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Pharmaceutical Development Of Modified *Tankana Malahara*- An Ointment Preparation

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ABSTRACT: Introduction: *Ayurveda* is a treasury of variety of dosage forms for internal and external usage, *malahara kalpana* (ointment preparations) being one of them. This study deals with the pharmaceutical development of a new formulation of *malahara* using coconut oil, bee wax and purified borax on the basis of classically explained other *malahara* formulations.

Methods and materials: The preparation of the modified *tankana malahara* was done as per the classical guidelines of other *malahara kalpana* with three different ratios of ingredients. General observations and organoleptic parameters of all three samples were noted.

Results and Discussion: Modified *tankana malahara* prepared with different ratio of ingredients were similar in physical attributes as well as organoleptic parameters.

Conclusion: As per the study all the samples of *tankana malahara* are pharmaceutically indistinguishable. Hence it can be concluded that, *tankana malahara* prepared with maximum quantity *tankana* is likely to have more therapeutic potency than other two ratios with less borax.

Key Words: *Malahara, Tankana, Siktha, Narikela Taila*

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INTRODUCTION:

Ayurvedic pharmaceutics is a profound, yet perplexing branch of Indian medical science, which comprises of plenty of distinctive formulations with herbal and metalo-mineral drugs. Among various preparations, the dosage forms that are used exclusively for external applications are also explained in the classical texts of *Ayurveda*. *'Malahara kalpana'* are one such preparation intended to apply on the skin and are almost same as ointments of contemporary dosage form with a oily base, giving a greasy, viscous semisolid consistency.[1]

Rasa tarangini, a 20th century book on *Rasashastra* contributes maximum number of *malahara* (ointment) preparations with various drugs for different ailments of the skin. For most of the preparations *tila taila* (sesame oil) and *siktha* (bee wax) are used as base drugs, which also add on to the therapeutic property of the main ingredients in the formulation. *Tankana* (Borax) a proved drug with antifungal and antibacterial property [2] is mentioned to be a content of several preparations like *tankanamrita malahara*, [3] *tankanamla malahara*, [4] *gandhakadya malahara*[5] etc.

With this background, a slight modification in classically explained *malahara* is done and attempt is made to prepare a new formulation with oil, bee wax and purified borax, where coconut oil is used instead of sesame oil owing to its antimicrobial property. [6]

OBJECTIVES:

To do pharmaceutical development of modified *Tankana malahara.*

MATERIALS AND METHODS:

Materials:

The raw drugs required for the study was procured from local market of Udupi and the practical was carried out in Rasa shastra and bhaishajya kalpana practical hall, Sri Dharmasthala Manjunatheshwara College of Ayurveda, Udupi.

Method of preparation:

Step 1:

***Tankana shodhana* (Purification of Borax):**

Method followed: *Bharjana* (Frying)

Reference: *Rasa tarangini*[7]

Ingredients:

Ashuddha Tankana (Unpurified borax) - 100g

Procedure:

- 100 g of *ashuddha tankana* was weighed and powdered finely.
- This was then heated in an earthen vessel with frequent stirring.
- The heating was continued until it is devoid of moisture and hissing sound.
- The obtained *tankana* was weighed and used for further procedure.

Step 2:

***Siktha taila* preparation:**

Ref: The method of preparation of *siktha taila* was followed as per *Rasa tarangini* [8] with modification in the ingredient, where *narikela taila* (coconut oil) is taken instead of *tila taila* (Sesame oil).

Ingredients:

***Narikela taila* (Coconut oil) – 90ml**

***Siktha* (Bee wax)-15g**

Procedure:

- 90 ml of coconut oil was taken in a clean stainless steel vessel.
- It was heated on mild fire until oil becomes hot.
- 15 g of *siktha* was added to it, mixed thoroughly and taken out of fire once the *siktha* melts in coconut oil completely.
- The mixture was immediately filtered through a clean cloth into vessel.
- The solidified filtrate once it gets cooled down is *siktha taila*.

Step 3: *Tankana malahara* preparation

Ref: Based on the references of various *malahara* formulations explained in *Rasa Tarangini,* Modified *tankana malahara* was prepared in 3 different ratios. [3-5] The samples were prepared in batches and were assessed for organoleptic characters.

The ingredients required for preparation of modified *tankana malahara* along with ratio and quantities are enlisted in table 1. Three samples of *tankana malahara* prepared with three different are ratios are denoted as *tankana malahara* 1(TM 1), *tankana malahara* 2 (TM 2) and *tankana malahara* 3 (TM 3).

Ingredients of *Tankana malahara*:

Table no. 1: Ratio and quantity of ingredients of modified *tankana malahara*

Name of the drug	**English name**	***Tankana malahara* test sample**	**Ratio**	**Quantity taken**
Shuddha Tankana	Borax	TM 1	1 part	5g
		TM 2	1 part	7.5g
		TM 3	1 part	15g
Siktha taila	Ointment base prepared with bee wax and coconut oil in the ratio 1:6	TM 1	6 parts	30g
		TM 2	4 parts	30g
		TM 3	2 parts	30g

Method of preparation:

- Prepared *siktha taila* was melted in a clean stainless steel vessel and poured to a porcelain mortar.
- Immediately specified quantity of *Shuddha tankana* in finely powdered form was added little by little. Meanwhile the pestle was rotated in such a way that the powdered *tankana* mixes uniformly with *siktha taila* and was continued until the mixture thickens and attains a homogenous form.
- The obtained product is weighed and noted for organoleptic features.

