Research Article

PRELIMINARY PHYSIOCHEMICAL EVALUATION OF NAGARADI OINTMENT: AN AYURVEDIC FORMULATION

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KEYWORDS:
Nagaradi ointment, Chakshushya, Kaphashamaka.

ABSTRACT
Plants serve as a very rich source of bioactive molecules, which are used to treat various acute and chronic diseases in Ayurveda. Medicinal plant materials are formulated into various types of Ayurvedic medicine either by ancient or modern methods where standardization plays a pivotal role for authentication. Standardization confirms the identity, quality and purity of drugs. WHO has set up various parameters to evaluate the crude drugs and their finished products. Now a day’s application of several modern analytical techniques has become inevitable for evaluating quality, safety and efficacy of the polyherbal Ayurvedic formulations. Out of several formulations available in Ayurveda, Anjana is considered as unique in Shalakya Tantra due to its various forms (which are prepared by different ways). This article is about the formation of Nagaradi Anjana as ointment which can be taken as a form of Raskriyanjana. Most of the ingredients of Nagaradi ointment are Chakshushya i.e., good for eyes and also have Kaphashamak properties. That is why they are useful in ocular diseased conditions which have dominance of Kapha dosha like Kaphaja Abhishyanda. Keeping all these points in view, the present study has been undertaken with the aim to make the Ayurvedic formulation in the form of Raskriya Anjana or ointment, from the herbal drugs, mentioned in Astanga Sangrah, an Ayurvedic classical text and to develop the physiochemical profile of it. The eye ointment was prepared by using vaseline as base which is mixed with powdered Ghana Satva of the herbal drugs.

INTRODUCTION

In Ayurveda ointment can be taken as the Rasakriya form of Anjana. Nagaradi ointment contains Nagar, Haritaki, Vibhitaki, Amalaki, Nimba, Vasa, Lodhra[1] and it has its pharmacological action like Kandhughn, Deepan-pachan, Sothahara, Srotoshodhaka and Shoolaprashaman etc. Due to which it is effective on the symptoms like Guruta (heaviness of eyes), Akshisopha (swelling of lids), Kandu (itching in eyes), Updeha (stickiness of eyes) and other Lakshana of eye disease related to Kaphaja Dosh[2].

Out of the above mentioned ingredient of Nagaradi ointment, Vibhitaki and Amalaki, are described as Chakshushya[3,4], Haritaki is Netrarujapaharini i.e., it relieves pain in eyes[5], Nimba and Lodhra are described as Netrayam and Chakshushya respectively[6,7]. Haritaki is also described as Indriya Prasadini Lekhani and Chakshurhita[8]. The purpose of formation of Nagaradi ointment is to provide an easy and effective way of application which remains in contact with the surface for a greater time and thus will be more effective.

The report on the standardization of Nagaradi Ashchyotana is carried out to maintain the quality control of the drug by the proper identification of raw material at the basic level with the help of organoleptic characteristics, physiochemical and phytochemical parameters and TLC study.

Access this article online

https://doi.org/10.47070/ijapr.v9i7.1953

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MATERIALS AND METHODS

Aims and objective
1. To analyze the physical or organoleptic character of drug.
2. To find out the sterility test and TLC profile of Nagaradi ointment prepared by classical and modified methods.

Collection of Raw Materials

The raw drugs for the study (shown in figure 1-7) were procured from Hansa Pharmacy Sidikul, Haridwar Uttarakhand. The final product i.e., Nagaradi ointment was prepared in the Hansa Pharmacy Sidikul, Haridwar Uttarakhand.

Method of Preparation of Nagaradi Ointment

The Nagaradi Ointment was prepared according to the classical method of preparation of Ghana Satva. For the preparation of Ghana satva all the herbal drugs i.e., Nagar, Haritaki, Vibhitaki, Amlaki, Vasa, Nimba and Lodhra were taken in equal amount i.e., 200gm each in dry form but Nimba patra was taken in fresh form because in Sharangdhar Samhita it had been mentioned that Nimba patra should always be taken in wet form. Then all the dry crude material was dipped in eight times of water for 12 hours. After that Nimba Patra was also added and decoction was made till it remained ¼ of total quantity. Then this part of decoction was filtered twice and allowed to sediment for 12 hours. The sediment portion was left and the clear portion was again boiled till it become thicker like Leha kalpna as shown in fig-8. After that all that Ghana satva was dried into tray drier at temperature 35-40 degree Celsius and then powdered using a Kharal Yantra.

