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AN ANALYTICAL STUDY OF *KANADI TAILA* AND ITS MODIFIED OINTMENT

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ABSTRACT

Taila Kalpana is one of the important dosage form mentioned in *Ayurveda* that has been emphasized in various conditions both for its internal and external utility. *Kanadi Taila* mentioned in *Ayurveda Sara Prameha chikitsa adhaya* for the management of *Vrana*. All the ingredients in *Kanadi Taila* possess wound healing properties. *Malahara Kalpana* is appreciated well for easy application and maximum retention in the site. Hence *Kanadi Taila* was prepared as per the classical method and modified into ointment by using modern principle with petroleum jelly as base material. Both the samples were evaluated organoleptic and physico-chemical characteristics. Analytical results of this study can be used as preliminary standard for the same.

INTRODUCTION

In ancient era Ayurvedic medicines were prepared by the physician himself for the use of his patient. The increased need for medicines has prompted a kind of uniformity in the preparation of Ayurvedic medicines. Today due to globalization of *Ayurveda*, medicine standards need to be fixed by all the possible means to find effective and safe medicine. The word 'analyze' means to examine in detail, since these medicines are made with complex compounds that cannot be wrong or divert from prescribed ingredients, it is very important that these medicines go through thorough checking and testing. These tests give an idea about the chemical compounds, raw material, as well as the proportion used. Analytical study gives with elaborate report of measurement and range of chemical substances, pharmacokinetics of

the drugs. *Kanadi Taila*[1] is a formulation explained in the context of *Prameha chikitsa* in the text *Ayurveda Sara Tratiya bhaga* for the management of *Prameha Pidika*, *Vrana* etc. *Malahara* (Ointment) *Kalpana*[2] is a kind of dosage form, which eliminates the impurities from the site and it is well appreciated for its easy application and maximum retention in required site. In modern world creams and ointments play very important role in external route of administration of drugs. *Kanadi Taila* is hopeful medicine for its wound healing property, but *Sneha Kalpana*[3] has some demerits like unctuous and difficulty in handling. So there is need to modify the preparation to patient friendly form. *Kanadi Taila* is modified into topical ointment form. For preparing the ointment white petroleum jelly[4] had been selected as the base substance. This article focuses on the analytical study of *Kanadi Taila* and its modified ointment.

MATERIALS AND METHODS

Pharmaceutical study of *Kanadi Taila* and its ointment was done in laboratory of *Rasashastra* and *Bhaishajya Kalpana*, Alvas Ayurveda Medical College Moodubidri, Karnataka.

Ingredients of *Kanadi Taila*

Table No.1: Ingredients for the formulation *Kanadi Taila.*

Drugs	Botanical name	Family	Part Used	Quantity
Kana(*Pippali*)	*Pipper longum* Linn	Piperaceae	Fruits	1 part
Madhuka	*Glycyrrhiza glabra* Linn	Fabaceae	Roots	1 part
Kushta	*Saussuria lappa* C.B.Clarke	Asteraceae	Roots	1 part
Ela	*Elettaria cardamomum* Maton	Scitaminae	Seeds	1 part
Renuka	*Vitex negundo* Linn	Verbinaceae	Seeds	1 part
Haridra	*Curcuma longa* Linn	Zingeberceae	Rhizome	1 part
Daruharidra	*Berberis aristata* Dc.	Berberidaceae	Stem	1 part
Samanga	*Mimosa pudica* Linn.	Mimosaceae	Roots	1 part
Sariva	*Hemedismus indicus* R.Br.	Asclepidaceae	Roots	1 part
Lodhra	*Symplocos recemosa* Roxb	Styraceae	Stem	1 part
Dhataki	*Woodfordia fruticosa* (L.)Kurz	Lytharaceae	Flower	1 part
Tila Taila	*Sesamum indicum L.*	Pedaliaceae	Seed	4 parts

Ingredients of *Kanadi Taila* ointment

Table No.2: Ingredients for the formulation *Kanadi Taila* ointment.

Sl.no	Ingredients	Quantity
1	*Kanadi Taila*	300ml
2	White Petroleum jelly	50g

Analytical study

Analytical study was carried out as per guidelines of Ayurvedic Pharmacopeia of India. During analytical study of *Kanadi Taila* and *Kanadi Taila* ointment following parameters was considered.

