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Pharmaceutical Modification of *Durvadi Kera Taila* to *Durvadi* Ointment and its Physico-Chemical Evaluation

Anjana Haridas[1], Vineeth PK[2] and Arun Mohanan[3]*

[1-3]Department of Rasashastra and Bhaishajya Kalpana, Amrita School of Ayurveda, Amrita VishwaVidyapeetham, Amritapuri, Kerala, India

Durvadi kera taila is an Ayurvedic medicated oil described in *Sahasrayoga*, *taila prakarana* which is indicated in *Vrana roga*. When a topical application in the form of *taila* is carried around and applied, it gets difficult to apply and there are chances of spilling which makes it uncomfortable. So it will be beneficial if it can be converted to one suitable form of ointment, which will be patient friendly and easily transportable. The *taila* was initially prepared classically and it was further modified into the form of ointment. The *Durvadi kera taila* was modified into *Durvadi* ointment by adding bee's wax and petroleum jelly as bases. And the physico chemical parameters of the *taila* were compared with those of ointment. Both *Durvadi* ointment and *Durvadi kera taila* had almost similar results, which showed that there is no change in physicochemical profile when a taila is modified into ointment form. So, *Durvadi* ointment can be more advantageous when compared to *Durvadi kera taila*.

KEYWORDS

Durvadi Kera Taila, Modified Dosage Forms, Taila Kalpana, Vrana Roga Chikitsa, Ayurvedic Ointment

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INTRODUCTION

Externally applied applications are very important dosage forms in the field of pharmaceutics when a wound is considered. But, the daily routines of a man make it difficult for him to utilize his medicine properly. Topical applications are advantageous in cases of chronic conditions where patient can easily carry and use it frequently. Ayurveda, has described a lot of external applications for different disease conditions. But, when a topical application in the form of *taila* is carried around and applied, it is difficult to manage and there are chances of spilling which makes it uncomfortable. So it will be beneficial if it can be converted in to a suitable form of ointment where it will be patient friendly and ready to carry. Considering this, an attempt was made to modified *Durvadi kera taila*[1](a taila indicated in *Vrana)*to *Durvadi* ointment and evaluate its physicochemical parameters and compare the both.

Vrana(wound) is one of the most commonly faced problem ever since life was started on earth and *vranaropana*(wound healing) is a constant challenge faced by physicians. In such situations it is very needful to develop ideal wound healing agents.

Durvadi kera taila is an oil mentioned in *Sahasrayoga* indicated for *vrana*, which is made out of the drug *Durva*, Cynadon dactylon (L.), which has been proven for its haemostatic action[2], and wound healing activity[3]. *Durvadi kera taila* has also been proven as an effective wound healer. The ingredients of *Durvadi kera taila* are *Durva swarasa* and *Durva kalka*.

AIMS AND OBJECTIVES

1.Pharmaceutical preparation of *Durvadi kera taila*

2.Pharmaceutical modification of *Durvadi kera taila* into ointment.

3.To do the comparison of physicochemical characters of *Durvadi kera taila* and *Durvadi kera taila* turned ointment.

Table 1 Ingredients and Proportion for Preparation of Durvadi KeraTaila

Sl no.	Ingredients	Proportion	Quantity
1.	*Durvadi Patra Kalka*	1 part	100 g
2.	*Kera Taila*	4 part	400 ml
3.	*Durva Swarasa*	16 part	1.6 litre

Table 2 Ingredients and Proportion of *Durvadi* Ointment

Sl no.	Ingredients	Proportion	Quantity
1.	*Durvadi Kera Taila*	1 part	200 ml
2.	Bee's Wax	1/6 part	32.5g
3.	Petroleum Jelly	1/10 part	18.25g

MATERIALS AND METHODS

1.Procurement of raw drugs.

