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Pharmaceutical Study of *Malhara Kalpna* Composed of *Aloe Barbadensis* and *Terminalia Belerica*

Ravinder Kumar[1], Shivani[2], Raghav Katoch[3], Shruti Sharma[4], Rakesh Thamman[5]

1- Lecturer Pharmacology, Department of Pharmacology, College of Ayurvedic Pharmaceutical Sciences, Joginder nagar, Mandi, H.P.
2- Scholar College of Ayurvedic Pharmaceutical Sciences, Joginder nagar, Mandi, H.P.
3- Scholar College of Ayurvedic Pharmaceutical Sciences, Joginder nagar, Mandi, H.P.
4- Lecturer Department of Pharmaceutics, College of Ayurvedic Pharmaceutical Sciences, Joginder nagar, Mandi, H.P.
5- Principal, College of Ayurvedic Pharmaceutical Sciences, Joginder nagar, Mandi, H.P.

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Corresponding author-
Ravinder Kumar, Lecturer Pharmacology, College of Ayurvedic,Pharmaceutical Sciences, Joginder nagar, H.P.

Email: ravindervardhan278@gmail.com

ABSTRACT:

The pharmaceutical branch of Ayurveda known as Bhaisajya Kalpana Vigyan deals with the preparation of herbal and herbo-mineral formulations. Numerous infectious diseases in humans are brought on by microorganisms, which are found everywhere in the soil, water, and air. These microorganisms include bacteria, viruses, fungus, and parasites. Our Acharyas have often mentioned *Malaharayogas* as a way to prevent issues like this. *Malhar kalpana* falls under the category of *Bahya kalpana* (external application). Compared to the other formulations, *Malhar* has a longer shelf element of *Malhar*. The second is a *Dravya* known as a *pachan Dravya, or a Dravya* that turns medications into *Malhar* such as *shatdhaut grit, Sikta tail, Sikta, raal, til* oil, etc. The gel of Aloe and the pharmaceutical powder of *Baheda* are used in making *Malhar* formulation, resembling ointments used in contemporary pharmaceutics. In this research, an attempt was made to prepare *Malhara* for exploring the properties of *baheda* and aloe vera together in semisolid dosage form.

Key word: - *Malhar*, *marahama*, aloe vera, *Bheda*, *Terminalia belerica*, *Aloe barbadensis.*

INTRODUCTION

Marahama (malaham), an Arabic term, refers to dressings, plasters, and other forms of wound care. The name *Lepa* suggests a connection between *Lepa Kalpana and Malahara Kalpana*. The Charak and Sushrut Samhitas were both translated into Arabic and Persian during the seventh century A.D., which would have had an effect on how the Ayurvedic *Lepa Kalpana* became the *Marahama Kalpana* in the Unani System. This composition is unique in that it uses both gel and the drug powder. Application and storage are both straightforward. It has anti-inflammatory and analgesic properties [1]. There are flavonoids in *Terminalia belerica* [2]. Additionally, beneficial are antimicrobial [3, 4] anti-hypertensive activity [5], hepatoprotection [6], diabetes [7], anticancerous activity [8], and antioxidant properties [9]. Aloe vera can treat bacterial and fungal infections[10]. It possesses anti-oxidation, anti-cancer,

anti-diabetes, and gastroprotective properties[11, 12]. This composition prevents skin from breaking down. Tula tawny (Sesamum indicum, Linn) Because it quickly penetrates skin and contains vitamin E, it is an antioxidant [13.] The Malhar Kalpana's base is made of bee's wax [14.] Early in the 20th century, benzoic acid was utilised as an expectorant, analgesic, and antiseptic[15.] Because of its intricate structure, EDTA may bind a variety of metals. The ties the structures made with the metals are incredibly strong and stop more hazardous effects from happening before excretion out of the body [16.] Tocopherol, often known as vitamin E, is a fat-soluble vitamin that serves as an antioxidant and defends the cell membrane [17.] Most often used as an astringent is an Acacia bark decoction[18.] Pharmaceutical products that include glycerine often include anaesthetics, suppositories, cough syrups, and heart medications [19.] To give the formulation a nice scent, perfume is added.

