



Research Article

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ANALYTICAL STUDY OF BILWADI YOGA OINTMENT: AN AYURVEDIC FORMULATION

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ABSTRACT

Our ancient seers have given prime importance to the eye by considering it the most vital sense organ among all sense organs. It says Sarvendriyanam nayanam pradhanam. Ocular diseases are the most common condition found in a day-to-day life. Vataja Abhishyanda, explained by our Acharya 5000 years, is much more significant today. According to Acharya Sushruta, Abhishyanda is the leading cause of all eye diseases and is also one of the aupsargic roga. It is one among the sarvagata roga. Bilwadi yoga combines herbal and mineral topical formulations mentioned in Ayurvedic classics. The formulation is helpful in itching, watering, and burning sensation in eyes, like ocular disorders. Material and Method: To make the drug application more convenient, the present study has been undertaken to modify Bilwadi yoga into ointment form and develop the final product's physicochemical profile. This form was designed in two steps: preparation of ghana satva from the decoction of herbal drugs and mixing the powdered medication with bee wax to attain the final product. Pharmaceutical analysis of Bilwadi yoga ointment preparation was done according to API and protocol of drug testing of PLIM. Result and Discussion: The formulation is safe for use as heavy metals were below the acceptable limit and free from pathogenic microbes. Conclusion: Bilwadi yoga ointment was prepared following the method described in Sharangdhara Samhita. This paper presents the analytical study of the formulation.

Keywords: Abhishyanda, Bilwadi yoga ointment, Analytical study.

INTRODUCTION

Netra Anjana is one among the kriyakalpa procedure. Anjana is a procedure of applying medicinal pastes or powders to the inner surface of the lower lid margin from kaneenika to apanga sandhi using a fingertip or the applicator called anjana shalaka. It has been classified into churnanjana (fine powder), gutikanjana (tablet rubbed in appropriate solution) and raskriya (semisolid form)¹. Bilwadi yoga ointment is a semi-solid aqueous extraction of a drug prepared by reducing decoction until it becomes thicker. It is considered to contain all the active principles of the whole drug².

Bilwadi yoga ointment is a formulation prepared of Bilwa, Agnimantha, Shyonaka, Patala, Gambhari, Eranda, Brihati and Madhu Shigru, all in equal amounts. Almost all drugs have anti-inflammatory, anti-microbial and anti-histaminic and anti-allergic properties³. By the properties mentioned above, this formulation is believed to have action on Vataja abhishyanda. This paper presents the analytical study of the formulation, which may serve as supporting literature for future studies and to maintain the standard quality of the formulation.

Aim and objectives

To prepare Bilwadi yoga in the form of eye ointment and to find out the sterility and physicochemical tests of Bilwadi yoga ointment. To analyse the physical or organoleptic character of the prepared drug.

MATERIALS AND METHODS

Collection of raw materials

The raw drugs for Bilwadi yoga ointment preparation drugs were procured from the Hansa Pharmacy Premnagar Ashram, Haridwar. The PG department of Dravyaguna, Rishikul Ayurveda Govt. PG College and Hospital Haridwar identified the ingredients. The final product was prepared in the Hansa Pharmacy Premnagar Ashram, Haridwar, Uttarakhand.

Method of preparation of Bilwadi yoga ointment

The Bilwadi yoga ointment was prepared using the classical method of ghana satva. For the preparation of ghana satva yavkoot of, all the raw herbal drugs, i.e., Bilwa, Agnimantha, Shyonaka, Patala, Gambhari, Eranda, Brihati and Madhu Shigru, were taken in equal amounts in dry form and was kept in 4 times of water (42 litres) for overnight (approx. 8 hours) and then decoction was prepared till it reduced to ¼ of the total quantity. This part of decoction was filtered and subjected to boil until it became thicker⁵. After obtaining the Ghana satva, it was kept in a tray drier at 35-40 °C until completely dry and then powdered. The obtained powder was sieved through mesh no. 120 and then mixed with the base of ointment prepared by mixing Bee wax mixed in a ratio of 2:1. Drug to base ratio was kept at 3:2 to obtain desired semi-solid consistency. The final product was then packed in sterile ointment tubes of 3 ml each.

Table 1: Ingredients and composition of Bilwadi Yoga⁴

Name	Latin Name	Family	Virya-Vipaka	Part Used	Ratio
Bilwa	<i>Aegle marmelos</i>	Rutaceae	Ushana-Katu	Root	1
Gambhari	<i>Gmelina arborea</i>	Verbenaceae	Ushana-Katu	Root	1
Agnimantha	<i>Premna mucronate</i>	Verbenaceae	Ushana-Katu	Root	1
Patala	<i>Stereospermum suaveolens</i>	Bignoniaceae	Ushana-Katu	Root	1
Shyonaka	<i>Oroxylum indicum</i>	Bignoniaceae	Ushana-Katu	Root	1
Eranda	<i>Ricinus communis</i>	Euphorbiaceae	Ushana-Madhura	Root	1
Shobhaanjana	<i>Moringa oleifera</i>	Moringaceae	Ushana-Katu	Root	1
Brahti	<i>Solanum indicum</i>	Solanaceae	Ushana-Katu	Root	1



Aegle marmelos



Gmelina arborea



Oroxylum indicum



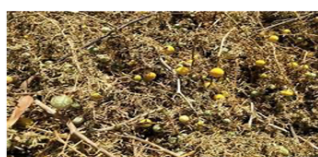
Ricinus communis



Moringa oleifera



Stereospermum suaveolens



Solanum indicum



Premna mucronate

Figure 1: Raw drugs for Bilwadi yoga ointment for fine powder



Powdered raw drugs



Kwath preparation



Kwath preparation



Bee wax mixing



Ghana Satva

Figure 2: Pharmaceutical unit operation of ointment preparation

Method of evaluation of Bilwadi yoga ointment: The ointment was evaluated by employing parameters mentioned in Ayurvedic Pharmacopeia of India and protocol of Ayurvedic drug testing of PLIM, Ghaziabad, UP, India. ⁶⁻⁷

Physicochemical analysis: The sample was subjected to physicochemical analysis, such as Loss on drying at 105 °C. Loss on drying was calculated after placing the 10 g of sample in the tared evaporating dish and drying at 105 °C for 5 hours.