Organoleptic evaluation for *Kanadi Taila* and *Kanadi Taila* ointment

1. *Sparsha* (Consistency)
2. *Rupa* (Appearance)
3. *Gandha* (Odor)

The Physical and external features can be known by these methods. It provides basic idea about the identification and quality of the formulation without any chemical test.

Physico-chemical evaluation: It includes following parameters

Kanadi Taila

- Rancidity[5]
- Viscosity[6]
- pH[7]
- Specific gravity[8]
- Iodine value[9]
- Saponification value[10]
- Acid value[11]
- Peroxide value[12]
- HPTLC[13]
- Microbial contamination[14]

***Kanadi Taila* ointment**

- Uniformity of content[15]
- pH
- Thermal Stability[16]
- Total fatty matter[17]
- Loss on drying at 105^{o}C[18]
- Spread ability[19]
- Microbial contamination

Certain parameters are required to develop standards for the reproducibility of *Kanadi Taila* and *Kanadi Taila* ointment of the same quality thereby ensuring uniform efficacy. The samples were analyzed for various physico-chemical parameters.

OBSERVATIONS AND RESULTS

Organoleptic characteristics of *Kanadi Taila* and *Kanadi Taila* ointment

Table No. 3: Organoleptic characters of the formulations.

Parameters	*Kanadi Taila*	*Kanadi Taila* ointment
Color	Yellow color	Yellow color
Odor	Characteristic	Characteristic
Consistency	Smooth, Unctuous	Soft, Smooth ointment
Texture	Smooth, Greasy	Smooth, Greasy

Results for physic-chemical characteristics of *Kanadi Taila*

Table No.4: Analytical study results of *Kanadi Taila.*

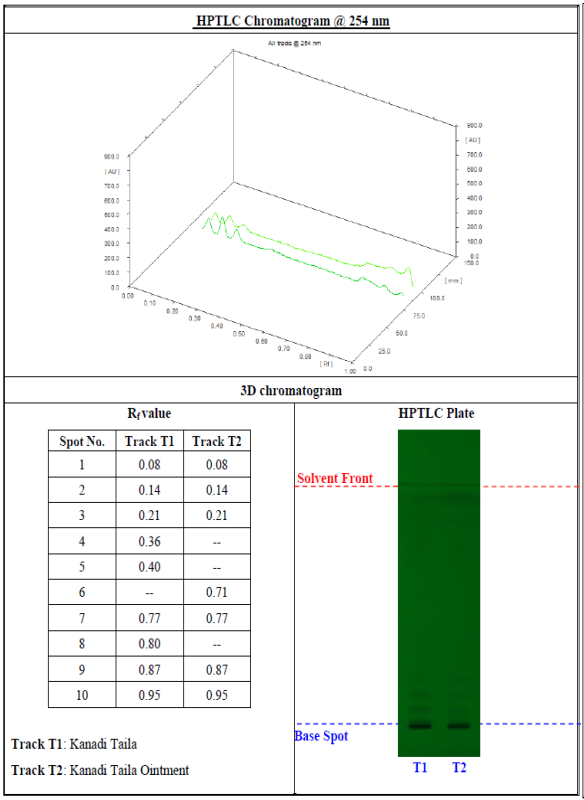
Parameters	Results
Specific Gravity	0.9241
Viscosity	24.11 Cp
Acid value	7.09
Peroxide value	19.92
Saponification value	169.73
Iodine value	89.41
pH	7.6
Rancidity	Rancid
Microbial contamination	3.7 CFU

Results for physic-chemical characteristics of *Kanadi Taila*

Table No. 5: Analytical study results of *Kanadi Taila* ointment.