2.Preparation of *Durva kalka* and *Durva swarasa*

3.Preparation of *Durvadi kera taila* by *Snehapaka vidhi*

4.Preparation of *Durvadi* ointment by adding bee wax and petroleum jelly.

5.Physicochemical evaluation of *Durvadi* ointment and *Durvadi kera taila*

1.Procurement of Raw drugs.

Fresh sample of *Durva* was collected from the herbal garden of Amrita School of Ayurveda. *Kera taila* was purchased from the local market and Bee's wax and petroleum jelly were collected from authenticated sources.

2.Preparation of *Durva Kalka* and *Durva swarasa*

Freshly collected *Durva* was washed thoroughly and a part of it was ground well in a stone mortar till it turned to a fine paste form, and then it was weighed to 100 g and this *Durva kalka* was kept aside. Then the remaining *Durva* was pounded and squeezed through a thin cloth. The same was continued till 1.6 litre of juice was obtained. The juice thus obtained was used as *Durva swarasa*.

3.Preparation of *Durvadi kera taila* by *Snehapaka Vidhi*

Durvadi kera taila was prepared by following the general rule of *tailapaka vidhi*, using *kalka*, and *swarasa* and *kera taila* as the given ratio in classics. The observations found during the *taila paka* were noted and was proceeded with precaution.

Procedure

- 400 ml of *Kera taila* was taken in a vessel and was heated till *phena shanti*.
- To this 100 g of *Durva kalka* was added and mixed well.
- Thereafter, 1.6 litres of *Durva swarasa* was added to this mixture and low flame heat was provided.
- On attaining all the *taila sidha lakshanas*, the *taila* was taken away from fire and was filtered in a double layered cloth.
- Then it was stored in airtight container after completely cooling.
- Care was taken during the *taila paka* to avoid sticking by continuous stirring and gentle heat.

4.Preparation of *Durvadi* ointment

- 200 ml from the prepared *Durvadi kera taila* was taken to prepare *Durvadi* ointment
- *Durvadi kera taila* was taken in a 500 ml beaker and heated using water bath.
- In another beaker the bee's wax and petroleum jelly was taken and heated in water bath to melt.
- When both *taila* and bases got into equal temperature the mixture of bases was added to the *Durvadi kera taila* and was mixed well.

• After properly mixing, it was thoroughly stirred until the mixture became homogeneous.

• After cooling, this *Durvadi* ointment was stored in air tight containers.

Figure 1 The prepared *Durvadi Kera Taila*

Figure 2 Beaker 1 - Prepared *Durvadi Kera Taila*
Beaker 2 - Bee Wax and Petroleum Jelly

Figure 3Prepared *Durvadi Malahara*

5.Physicochemical evaluation of *Durvadi kera taila* and *Durvadi* ointment

The following physicochemical parameters were subjected for evaluation:

a. Organoleptic Characters – State, Colour and Odour

b. Loss on Drying

c. Acid Value

d. Saponification Value

e. Iodine Value

f. Peroxide Value

g. Thin Layer Chromatography (TLC)

RESULTS

The formulated *Durvadi* ointment, was homogenously mixed, without any lumps or bubbles. It had no irritating or pungent smell, and was easily spreadable.

Table 3 Physicochemical Parameters of *Durvadi kera taila*

Sl no	Parameters		*Durvadi kera taila*
1.	Organoleptic Characters	1..State	Liquid
		2.Colour	Greenish
		3.Odour	Oily
2.	Loss on Drying		0.68%
3.	Acid Value		2.99mg/g
4.	Saponification Value		235.40mg/g
5.	Iodine Value		10.12
6.	Peroxide Value		0.1285mEq/kg

Table 4 Physicochemical Parameters of *Durvadi* Ointment

Sl no	Parameters		*Durvadi* Ointment
1.	Organoleptic Characters	1.State	Soft, waxy solid
		2.Colour	Yellowish green
		3.Odour	Characteristic of *Durvadi keram*
2.	Loss on Drying		0.56%
3.	Acid Value		2.82mg/g
4.	Saponification Value		200.44mg/g
5.	Iodine Value		7.79
6.	Peroxide Value		0.09345mEq/kg