Then 40gm of the dry powder of Ghana Satva was mixed with 60gm of vaseline properly (fig.9). This portion was filled into eye ointment tubes and containers. (fig-10)

| Drug   | Latin Name       | Family          | Part Used  | Ratio |
|--------|------------------|-----------------|------------|-------|
| Nagar  | Zingiber officinale | Zingebraceae    | Rhizome    | 200gm |
| Haritaki | Terminalia chebula     | Combretaceae   | Dry fruit  | 200gm |
| Vibhitaki | Terminalia bellirica  | Combretaceae   | Dry fruit  | 200gm |
| Amlaki | Emblica officinalis | Euphorbiaceae  | Dry fruit  | 200gm |
| Nimba | Azadirachta indica | Meliaceae      | Leaves     | 200gm |
| Vasa   | Adathoda vessica    | Acanthaceae    | Panchang (whole) | 200gm |
| Lodhra | Symplocos recemosa | Symplocaceae   | Root       | 200gm |

Analytical Study

Raw material and prepared final product i.e., Nagaradi Ointment were analyzed by employing various analytical parameters.

Physical Characterization Description or Organoleptic Study

Organoleptic characteristics for various sensory characters like appearance, color, odour, etc. were carefully noted down.

| Physical description | characterization | A dark brown coloured semi solid mass |
|----------------------|------------------|---------------------------------------|
| Appearance           | Semisolid        |                                       |
| Taste                | Characteristic   |                                       |
| Colour               | Dark brown       |                                       |
| Odour                | Characteristic   |                                       |

pH value

pH was determined by using digital ph meter. One gram of ointment was dissolved in 100 ml of distilled water and stored for two hours and the measurement of ph was 5.4 which is weakly acidic.

Nagaradi ointment was further subjected to thin layer chromatography (TLC) study.

Sterility Test

Sterility test was done by the method mentioned under IP 2007, Vol-2 which shows that the drug tested was sterile.
TLC Profile

Instrument used for testing TLC Profile was silica plate. The stationary phase used was silica gel G G60F254 and mobile phase was toluene, ethyl acetate, formic acid (6:3:1). The plate was visualized under iodine vapors. RF values were recorded 0.34, 0.67, 0.91

Alfatoxins

Alfatoxins B1, B2, G1, G2 were tested by the method mentioned under A.P.I. Part II, Vol, appendices 2.7 which show no detection of alfatoxins.

| Parameters      | Specification | Result       |
|-----------------|---------------|--------------|
| Alfatoxins B1   | 0.5ppm        | Not detected |
| Alfatoxins B2   | 0.1ppm        | Not detected |
| Alfatoxins G1   | 0.5ppm        | Not detected |
| Alfatoxins G2   | 0.1ppm        | Not detected |

Microbial Analysis

*Nagaradi* ointment was then evaluated for total aerobic microbial count and total yeast count. Total aerobic microbial count was carried out by plate count method, which is mentioned in A.P.I. part 2, vol-1 appendices -2-4.

| Parameters                      | Specification | Result       |
|---------------------------------|---------------|--------------|
| Total aerobic microbial count    | $10^3$        | Less than 10 |
| Total yeast and mould count      | $10^3$        | Less than 10 |
Estimation of Vit-C

Vit-C was tested by the method mentioned in HPLC and the result recorded was 0.0012ug/gm.

DISCUSSION

Analytical study of the drugs deals with the analysis of the values of some physical constants and chemical values of the prepared formulation. Pharmacological analysis organoleptic evaluation was performed at final product i.e., Nagaradi ointment (observations of organoleptic analysis are tabulated in figure 1).

Thin layer chromatography study (TLC) was carried out under 254 and 366nm UV to establish finger printing profile. It showed RF values 0.34, 0.67 and 0.91 were recorded which may be responsible for expression of its pharmacological and clinical actions.

CONCLUSION

After pharmacognostical evaluation of Nagaradi ointment it has been illustrated that there are some specific characters of the eye ointment preparation. In present analytical study, obtained results were found within normal prescribed limits as described in Ayurvedic pharmacopoeia of India. In this study all the physico-chemical parameters were found in acceptable range and all the samples were found to be free from microbial contamination. For the first time pharmaceutical and analytical profile of Nagaradi ointment was established. On the basis of TLC fingerprint profile and other physiochemical parameters, this study may be used as reference standard in further quality control researches. So the results of the study may be used as trail for the further development of Ayurvedic drugs formulation.

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Cite this article as:
Sarita Yadav, Anupama Singh, Ranjana Negi. Preliminary Physiochemical Evaluation of Nagaradi Ointment: An Ayurvedic Formulation. International Journal of Ayurveda and Pharma Research. 2021;9(7):22-25. https://doi.org/10.47070/ijapr.v9i7.1953

Source of support: Nil, Conflict of interest: None Declared

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