Pharmaceutico-Analytical Study of *Palityahara* Hair Mask-A Novel Dosage Form

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Abstract

Ayurveda has mentioned various internal and external dosage forms. Although, some of the conventional dosage forms have limitations pertaining to storage, stability, shelf life and feasibility of usage. To overcome this, there is a need to transform conventional dosage form into contemporary ones. *Palityahara* hair mask is one such formulation, wherein the conventional *lepa kalpana* was converted into a hair mask to help provide uniformity of product. A traditional *lepa* is dispensed in a fine powder form which is then supposed to be mixed with a liquid media and appliedto skin/hair. Non-uniformity in the consistency of *lepa* is a major drawback. Therefore, to fill in this lacuna, there was a need to transform it into a novel formulation and help impart the benefits of ancient wisdom to the contemporary modern world. *Palityahara lepa* was prepared as mentioned inAshtang Hridaya. It was then converted to mask formulation and was finally subjected to organoleptic and physico-chemical tests. Proper understanding of ancient wisdom with an aim to enhance its quality can help achieve greater goals in terms of dosage forms. *Palityahara* hair mask was a step towards it. Further experimental studies are required to test its efficacy.

Keywords: *Palityahara*, Hair mask, dosage form, *Lepa Kalpana*.

INTRODUCTION

Palitya (pre-mature greying of hair) is a burning issue in the present era. Due to excessive stress and changing lifestyles it has become common in early age. According to W.H.O., India witnesses high incidence of Canities (*Palitya*) in the age group of 20-30 years. According to Ayurveda, *Kesha*(hair) is a *Prithvi Mahabhutha Pradhan Dravya* which is developed from *Pitruja Bhava* (1) and the *Bhrajaka Pitta* located in the *Twak* is responsible for imparting colour to *Twak* and *Kesha* (2).

Palitya is the condition which is caused by anger, grief and exertion that results in *Pittaadhikyata* inthe head (3). Vagbhata has mentioned diverse types of *Palitya* grounded on involved *dosha* as follows- by *Vata dosha*, cracked hair, black colour, rough, dry and watery tinge; by *pitta*, there's burning sensation at roots of hair and unheroic colour; by *Kapha*, it's smooth, thick growth and white and with ascendance of all the *doshas*, the features are mixed (4)

Application of ayurvedic herbs is considered as one of the safest practices for hair dyeing in Indian population. The effect may be visible varying from couple of days to months. *Bringaraja* [(5)], *Eranda* [(6)], *Haritaki*[(7)], *Amalaki*[(8)], *Vibhitaka*[(9)], *Patanga*[(10)], *Neeli*[(11)], *Madayantika*[(12)] are some of the currently famous ayurvedic herbs which give deep dark colour.[(13)] One such hair dyeing formulation is mentioned by *Acharya Vagbhata* in his text *Ashtang Hridaya* in *Uttarsthana*.[(14)] It is itself a unique method to prepare *Lepa Kalpana*.[(15,16)] Here *Vagbhata* has mentioned to formulate *lepa* by *Sandhan* process. *Sandhana* is the term used to define the process of fermentation.[(17)] Medicines are combined and allowed to be in same state for a specific period for *Sandhana Prakriya* [(18)] or fermentation. It is classified into *Madya*(alcoholic) and *Shukta*(acidic) preparations which again are of several types based on the ingredients used. Among them, *Sheetaras Sidhu* [(19)] is one such alcoholic preparation, where sugarcane juice or any other *Madhur Dravya* is fermented without boiling.[(20)] The formulation under study comes under *Sheetaras Sidhu*. The residue produced at the end in this process is used as *Palityahara Lepa* for external application.

For the practical application of *Lepa*, the powdered drugs are to be mixed with definite proportion of liquid media and formed into a paste. The major drawback here is the non-uniformity of formulation, as every individual have their own perspective of density of paste. This leads to decreased feasibility of application, reduced stability, and shelf life of the formulation. Hence to overcome this, there was the need to convert this classical formulation of *Lepa* into a novel hair mask.

AIM- To conduct pharmaceutico-analytical study of *Palityahara* Hair Mask.