Thin Layer Chromatography(TLC) of *Durvadi* Ointment

The thin layer chromatography of *Durvadi* ointment and *Durvadi kera taila* was

checked by using *Durva* leaves extract as standard. *Durva* extract was prepared by using alcohol extraction method using propanol. Both *Durvadi* ointment and *Durvadi kera taila* 5ml each were taken in test tubes and was diluted with 1ml alcohol and 3 spots each of *Durva* leaves extract, *Durvadi* ointment and *Durvadi kera taila* was spotted on a TLC plate. Toluene : ethyl acetate in the ratio 9:1 was used as mobile phase as per monogram of *Durva* in Ayurvedic Pharmacopoeia of India. After drying, the TLC plate was observed under UV long wave and it was then further derivetized with 5% methanolic sulfuric acid reagent. Three spots were observed in all the spotted samples at R_f values 0.27, 0.36 and 0.60 (Figure 4 & 5), which proved that all the active principles present in *Durva* were present in *Durvadi kera taila* and after modifying it into ointment, they were present in *Durvadi* ointment too.

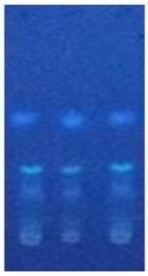

Figure 4TLC plate under UV long
Spot no.1- *Durva* alcohol extract
Spot no.2- *Durvadi Malahara*
Spot no.3-*Durvadi kera taila*

Figure 5TLC plate post Derivetization
Spot no.1- *Durva* alcohol extract
Spot no.2- *Durvadi Malahara*
Spot no.3- *Durvadi kera taila*

DISCUSSION

One of the principal aims of a topical formulation is to maximize delivery, either by occluding the skin membrane (thus changing the membrane's properties by increasing hydration) otherwise enhancing the drug penetration by releasing vehicle components. Then, the main function of the membrane as a barrier itself can be changed by a formulation. Current models of transdermal drug delivery through topical applications enable constant drug diffusion in the membrane during the transport[4]. Generally, topical applications are administered where a local action is needed, or where a delayed or controlled action is expected. Concentration of drug, time of contact of the drug with the skin, solubility of the drug andabsorption of the drug are the important factors that affect the efficacy of a topical application[5]. When a *taila* is

applied over the skin, it has lesser adherence to the skin when compared to ointment. In ointment, the bee wax and petroleum jelly which are used as the base, provide a better adherence of the medicament to the skin, thus enabling longer duration of drug-skin contact. Increased contact time facilitates enhanced drug absorption and prolonged drug delivery thus providing better therapeutic efficacy.Because of the lipoid nature of bio membranes, lipid based drugs are assumed to have better pharmacokinetic action in comparison to other dosage forms. So, in such an arrangement, the aqueous soluble and lipid soluble active principles can get readily permeated to the skin membrane[6].When comparing the physico-chemical characteristics, both *Durvadi* ointment and *Durvadi kera taila* had almost similar results, which show that there is no much alteration is happening when a taila is modified into ointment form.

Here, *Durvadi kera taila*, which is indicated in *vrana* has been modified into *Durvadi* ointment, which could be patient friendly, easily portable, easily prepared and more than anything cost effective.

So, *Durvadi* ointment can be more significant when compared to *Durvadi kera taila*.

CONCLUSION

The aim of the present study was mainly focused upon finding a dosage form for *vrana*, which is a chronic condition where continuous medication is needed. External applications which are said to be effective in *vrana* are mostly *tailas* and *ghrithas* and they are difficult to carry around in our daily life and difficult to apply also. So, modifying *Durvadi kera taila* in to *Durvadi* ointment, was a quick, cost effective and therapeutically effective option for *vrana*.

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