

## ANALYTICAL STUDY OF VRANASHODHANA TAILA: A WOUND HEALING MEDICATED OIL

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Received on: 06/08/11 Revised on: 01/09/11 Accepted on: 26/09/11

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## ABSTRACT

Herbal oil named Vrana Sodhana Taila mentioned in the Ayurvedic pharmacopoeia of Andhra Pradesh (A.P) was supplied to all the Government Ayurvedic Dispensaries and Government Ayurvedic hospitals in A.P. This medicated oil showing enhanced Vrana ropana (wound healing) property and requires proper scientific validation. Physico-chemical analysis of Vrana Sodhana Taila, like loss on drying, specific gravity, iodine value, saponification value, acid value and total fat were determined. High Performance Thin Layer Chromatography (HPTLC) finger print of the Vrana Sodhana Taila has been performed. Sample plate scanned under UV Wavelength of 254nm showed six peaks of Rf values ranging 0.25 to 0.80. The data obtained from physico-chemical tests and Rf values of HPTLC may be used as pharmacopoeial standards for Vrana Sodhana Taila.

**KEY WORDS:** Vrana (Wound), Vrana Ropana (Wound healing), Vrana Sodhana Taila, Standardization.

## INTRODUCTION

Effective management of wound and uneventful healing (without hypertrophication and keloid formation) are the important tasks in the field of surgery. Acharya Sushruta, a pioneer Indian surgeon described Vrana (wounds) of different origin and Sashti upakrama (60 procedures) for their management. Among them Taila (medicated oil) is one of the medicaments prescribed by him<sup>1</sup>.

Vrana Sodhana Taila mentioned in the Pharmacopoeia in Ayurveda part-1 of Andhra Pradesh<sup>2</sup> is supplied to all the government Ayurvedic dispensaries and government Ayurvedic Hospitals in A.P. This oil is showing clinically enhanced wound healing property which requires analytical study for standardization.

According to the Ayurvedic Formulary of India<sup>3</sup> (AFI) medicated oils have principally three components namely, drava or kwadha (a liquid or aqueous decoction of one or more herbs), or juice of herbs or milk, kalka (a fine paste of the herbs) and sneha dravya (a vegetable oil).

Throughout the world several researchers has reported<sup>4-6</sup> the wound cleansing, wound healing, anti-bacterial and anti-fungal activities of all the drugs present in this Taila, which are incorporated in a single combination to impart optimum levels of efficacy.

Clinical trials on Vrana Sodhana Taila for the management of wound has been conducted and already reported<sup>7</sup>. In the present study Vrana Sodhana Taila subjected to physico-chemical parameters and HPTLC fingerprinting for standardization.

## MATERIALS AND METHODS

Vrana Sodhana Taila having five ingredients Nimba (*Azadirachta indica*), Haridra (*Curcuma longa*), Trivrit (*Operculina turpethum*), Tila kalka and taila (*Sesamum indicum*) were identified and authenticated by Dravyaguna Department, Dr. N.R.S. Government Ayurvedic College, Vijayawada, A.P. The drugs were checked for their quality and used for the preparation. Raw drugs were washed and grinded, weighed as per the formulation shown in Table 1.

## Preparation of oil

The ingredients<sup>8-9</sup>, were taken as per the formula and boiled in 52.800 L of water and reduced to 17.600 L of decoction and added Tila kalka and taila. Oil was prepared by sneha paaka method described in the text<sup>10</sup>.

The oil prepared was analysed to find out loss on drying, specific gravity, iodine value, saponification value, acid value, total fat and HPTLC fingerprinting.

## Analytical Methods

For Standardisation<sup>11-13</sup> of Vrana Sodhana Taila below methods<sup>14</sup> were followed.

- I Organo-leptic characters
- II Pharmacognostic method
- III Phyto-chemical method
- Observations and results

## I Organoleptic characters

These refer to macroscopic identification of the formulation.

- Colour: Dark brown
- Odour: pungent
- Touch: oily

## II Pharmacognostic method

Pharmacognosy is an applied science which deals with botanical, physicochemical and economical features of the crude drugs. Physico-chemical parameters for Oils were determined as per W.H.O. guidelines<sup>15</sup>. They are shown in Table 2 and analysed below.

- Loss on drying at 110<sup>o</sup>c is 0.13%
- Determination of weight per millilitre- The weight per ml of a liquid is the weight in gram of 1 ml of a liquid when weighed in air at 25<sup>o</sup>c. The weight per millilitre of the Vrana Sodhana Taila is 0.92 g/ml.
- Determination of saponification value- Saponification value is the number of mg of Potassium hydroxide required neutralizing the fatty acids. The saponification value of Vrana Sodhana Taila is 148.22.
- Determination of iodine value- Iodine mono-chloride method is that the approximate weight (in g) of the oil to be taken is calculated by dividing 20 by the highest expected iodine value. The iodine value of Vrana Sodhana Taila is 99.23
- Acid value- Acid value is the number of mg of potassium hydroxide required to neutralize the free acids in 1g of the substance. The Acid value of the Vrana Sodhana Taila is 4.53
- Total fat- 2g of oil was taken in a thimble made of coarse filter paper. This sample was extracted with 25 ml anhydrous alcohol in a soxhlet extraction apparatus. The solvent was evaporated and the extract was dried to a constant weight at 110<sup>o</sup>c. Finally the fat content percentage was calculated. Alcohol soluble extractive principle in oil is 95.76%

## III Phyto chemical method

- HPTLC Identification of Vrana Sodhana Taila

Sample preparation- 1g of extract sample was refluxed with 10ml methanol and spotted using Linomativ (Camaq Switzerland).