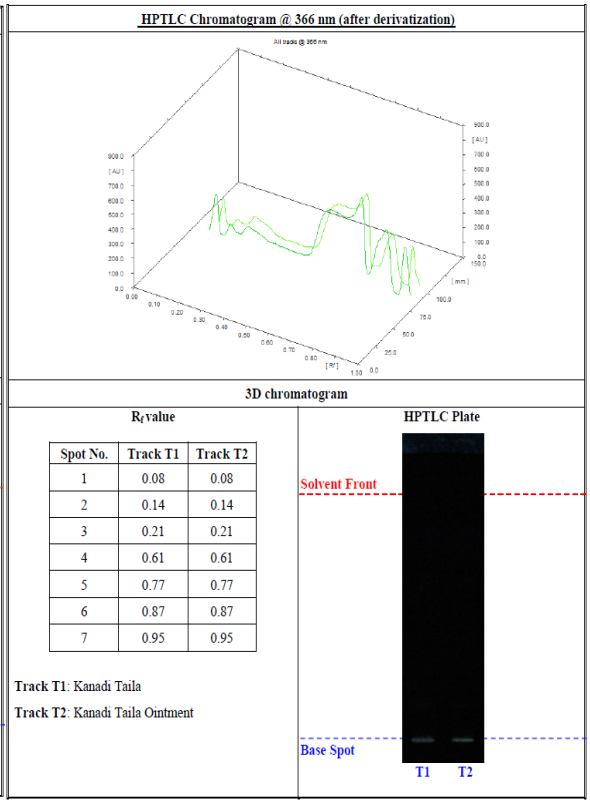
Study	Value
Uniformity of content	Uniform
pH	15.09
Thermal stability	No Phase separation
Total fatty matter	94.99
Loss on drying at 105^{o}C	3.49
Spread ability	Firmness- 219.25 g Work of Shear- 204.25 g.sec
Microbial contamination	12.5 CFU

PHOTOGRAPHS



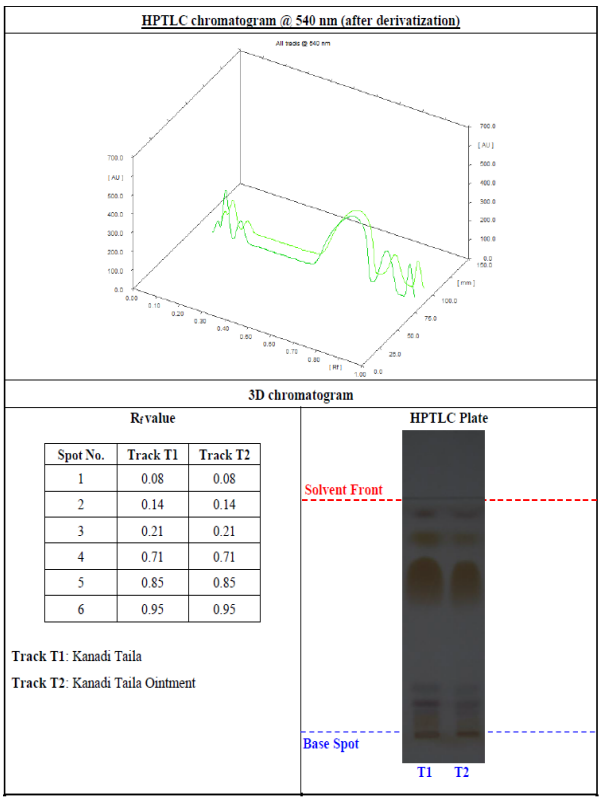
Spot No.	Track T1	Track T2
1	0.08	0.08
2	0.14	0.14
3	0.21	0.21
4	0.36	--
5	0.40	--
6	--	0.71
7	0.77	0.77
8	0.80	--
9	0.87	0.87
10	0.95	0.95

Fig. 1: Scan of HPTLC chromatogram @ 254 nm



Spot No.	Track T1	Track T2
1	0.08	0.08
2	0.14	0.14
3	0.21	0.21
4	0.61	0.61
5	0.77	0.77
6	0.87	0.87
7	0.95	0.95

Fig. 2: Scan of HPTLC Chromatogram @ 366 nm



Spot No.	Track T1	Track T2
1	0.08	0.08
2	0.14	0.14
3	0.21	0.21
4	0.71	0.71
5	0.85	0.85
6	0.95	0.95

Fig. 3: Scan of HPTLC Chromatogram @540 nm.

DISCUSSION

The quality of the medicine is very important in health system. Medicinal property of the herbal formulation depends on phytochemical constituent present in it. Developing of authentic analytical methods that reliably profile the phytochemical composition, including quantitative analyze of bioactive compounds and other key components, is a major challenge to scientists. The *Ayurvedic* formulations are prepared with single or multiple ingredients. Also some formulations contain minerals and animal extracts. Hence, in order to assure constituents and quality of the product, care should be taken right from the identification of the drugs to the verification process of the final product.

In this study, the formulation *Kanadi Taila* and its modification *Kanadi Taila* ointment were analyzed for organoleptic and physico-chemical evaluation. The organoleptic characters *Sparsha*, *Roopa* and *Gandha* were evaluated using sense organs.

