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## Analytical Study of *Ark Taila* in *Vicharchika*

Suman Purohit<sup>1\*</sup>, Ekta Naithani<sup>2</sup>, Shweta Shukla<sup>3</sup> and Khemchand Sharma<sup>4</sup>

<sup>1,4</sup>RS&BK Dept, Uttarakhand Ayurved University, Rishikul Campus, Haridwar, Uttarakhand, India

<sup>2</sup>DravyaGuna Dept, Uttarakhand Ayurved University, Rishikul Campus, Haridwar, Uttarakhand, India

<sup>3</sup>Kayachikitsa, Uttarakhand Ayurved University, Rishikul Campus, Haridwar, Uttarakhand, India

### ABSTRACT

*Vicharchika*, one of the *Kshudrakustha* closely resembles with eczema due to similarities in sign and symptoms. Modern dermatologists use topical therapy such as topical corticosteroid, systemic steroids, and antihistaminics etc. to give symptomatic relief. Use of steroid suppresses the symptoms of eczema temporarily but leads to severe long-term toxicity. In Ayurvedic texts, various medicaments are described as a successful and safer remedy for *Vicharchika*. Acharya Sharangdhar had depicted one such formulation "*Ark Taila*" for treating *Vicharchika*. Here, a study has been done for the method of preparation of *Ark Taila* and standardize it through analytical parameters such as iodine value, acid value saponification value etc.

### KEYWORDS

*Vicharchika*, *Kshudrakustha*, *Eczema*



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## INTRODUCTION

*Snehakalpana* is a fundamental part of *Ayurvedic* formulations. *Snehakalpana* i.e. *Ghrita & Taila Kalpanais* described in *Ayurvedic* classics. According to *AacharyaSushruta*], *Sneha* is an indispensable constituent of living body<sup>1</sup>. He has described various form of *Sneha* with their different routes of administration. *Sneha Siddha* drugs have better pharmacokinetics action in contrast to other dosage form because of the lipid nature of bio membrane. The lipid soluble substances readily permeate into cells. *Snehakalpana* is successfully used for ages in treating various disorders of nerve, skin diseases etc.

Different medicated oils are used for the treatment of skin diseases depending on the condition & severity of the disease. *Ark Taila*, one such formulation mentioned in *Pama, Kacchu, Vicharchika*<sup>2</sup>. It contains *Arka Patra Swaras, Haridra Kalka* and *SarshapaTaila*. *Arkais* having properties like *Kusthahara, Vatahara, Kaphahara, Shothahara, Vranashodhaka, Vranaropaka, Krimighna, Kanduhara*<sup>3</sup>. *Haridra* possess qualities like *Katu, Tikta Rasa, Ushna Virya* and *Kapha Pitta Nashak* mentioned in *Twakdosha, Raktavikara, Shotha and Vrana*<sup>4</sup>. *SarshapaTaila* possess properties like *Katu*

*Rasa, Laghuguna, Ushna Virya, Lekhana* and *Agni Dipaka* mentioned in *Kandu, Kustha, Krimi, Switra, Kota, DushtaKrimi*<sup>5</sup>. So *ArkaTaila* can be considered as a potent formulation in treatment of *Vicharchika*. In this study preparation of *ArkaTaila* has been done according to the general law of *SnehaKalpana* which is in the ratio of 1 (*Kalka Dravya*): 4 (*Sneha Dravya*):16 (*Drava dravya*)<sup>6</sup>. Furthermore different analytical tests such as Organoleptic properties and values of Acid, Saponification Value and Iodine value, etc. were performed.

## MATERIALS AND METHODS

### 1. Pharmaceutical study

#### a) Collection of Raw materials

All the ingredients used in *ArkaTaila* preparation were collected from the local market of Haridwar. Fresh *Arka Patras* were washed under running water to remove the adhering dust from the leaves.

#### b) Preparation of *ArkaTaila*:-

- One liter *Swarasa* was extracted from the fresh *Arka Patras* by *Kwath* method.
- Raw *Haridra Kalka* 62.5 gm (Paste) was prepared.
- In a steel vessel, 250 ml of *SarshapaTaila* was taken and subjected to moderate heat. Then 62.5gm of *Haridra*



*Kalka* and one liter of *Arkapatra Swarasa* were added in it.