Fig.1: Shuddha Tankana

Fig. 2: Siktha

Fig.3: Narikela Taila

Fig.4: Heating Narikela Taila

Fig.5: Addition of siktha to hot narikela

Fig.6: Mixture of Siktha and Taila

Fig.7: Filtration of Siktha Taila

Fig.8: Siktha Taila

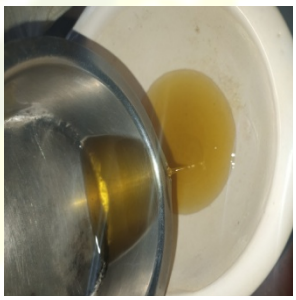

Fig.9: Molten Siktha Taila

Fig.10: Addition of Tankana

Fig.11: Mixing tankana and siktha taila

Fig.12: Homogenous mixture of tankana malahara

Fig.13: Tankana malahara 1

Fig.14: Tankana malahara 2

Fig.15: Tankana malahara 3

OBSERVATIONS AND RESULTS:

Observations:

- Uniform mixing of powdered *tankana* in molten *siktha taila* was observed during as well as after preparation in all three samples of *tankana malahara*.
- The samples were smooth and devoid of solid particles in it.
- All the three samples were greasy and not washable with water alone.
- On application over skin all the three samples produced mild tingling sensation for around 30 seconds.
- All the prepared samples were physically stable, when stored in room temperature for 3 months.

RESULTS:

The prepared samples of modified *Tankana malahara* are checked for quantity of product obtained, percentage loss and organolpetic parameters which are enlisted in table no.2

Table no. 2: Results of pharmaceutical study of modified *tankana malahara* prepared in three different ratios

Parameter	TM1	TM2	TM3
Weight of product obtained	32.4g	35.6g	41.7
Percentage loss	7.4%	6.3%	7.7%
Color	Light creamy yellow	Light creamy yellow	Light creamy yellow
Consistency	Waxy semi solid	Waxy semi solid	Waxy semi solid
Odor	Characteristic odor of coconut oil	Characteristic odor of coconut oil	Characteristic odor of coconut oil
Taste	Not assessed	Not assessed	Not assessed

DISCUSSION:

The basic ideology behind formulating modified *tankana malahara* is to use it as an antifungal drug for external application. Hence the pharmaceutically standardized ointment must be suitable for clinical usage with maximum therapeutic efficacy. Thus the formulation is prepared with an aim to fulfill following criteria [9]:

- Physical and chemical stability when stored under normal conditions.
- Pleasant appearance and odor.
- Non toxic and nonirritating.

- Easy for application.
- Non greasy, but remains in the applied site for longer time. As the oil and bee wax are ingredients in the formulation, it's difficult to obtain completely non greasy consistency, but it should not be to the extent that it causes inconvenience for users.
- Presence of main ingredient *tankana* in maximum possible quantity.

Discussion on Ratio of the ingredients:

Various *malahara* formulas quoted in *Rasa tarangini* are having different ratio of *siktha taila* and other drugs in them. Among them, Tankanamrita malahara[3] has 1:2:12 ratio of other drugs, *tankana* and *siktha taila* respectively; *Tankanamla malahara*[4] has 1:9 ratio of *tankanamla* (boric acid) and *siktha taila* respectively; *Gandhakadya malahara*[5] has 7:1:36 ratio of other drugs, *tankana* and *siktha taila* respectively.

Based on these references 1:6, 1:4 and 1:2 ratio of *tankana* and *siktha taila* were taken for the present study in TM 1, TM 2 and TM 3 respectively.

Discussion on observation and results:

- The smoothness and homogenous mixture of *malahara* owe to the uniformity of contents in them.
- The greasiness in the *ayurvedic malahara* is unavoidable due to its nature and is also responsible in imparting the therapeutic property. Apart from this, greasiness also makes the drug adhered to the skin for longer time.
- The mild tingling sensation produced on application is due to the presence of *tankana*- an alkaline drug in it.
- The stability checked in the present study is just an observation and need to be confirmed with laboratory stability tests.
- The quantities of product obtained are almost proportionate to the raw drugs taken with 6-8 percent of loss due to adherence to the vessels used and can be considered negligible. Color and odor of all the three samples are similar and are related the ingredients added. Consistency of TM 1, TM 2 and TM 3 was expected to vary to due to the ratio

of ingredient, but are similar in all the three samples.

CONCLUSION:

The prepared modified *tankana malahara* yielded almost identical products in three different ratios. Their characters by organoleptic parameters and general appearance remain the same. These parameters further need to be ascertained by quality control analysis of ointments and decided for the suitable ratio.

But, the key ingredient in the formulation *tankana* was incorporated in larger quantity in TM 3. Hence it can be concluded that modified *tankana malahara* prepared with 1:2 ratio of *tankana* and *siktha taila* would be beneficial for therapeutic purpose which has to be confirmed by further analytical and clinical study.

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Conflict of interest :- Nil

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