- The color of *Kanadi Taila* and its ointment was found to be yellow. The usage of *Haridra* as one of the ingredient in this preparation may be the reason for this color.
- The formulations *Kanadi Taila* and its ointment had characteristic smell of the ingredients. There was no predominant smell of any ingredients.
- Consistency of the formulation *Kanadi Taila* was smooth and unctuous. Consistency of ointment was found to be soft and smooth.
- The textures of both formulations were found to be smooth and greasy. It may be due to the base used for both formulations.
- The specific gravity of *Kanadi Taila* found to be 0.9241. The specific gravity indicates the presence of solute content in the solvent. Here the solvent is oil and solute refers to extraction of active principles from the oil, which was found to be in normal limit.
- Viscosity of *Kanadi Taila* was found to be 24.11 Cp. Viscosity is an index of a liquid to flow. The higher the viscosity, lower the rate of absorption. Here *Kanadi Taila* shows less viscosity which indicates oil is better absorbed into the skin.
- The acid value of *Kanadi Taila* was found to be 7.09; the higher value in the *Taila* may be due to increased free fatty acid content.
- Peroxide value of the *Kanadi Taila* was found to be 19.92. The slight higher value in the *Taila* may be due to primary oxidation of the oil.
- Saponification value of *Kanadi Taila* was found to be 169.73. The saponification value indicates the average molecular weight/chain length of all fatty acid present. The long chain fatty acids found in fats have a low saponification value because they have a

relatively fewer number of carboxylic functional groups per unit mass of the fat as compared to short chain fatty acids. Saponification value of *Taila* lies between 188 to195. Hence the saponification value of *Kanadi Taila* found to be in normal limits.

- The iodine value of the *Kanadi Taila* was found to be 89.41. The iodine value indicates the degree of unsaturation. Iodine value of the *Taila* where *Tila Taila* was used as base lies between 104 to120. Here lower value may be due to the lesser degree of unstauration which indicates there is no atmospheric oxidation in *Taila*.
- Both *Kanadi Taila* and *Kanadi Taila* ointment showed alkaline pH. pH of *Kanadi Taila* was found to be 7.96 and pH of *Kanandi Taila* ointment was found to be 15.09. It is observed that pH between 6.2 to 6.8 is ideal for the body. pH *of Kanadi Taila* ointment is slightly high which may be due to the petroleum jelly used as base.
- Rancidity showed in *Kanadi Taila* may be due to moisture content present in the *Taila.*
- There is uniform distribution of content in ointment; this indicates ingredients are mixed homogeneously.
- There is no phase separation found in thermal stability test in *Kanadi Taila* ointment.
- Total fat matter was 94.99 in *Kanadi Taila* ointment. The higher value in the ointment may be due to *Kanadi Taila* used as an ingredient and also may be due to the ointment base.
- The loss on drying for *Kanadi Taila* ointment was 3.49 which is normal limit.
- Spreadability of the drug *Kanadi Taila* ointment was found to be 219.25. It shows that ointment will spread easily without too much drag and friction in rubbing process.
- Microbial contamination of the samples were assessed and *Kanadi Taila* showed value 3.7 CFU and ointment showed 12.5 CFU. The less value in *Kanadi Taila* may be due to the less chance of microbial growth in *Taila* medium due to lack of oxygen and the more value in ointment may be due to petroleum jelly used as base.
- On analyzing the HPTLC results, under TLC plate documentation of methanol extract of *Kanadi Taila* and *Kanadi Taila* ointment under 254 nm, nine spots were seen in *Kanadi Taila* and seven spots were identified in *Kanadi Taila* ointment. At 366 nm, seven spots have been observed in both *Kanadi Taila* and its ointment. At 540 nm both *Kanadi Taila* and *Kanadi Taila* ointment showed 6 spots. From this it can be assessed that more active principles are present in *Kanadi Taila* when compared to *Kanadi Taila* ointment.

CONCLUSION

Taila Kalpana is one of the important and prime dosage forms that have been emphasized in various conditions both for its internal and external utility. *Kanadi Taila* is one among the formulation mentioned in *Ayurveda* Sara *Trateeya bhaga Prameha chiktsa adhyaya* for the management of *Vrana*. The present study, *Kanadi Taila* has been prepared by classical method of *Sneha* preparation and modified to a topical ointment form. The ointment was prepared using white petroleum jelly as the base substance and the method adopted was infusion method. Analytical evaluation of both the formulations was found to be satisfactory. HPTLC profile showed that more active principles are present in *Kanadi Taila* when compared to *Kanadi Taila* ointment by which significant therapeutic efficacy can be assumed.

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