- This mixture stirred constantly to avoid sticking at the bottom of the vessel.
- Heating was carried out for 3 hours till the *Sneha Siddhi Lakshanas* appeared. Which was verified by two observations, first by taking the *Kalka* and rolling it between the fingers, a *Varti* was formed and second when put on fire and no crackling sound was produced.
- After verification, *Taila* was removed from heat source and filtered through a double layered clean muslin cloth.
- A total of 420ml *ArkaTaila* was obtained and stored in a clean, dry, air tight glass container after self-cooling.

## 2. Analytical Study

a) Organoleptic Characters:-*ArkaTaila* was tested for the taste, odor, colour, appearance, touch and clarity. Results are summarized in the table 1.

**Table 1** Organoleptic characters

S.No	Parameters	Results
1.	Color	Yellow Colored oil
2.	Odor	Characteristic
3.	Appearance	Soft, Viscous
4.	Touch	Unctuous

b) Physico – Chemical parameters measurements

- Refractive index measurement<sup>7</sup>: A drop of the *Ark Taila* was placed on the lower part of the prism and Refractometer was closed. Eyepiece was observed and the dispersion correction knob was turned until

the colored indistinct boundary seen between light and dark field became a sharp line. The knob was adjusted until the sharp line exactly intersected the midpoint of cross wires in the image. Reading of Refractive index was noted as shown in table 2.

**Table 2** Physio-chemical parameters

S.No	Physio-chemical parameters	Results
1.	Refractive index	1.472
2.	Specific gravity	0.9178
3.	Acid Value	1.97
4.	Peroxide Value	7.88
5.	Iodine Value	96.91
6.	Saponification Value	206.61
7.	Viscosity	204.5
8.	Rancidity	Absent

- Specific gravity measurement<sup>8</sup>: Empty Pcnometer (specific gravity bottle) was cleaned, dried and weighed. Then distilled water at the 20°C temperature was filled in Pcnometer and weighed. The water was removed from the bottle. Bottle was dried and filled with sample of *Taila* at 20°C and weighed. From these three readings specific gravity of the *Taila* was calculated and the value is shown in the table 2.

- Acid Value measurement<sup>9</sup>: *Ark Taila* 5 gm was weighed and placed into a 250 ml conical flask. Then 50 ml of neutralized alcohol solution was added into it. This resulted mixture was heated gently for 10 min until substance was completely melted. After 10 minutes, the processed solution was taken out and 1 or 2 drops of phenolphthalein indicator was added in it.



Resulted solution was titrated against KOH solution from the burette. The appearance of pink color indicates the end point. The volume of consumed KOH solution was determined and for each sample the titration was carried out in triplicate. The mean of the successive readings was used for the acid-value calculation of the sample (*Taila*) by following expression.

*Acid Value* =

$$\frac{\text{Volume of KOH} \times \text{Normality of KOH} \times \text{Eq.wt} \times 1000}{\text{Weight of sample}}$$

- Iodine value measurement<sup>10</sup>: Accurately weighed 5mg *Taila* was taken in dry iodine flask and 10 ml of carbon tetrachloride was added to it. After that 20 ml of iodine monochloride solution was added. The stopper was placed and it was allowed to stand in a dark place at a temperature of about 17°C for thirty minutes. Then 15 ml solution of potassium iodine with 100 ml of water was added and shaken well. Then using solution of starch as indicator, it was titrated with 0.1 N sodium thiosulphate. Number of ml required was noted. Similarly a blank titration was carried out. Result is shown in table 2. Saponification value measurement<sup>11</sup>: Oil sample was taken into a 250 ml conical flask and 25 ml alcoholic solution of Potassium hydroxide was added into it. It was attached to a reflux condenser for 1 hr. on water bath, boiled gently and steadily until Saponification was

complete. Then 1 ml of Phenolphthalein solution was added and excess of alkali was titrated with 0.5 N Hydrochloric acid. The required HCL in ml was noted (A). The same procedure was repeated without taking sample for Blank Titration, Required number of ml of HCl was noted (B).

