasant
Touch	Semi-solid	Fine
Texture	Semi solid	Coarse powder

Table 6: Physico-chemical Analysis of Haritkyadi Lepa and Bilwadi Kwatha

Parameters	Haritkyadi Lepa	Bilwadi Kwatha
pH (10% Aqueous solution)	5.33	3.46
Total ash (%w/w)	52.1	10.21
Water soluble extractive (%w/w)	40.13	22.91
Alcohol soluble extractive (%w/w)	11.44	11.21

Microbiological Limit Test

Procedure

MLT was performed in a government approved testing laboratory named Multani Pharmaceuticals Limited, Makkanpur Mehmood Alam, Bhagwanpur, Haridwar, where micro-organisms are counted and compared with the ATCC/MTCC culture for detection of pathogenic bacteria following membrane filtration method. The total colonies are counted with the help of digital colony counter under SOP.

Table 7: Microbiological Limit Test

Micro-oraganisms	Haritkyadi Lepa	Bilwadi Kwatha
Total bacterial count (cfu/g)	750	65000
Yeast and mould count (cfu/g)	100	250
Escherichia coli	Absent	Absent
Staphylococcus aureus	Absent	Absent
Pseudomonas aeruginosa	Absent	Absent
Salmonella species	Absent	Absent

Thin layer Chromatography (TLC) of Rasanjana and Haritkyadi Lepa

It was carried out at 254 and 366 nm UV to establish finger printing profile. TLC of rasanjana revealed RF values 0.622, 0.530, 0.397 and 0.316 whereas that of Haritkyadi lepa showed RF values 0.911, 0.778, 0.578, 0.511, 0.389, 0.278 which can be concluded to responsible for its pharmacological and clinical actions.

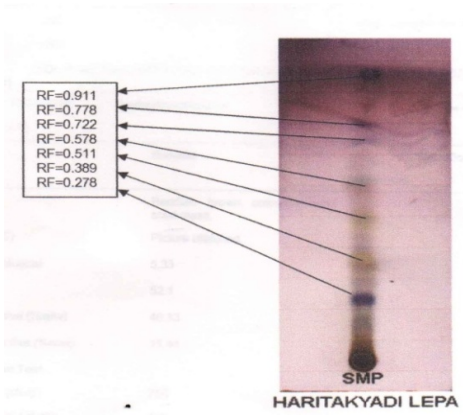

Figure 1

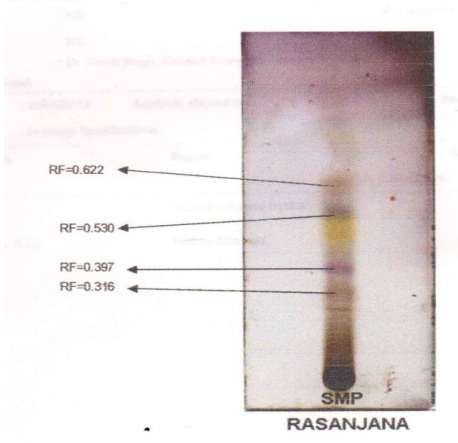

Figure 2

DISCUSSION

Haritaki is considered as Shothhara and Vedna sthapana. It is Netrarujapaharini i.e. it relieves pain in eyes. It is also Lekhni, Chakshurhita and Indriya Prasadini as mentioned in Bhavprakash Nighantu. The remaining three minerals also have pharmacological action on eyes while applying them locally. Saidhava lavana has properties as Lekhana, Netrarogagna and Vrana prashamanam. Gairika is kanduhara and dahashamaka while rasanjana is Shoth hara and Vedna sthapana. All these astounding properties of above-mentioned drug and minerals make Haritkyadi vidalaka a promising therapeutic procedure to cure ocular diseases showing clinical features like gharsha (foreign body sensation in eyes), toda, bheda (different types of pain in eyes), updeha (discharge in eyes) and paka (inflammation of lids). Shighru content of Bilwadi Kwatha is considered as Chakshushya Dravya along with Vedna sthapana, Shoth hara, Shool prashmanam and Krimigna properties, while the rest of them are Daha prashmanam also. These astounding properties make Bilwadi Kwatha a promising formulation to eliminate Netra rogas showing clinical features like Shotha, Vedna, Shool, Krimiutpatti, Daha etc. Organoleptic properties are relevant and made both products not irritating and safe when applied locally over eyes. MLT shows satisfactory outcomes as presence of *Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa* and *Salmonella* species would be contagious for patients. Microbial count is within the WHO standards. Active compounds shown in TLC of Haritkaydi Lepa and Rasanjana could make the formulation competent for ocular disorders and also provide potential for treating them.

CONCLUSION

Pharmacodynamics of Haritkyadi Lepa and Bilwadi Kwatha reveals its discrete properties of ingredients of both the formulations. All the ingredients of Lepa and Kwatha were proved to be authentic and their analysis tests are compared with parameters mentioned in API showing positive results. Physico-chemical analysis of both formulations illustrated parameters within normal limits. This is the first time that analytical study of Haritkyadi Lepa and Bilwadi Kwatha has been established and can be used as a reference standard for future researches.

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