OBJECTIVES

1. To prepare *Palityahara lepa*.
2. To prepare *Palityahara* Hair Mask.
3. To test the physico-chemical parameters of *Palityahara* Hair Mask

METHODOLOGY

A. Preparation of *Palityahara lepa*.

B. Preparation of *Palityahara* Hair Mask.

C. Physico-chemical tests of *Palityahara* Hair Mask.

A. Preparation of *Palityahara lepa*.

Materials-

Sr. No.	Ingredients	Latin/English name	Quantity
1.	*Loha churna*[21]	Iron powder	50 g
2.	*Haritaki churna*[22,23]	*Terminalia chebula*	16.5 g
3.	*Amalaki churna*[24,25]	*Emblica officinalis*	16.5 g
4	*Bibhitaki churna*[26,27]	*Terminalia bellirica*	16.5 g
5.	*Bhringaraj churna*[28,29]	*Eclipta alba*	50 g
6.	*Krishna mrittika*[30]	Black soil	150 g
7.	*Ikshu rasa*[31,32]	*Saccharum officinarum*	2 Litre

Method-

1. An appropriate '*Sandhan patra'*, an earthen pot, which was completely inert, was selectedfor the purpose.
2. *Dhupana* (fumigation) of the '*Sandhan patra'* was carried out using *Sarjaras* before fillingmedicine into it.
3. Now, the *Ikshu* rasa was filled in the *Patra* in given proportion followed by other *ChurnaDravyas*.
4. The mixture was gently stirred and the vessel kept undisturbed by temporarily closing itsmouth with cloth and a lid.
5. The onset of fermentation was observed daily for 3 to 5 days.
6. Soon after fermentation onset the *Sandhi-Bandhana* of the vessel was done.
7. Now the vessel was left undisturbed for 30 days.
8. Later the signs of fermentation completion were looked for.
9. After confirming completion of fermentation through all the classical guidelines, thepreparation was carefully filtered and *Kinwa* and *Asava* parts were separated.
10. The *Kinwa* portion i.e the residue was taken as the *Palityahara Lepa.*
11. It was finally packed in suitable airtight container and labelled.

Figure 1: *Sandhana patra* with all the ingredients

Figure 2*: Palityahara lepa*

B. Preparation of *Palityahara* Hair Mask

Materials-

Sr. No.	Ingredients	Quantity
1.	*Palityahara lepa*	50 g
2.	Multani clay[33]	10 g
3.	Lavender fragrance	5-7 drops

Method-

1. The prepared *Palityahara lepa* was taken in given quantity and 10g of powdered Multaniclay was added to it.
2. The mixture was triturated well using the *Asava* part as liquid media until a uniform pastewas obtained.
3. Finally, 5-7 drops of lavender fragrance oil were added.
4. The prepared *Palityahara* Hair mask was then stored in airtight container.

Figure 3: *Palityahara* Hair mask

C. Physico-chemical tests of *Palityahara* Hair Mask.

The *Palityahara* hair mask was subjected to following physico-chemical tests.[34]

1. pH value[35]
2. Total ash[36]
3. Water soluble ash[36]
4. Acid insoluble ash[36]
5. Alcohol content[37]
6. Moisture content[37]

Observation

A. *Palityahara lepa-*

Sr. No.	After onset of fermentation	After consummation of fermentation
1.	*Churna dravya* were floating	*Churna dravya* sank completely
2.	Mild alcoholic odour appeared	Strong alcoholic odour appeared
3.	Effervescence was seen	Effervescence was absent
4.	Typical sound heard close to *sandhanapatra*	No sound heard
5.	Burning candle was put off when takeninside container	Burning candle continued to light when taken inside container

- After consummation of fermentation process the fermented product was filtered.
- A total of 510g of *Palityahara lepa* was obtained.
- Organoleptic Characters[38] of *Palityahara lepa-*

1. *Shabda- Nishabda*
2. *Sparsha- Kinchit khara*
3. *Rupa*- Black coloured paste
4. *Gandha- Ugra madya-gandhi*

B. *Palityahara* hair Mask-

67g of *Palityahara* Hair Mask was obtained.Organoleptic Characters [38]-

1. Shabda- Nishabda

2. Sparsha- Snigdha,Picchila

3. Rupa- Blackish grey paste

4. Gandha- Ugra gandha

RESULT

Thus, 67g of *Palityahara* Hair Mask was prepared. Physico-chemical analysis of *Palityahara* Hair Mask-

Sr. No.	Test	Result
1.	pH value	4.35
2.	Total Ash	27.48% w/w
3.	Water soluble ash	1.39% w/w
4.	Acid insoluble ash	21.08% w/w
5.	Alcohol content	1.216% w/w
6.	Moisture content	28% w/w