- Viscosity measurement<sup>12</sup>: *Taila* sample was filled in a U tube viscometer in accordance with the expected viscosity of the *Taila* such that the fluid level stands within 0.2 mm of the filling mark of the viscometer when the capillary was vertical and the specified temperature was attained by the test liquid. The *Taila* was sucked or blown to the specified weight of the viscometer and the time taken for the meniscus to pass the two specified marks was measured. From the following equation the kinematic viscosity in centistokes was calculated:

$$\text{Kinematic viscosity} = kt$$

Where *k* is the constant of the viscometer tube determined by observation on liquids of known kinematic viscosity.

*T* is time in seconds for meniscus to pass through the two specified marks.

- Peroxide value measurements<sup>13</sup>: It is the number of milliequivalents of active oxygen that shows the amount of peroxide contained in 1000 g of substance (*Ark Taila*).



In a 250 ml glass-stopper conical flask 5 gm Ark Taila was taken. A mixer of 30 ml of glacial acetic acid in 3 volume and chloroform solvent in 2 volume were added & stirred until get dissolved. 0.5 ml Saturated KI solution added, kept for exactly 1 min with occasionally shaking. Then 30 ml water added. It was titrated gradually with continuous & vigorous shaking with 0.01 M sodium thiosulphate solution until yellow colour almost disappeared. 0.5 ml starch solution was added as an indicator at the end until the formed blue colour was disappeared (A). Repeat the process omitting the substance being examined (B). The volume of 0.01 M Sodium thiosulphate in the blank determination must be <0.1 ml.

**Calculation:** Peroxide Value =

$$\frac{(A-B) \times \text{Normality of sodium thiosulphate} \times 1000}{\text{Weight of sample (gm)}}$$

- Rancidity measurement<sup>14</sup>: In a test tube 1 ml of melted sample was taken and 1 ml of con. HCL mixed with it in test tube. Further 1 ml of 1% solution of Phloroglucinol was added in diethyl ether and mixed well. Pink Colour formation indicates that fat is slightly oxidized while Red Colour formation indicates that fat is completely oxidized.

## DISCUSSION

In *Sarangadhara Samhitha Madhyama Khanda* a unique formulation called Ark

*Taila* is mentioned for the treatment of *Vicharchika*. Ark Taila has *Katu, Tikta Rasawhich* helps in reducing *Kandu, Pidika and Klinnata*. It can also absorb the *Srava*. Due to *Laghu* and *Ruksha Guna* it penetrates deeply in the skin and subside the disease.

Refractive index for the Ark Taila has been found 1.474 which is near to a standard value (1.4630-1.4670 for *Sarshapa Taila*). Acid Value, the measure of free fatty acid of Ark Taila has been found 2.37 (<5 for *Sarshapa Taila*) which is to the lower side and near to standard shows that it has longer shelf life. Similarly the Peroxide value and Iodine value (115-125 for *Sarshapa Taila*) values are also near standard values only. These values of above mentioned parameters show the absence of Rancidity in sample which clearly indicates the longevity of Ark Taila.

Saponification value for the sample was found 206.61 (190-198 for *Sarshapa Taila*) which in higher side shows Ark Taila has high absorbing power. Similarly the viscosity of sample was 207.7 again shows higher absorbing power. Higher values of these two parameters indicate that Ark Taila will give better results.

Rancidity is a method of decomposition of Taila by either oxidation or hydrolysis. Due to rancidity, the fatty acid of



*Taila* is converted into free fatty acids which results in offensive, unpleasant odor and taste of *Taila*. These free fatty acids make oil unstable and thus rancidity is responsible for reduced shelf-life of oil or fats. The rancidity value of *Ark Taila* was absent.

## CONCLUSION

From present study it was concluded that all the analytical parameters for *Ark Taila* are near standard values. And there have been significant improvements in their values comparing with standard of *Sarshapa Taila*. These improved values results long shelf life, therapeutic properties which are effective in the *Vicharchika* treatment. The present study results further can be used by other researchers for similar work in future.



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