Stationary phase (Application)- The prepared sample was applied over the silica gel 60 F<sub>254</sub> pre-coated aluminium foil plate with layer thickness 0.2mm (1.05554.0007, MERCK, Germany).

Mobile phase (Development) - The sample was developed with the help of mobile phase – Benzene: IPA: (90:10).

Visualisation (Scanning) - For visualisation, plate was dried at 100<sup>o</sup>c and scanned at 254nm UV with scanning speed of 20mm/sec.

The sample plate scanned under UV wavelength showed six Rf values of 0.25, 0.35, 0.5, 0.58, 0.7 and 0.80.

**DISCUSSION**

Vrana Sodhana Taila was subjected to physico- chemical analysis and HPTLC finger printing for further studies and utility.

The physicochemical parameters are very close to general oil preparations as per AFI (Ayurvedic Formulary of India). Iodine value and Saponification value indicate the addition of crude drugs as the value is in comparison to Tila taila. Lowering of the value indicate the presence of crude drugs. Acid value is similar to the Tila taila indicates no alteration in free fatty acid composition after adding crude drugs.

The developed HPTLC finger prints of the Vrana Sodhana Taila are useful for verification and comparison in future studies. The obtained parameters can be considered as pharmacopoeial standards to determine the efficacy of Vrana Sodhana Taila for wound management.

**ACKNOWLEDGEMENT**

The authors are grateful to sri G. Ganga raju, Chairman Laila group and Mr. G. Rama Raju Managing Director, Chemiloides, Vijayawada, A.P. for their help in the study.

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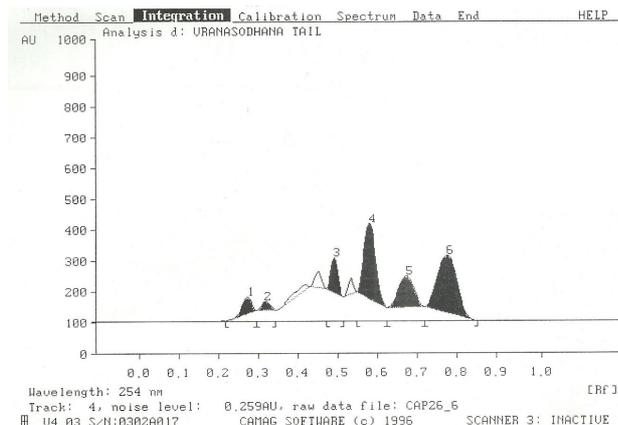
Vrana Sodhana Taila

**Table-1**

S no.	Sanskrit name	Botanical name, Family	Part used/Form	Quantity
I	Nimba	<i>Azadirachta indica</i> A.Juss. Meliaceae	Leaves- swarasa	2 Kg
II	Haridra	<i>Curcuma longa</i> Linn.Zinziberaceae	Tuber- churna	1.6 Kg
III	Trivrit	<i>Operculina turpethum</i> Linn. Menispermaceae	Leaves- kalka	1.6 Kg
IV	Tila kalka	<i>Sesamum indicum</i> Linn. Pedaliaceae	Seed- kalka	1 Kg
V	Tila taila	<i>Sesamum indicum</i> Linn.Pedaliaceae	Seed-oil	6 L

**Table.2**

S no.	Analysis	Report
I	Loss on drying	0.13%
II	Specific gravity	0.92
III	Iodine value	99.23
IV	Saponification value	148.22
V	Acid value	4.53
VI	Total fat	95.76%



Peak #	Rf	H	max	end	area
1	0.22	0.0	0.27 51.8 7.28	0.30 0.0	638.0 5.08
2	0.30	0.0	0.32 26.7 3.75	0.34 0.0	292.9 2.33
3	0.47	0.0	0.49 110.7 15.55	0.51 0.0	1002.3 7.97
4	0.55	0.0	0.58 239.8 33.69	0.62 0.0	3769.3 29.98
5	0.62	0.0	0.67 99.4 13.97	0.72 0.0	2068.1 16.45
6	0.72	0.0	0.77 183.3 25.76	0.85 0.0	4800.6 38.19
Total height = 711.7				total area = 12571.2	

**HPTLC Finger prints of Vrana Sodhana Taila (UV 366nm)**

Source of support: Nil, Conflict of interest: None Declared