DISCUSSION

Hair dye is reported as one of the most common causes of contact dermatitis in India. P- phenylenediamine (PPD) has been identified as the most frequent contact sensitizer of hair dye.[39] Apart from conventional PPD , the contemporary dyes used nowadays have a composition of other chemical constituents like- ammonia, peroxide, resorcinol, diaminobenzene, para- phenylenediamine, toulene-2, 5-diamine etc. Allergic skin rashes, dermatitis, rubor and inflammation of scalp and face are common side-effects due these chemicals in many people. They are also at risk of producing even cancers on perpetuated usage. [40]

Among various products used to tackle the premature greying of hair, *Kesha lepa* is widely used for instant gratification. However, in ayurvedic clinical practice, practitioner faces difficulties to prescribe Ayurveda dosage form due to its appearance, non-palatable, and non-portability properties. Due to these demerits it is a great challenge in front of Ayurveda pharmaceutics to improve Ayurveda dosage form which are easily palatable, have long shelf-life, easy to dispense, easily portable and have good appearance with increased therapeutic utility, potency and market value.[41] Hence present study was primarily aimed at preparing a novel dosage form of a hair mask from a conventional *Lepa kalpana*. Core aspects of uniformity of product & feasibility in application were the major concern to be addressed.

Various ingredients of the formulation are designed by ancient text to impart colouring effect to hair when applied externally. *Triphala* is used since ancient times to promote hair growth & dyeing purposes. Emblicanins & Ellagic acid in *Amalaki* (*Emblica officinalis*) herb are a type of polyphenol which are traditionally used as dyes.[42] *Amalaki* alleviates pitta *dosha* due to its *sheeta* and *madhura* properties and thereby promotes pigmentation of hair.[43] *Haritaki* (*Terminalia chebula*), *Vibhitaki* (*Terminalia bellirica)* present in *Triphala* contains Gallic acid and Tannic acid. Gallic acid forms a complex with iron ions in hair to achieve a good chromaticity. Tannic acid is a type of polyphenol useful as yellow dye for hair. *Bhringaraja* (*Eclipta alba*) contains yellow crystalline flavones. Apigenin and Luteolin present in it give dyeing property. [44] Also, it has *Keshya* properties and is indicated in *Palit rogas*.[45] Interaction of *Loha churna* (iron oxide) with *Amalaki* Powder produces fused black particles (chelates) capable of hair dyeing.[42] *Krishna mrittika* has *Madhur Rasa* which helps in increasing the *Kshina dosha and Dhatus* and alleviates the *Kupita dosha* thereby promoting natural colour to hair.[30]

Hair mask usually consists of concentrated ingredients in the form of pastes which can be left on hair for durations varying from 20 mins to few hours. [46] An attempt was made to convert the prepared *Palityahara lepa* into a homogenous mask by triturating the *lepa* with Multani clay and *Asava* obtained during fermentation. Multani clay was used as a binder which imparts smooth texture to the mask. It also hydrates the scalp & strengthen the roots. It is found in number of skin care and personal care products and is used to cleanse and soak up excess oil, grime, and other contamination from the skin and hair.[47] Lavender essential oil was used to give a pleasant odour as the natural *lepa* had a very *'Ugra madya Gandha'*(alcoholic odour). The *Asava* (alcoholic fermentation) used for trituration act as self-preserving agent, thus negating the need of artificial preservatives.[48]

Analytical tests-

- Total Ash value of the mask indicates the presence of calcium, aluminium, magnesium oriron deposition on activated carbon.[49]
- Water soluble ash indicates the inorganic components.
- Acid insoluble ash indicates the siliceous or earthly material in drugs. A higher limit of acid- insoluble ash is imposed, especially in-case where silica may be present or when the calcium oxalate content of the drug is very high.[49] Here, the higher percentage of acid insoluble ash is due to Multani clay which contains hydrated aluminium silicates, magnesium chloride, and calcium bentonite.[50]
- pH was found to be acidic due to the process of fermentation.

CONCLUSION

Thus, an attempt was made to transform a conventional dosage form of *lepa* into a contemporary form of hair mask. There was significant change in organoleptic characters of mask which might help in feasibility of application. There is a future scope of experimental validation of this novel formulation along with the advanced drug development.

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