MATERIAL AND METHODS

Ingredients: -[13, 20, 21, 22, 23] Table 1

Procedure [21, 24, 25, 26]: -

Grinding of raw drugs: -

Terminalia belerica fruits were collected and allowed to dry in shade. After complete drying of the fruits, small amount of raw drug was taken in *khalva yantra* and powdered. Removed the powder from *khalva yantra* and poured into glass container. The powder was collected and stored in cool and dry place.

Preparation of *Malhar:* -

Til taila was taken in the glass container and heated on water bath. Beeswax was incorporated in the *taila* and allowed to melt. The mixture was stirred continuously and later on the mixture was filtered with the aid of Muslin cloth. The powdered drug was added to the prepared mixture. After this the gel of aloevera was poured to it and mixed continuously. The excipients were then added to the formulation. The formulation was stirred continuously with some trituration in between. After trituration the prepared *Malhar was* collected in tight closed container and labelled by mentioning it as for external use only. Stored the preparation in the cool and dry place.

Evaluation: -

1. **Physical appearance:** The physical appearance was detected visually. *Malhar* was assessed for the following characteristics: -Cracking of the emulsion (separate of the oil from the water phase), development of grainy or lumpy appearance, Viscosity changes that were noticeable, crystal development, and severe microbiological contamination. The prepared *Malhar* was found to be in good physical state and was stable.

2. **Solubility-** Water was used to check the solubility of prepared formulation and it was observed that the produced Malhar was immiscible in water.

3.**Viscosity**- Rotational viscometers are required for the measurement of viscosity. At 24.7 degrees Celsius and 4 spindle numbers, the viscosity was 14.9%, or 14948 mPa.S.

4. Spread ability: A cream base should be able to spread without much resistance and shouldn't increase friction when rubbing. The spread ability apparatus, which consists of a wooden board with a scale and two glass slides with two pans on either side set on a pulley, was used to determine spread ability. In order to compress the sample to a consistent thickness, extra sample was sandwiched between the two glass slides and 100 g of weight was applied to the glass slide for 5 minutes. To the pan was put weight (250 g). The spread ability was measured by the number of seconds needed to separate the two slides. S = m * l/t Here, m-weight is fastened to the upper slide. l - glass slide length t - time in seconds Ointment has a spread ability of 30.02 g/cm/s 5.

5. pH: - The digital pH meter was used to check the pH. Firstly, it was calibrated, and then, by dipping the electrode into the produced Malhar, the pH of the Malhar was determined. Meter calibration with pH 7 and pH 2 Buffers. Set the temperature control knob to 25°C and chose the pH Mode. Turned the Cal 2 knob until it read 100%. The electrode was cleaned with deionized water before patting it dry with a tissue. Placed the electrode in the pH 7 buffer solution, waited for the display to settle, and then adjusted Cal 1 to make the display read 7. The electrode was removed from the buffer. Deionized water used to rinse the electrode, and wipe the area dry using a tissue. The electrode was placed in the pH 2 buffer solution, wait for the display to settle, and then set Cal 2 to 2 to make the display read 2. From the buffer, removed the electrode. Cleansed the electrode with deionized water before patting it dry with a tissue. pH was calculated by ensuring that the pH Mode was selected on the meter, and set the temperature to 25°C. The electrode kept inside the test sample. The panel showed the pH of the fluid. The pH for prepared *Malhar* was 6.21.

RESULTS

Table 2 Observation of base of *Malhar*

Table 3 Observation of drugs
Table 4 Observation of *Sikta tail*
Table 5 Observation of *Malhar*
Table 6 Organoleptic characters
Table 7 Comparative study of experimental Formulation with Marketed formulation

DISCUSSION

For the preparation of *Malhar, sikta tail* was prepared using various ratios of *til oil* and bees wax. In Rasatarangini, 1:6 and 1:5 ratio have been described of wax: *til* oil. *Malhar* (ayurvedic ointments) are typically processed using three ingredients: an oil base, a binding agent, and ingredients in powder form. Sesame oil is typically used as an oily foundation. *Madhuchistha, ghrita, gandhapiroja, rala, and shatadhautha ghrita* are all employed as binding agents. Vaseline, paraffin, and animal fats are utilised in contemporary pharmaceutical businesses to prepare ointments. *Malahara* formulations employ herbal and mineral medications in powder form as a component. However, the base and components listed in the making of *Malhar* do not have a set ratio. Raw materials used for formulation were of analytical grade. The evaluated parameters revealed that prepared the physical properties of *Malhar* were within the limits and the formulation was stable.