Heavy Metal Test: Spectrometry of the sample was also carried out for the presence of heavy metals such as cadmium (Cd), lead (Pb), mercury (Hg), and arsenic (As). All the metals were present in the ointment in a safe range.

Microbial Analysis: Bilwadi yoga ointment was evaluated for the total bacterial and fungal counts. The plate count method carried out the total bacterial count, which is mentioned in A.P.I, Part II, Vol-I, Appendices 2.4.

RESULT AND DISCUSSION

Pharmacognostic analysis and organoleptic evaluation of the final product were performed. The Bilwadi yoga has been prepared in ointment form for the first time to make the application easy and accessible. As the product is ready to be used directly on the eyes, these are significant factors that will ensure safety while applying the product. Low microbial count and sterility will ensure that using the product on the eyes would not be responsible for any secondary infections. All the readings of the product came out to be within the normal range, which indicates the good quality of the product and may be responsible for its pharmacologic and clinical actions.

Table 2: Physical characterization Description

Appearance	Semi-solid
Colour	Dark Brown
Odour	Characteristic
Taste	Characteristic

Table 3: Physicochemical properties

Parameters	Bilwadi yoga ointment
Loss of Drying (% w/w)	6.31
Total Ash (% w/w)	3.11
Acid insoluble (% w/w)	0.41
Alcohol soluble extraction (% w/w)	3.59
Water soluble extraction (% w/w)	12.40

Table 4: Heavy Metals

Lead (Pb) ppm	4.28
Arsenic (As) ppm	<0.50
Cadmium (Cd) ppm	0.03
Mercury (Hg) ppm	<0.13

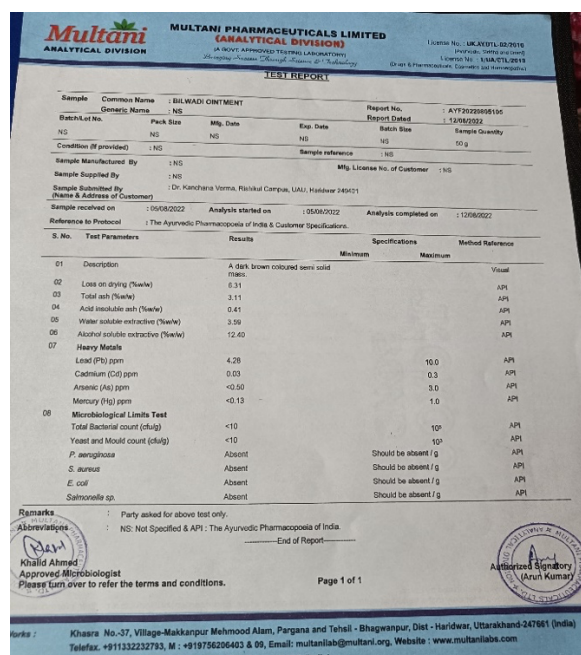
Table 5: Microbiological Analysis

Total Bacterial Count	<10 cfu/g
Yeast and Mould Count	<10 cfu/g
<i>E.coli</i>	Absent
<i>Salmonella sp.</i>	Absent
<i>P.aeruginosa</i>	Absent
<i>S.aureus</i>	Absent

Determine the total aerobic microbial count by plate count: For bacteria, Using Petri dishes 9 to 10 cm in diameter, add a mixture of 1 ml of the pre-treated preparation and about 15 ml of liquefied casein soybean digest agar at not more than 45 °C: If necessary, dilute the pre-treated preparation as described above so that a colony count of not more than 300 may be expected. Calculate the results using plates with the most significant number of colonies but taking 300 colonies per plate as the maximum consistent with good evaluation⁷.

Determine the total fungal count: Proceed as described in the test for bacteria but use Sabouraud dextrose agar with antibiotics in place of casein soybean digest agar and incubate the plates at 20-25 °C for five days unless a more reliable count is obtained in a shorter time. Calculate the results using plates with not more than 100 colonies⁷.

The Bilwadi yoga ointment was prepared using the classical method of ghana satva. Almost all drugs have anti-inflammatory, anti-microbial and anti-histaminic and anti-allergic properties³. By virtue of the abovementioned properties, this formulation is believed to have action on Vataja abhishyanda. The formulation is not found in API; thus, the results of this study may be used as the reference monograph and further research on it.



Analytical report

CONCLUSION

The pharmacognostic evaluation of Bilwadi yoga ointment illustrated the specific characteristics of this preparation. The microscopic features, physicochemical parameters, sterility, heavy metal testing and microbiological analysis are essential for ensuring the drug's safety and quality. All parameters of Bilwadi yoga ointment were found within the normal range and may be used for standardization and quality evaluation of the drug for future scholars.

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