CONCLUSION

Kumari & Bibhitak Malhar is associated as ayurvedic *Malhar* possessing properties of both botanicals. The *Malhar* formulation acts by penetrating through the skin exhibiting a significant approach to preserve the structure of skin. The formulated *Malhar* is expected to possess the efficacy same as that of *Gandhak Malhar.* The ingredients in the formulation efficiently hydrate the skin as well. The various parameters revealed its ease for external application.

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ORCID

Ravinder Kumar, https://orcid.org/0000-0003-1337-9681

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Table 1 Ingredients: -[13], [20], [21], [22], [23]

No.	Ingredients	Latin name	Part used	Quantity
1.	*Til Tail*	*Sesamum indicum*	Oil	109ml
2.	*Bees'wax*	*Apis mellifera Linn*	Wax	27gm
3.	*Aloe vera*	*Aloe barbadensis*	Gel	7gm.
4.	*Baheda*	*Terminalia belerica*	Dried fruit	7gm.
5.	*Benzoic acid*	*Benzoic Acid*	Powder	1.3gm.
6.	Edta	*EDTA*	Powder	0.6gm.
7.	Vitamin E	Tocopherol	Capsule	2
8.	Acacia	Acacia arabica	Powder	34gm
9.	Glycerin	Glycerin	Liquid	20.454
10.	Perfume	Perfume	Essence	Q.S.

Table 2 Observation of base of Malhar: -

Til tail	**Sikta**
Light yellowish in colour	Light brownish in colour. It is solid and melt in the hot Til taila when kept in heat.

Table 3 Observation of drugs: -

Terminalia belerica		***Aloe barbadensis***	
Raw fruit	**Processed drug taken to prepare *Malhar***	**Raw form**	**Part taken to prepare *Malhar***
Fresh fruits collected from healthy tree were dried	Powdered form of dried fruits was formed when ground in *Khalva yantra*	Fresh green leaf containing gel was collected from healthy plant	Transparent gel form was obtained from the leaf to be incorporated in the *malhara*

Table 4 Observation of *Sikta tail:-*

Duration	***Sikta tail***
15 min	*Sikta* was not completely soluble in Taila
30 min	*Sikta* was melted
45 min	*Sikta taila* was prepared

Table 5 Observation of *Malhar:* -

Duration	**Observation**
½ hour	Mixture melted
1 hour	Stick to the wall of container
1½ hour	Thin in consistency
2 hour	*Malhar* start forming
2½ hour	Semisolid paste like

Table 6 Organoleptic characters: -

Character	***Aloe vera & Baheda Malhar***	**Marketed Formulation[27]**
Colour	Brownish	Orange
Odour	Pleasant	Strong
Touch	Soft	Not completely soft
Homogeneity	Smooth	pearlscence and roughness and graded

Table 7 Comparative study of experimental Formulation with Marketed formulation

Test		**Experimental Formulation**	**Marketed formulation [27]**
Solubility in water	1.	Not soluble	Not soluble
	2.	Not soluble	Not soluble
	3.	Not soluble	Not soluble
Viscosity	1.	14948mPa.S	14950 cps
	2.	14900mPa.S	15000 cps
	3.	14850mPa.S	15850 – 236400 cps
Spread ability	1.	**30.02 g·cm/s**	29.9 **g·cm/s**
	2.	**29.00g·cm/s**	**30.0 g·cm/s**
	3.	**28.02 g·cm/s**	30.5 **g·cm/s**
pH	1.	6.21	6.0

Photo 1