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ISSN: 2581-785X; <https://irjay.com/>DOI: [10.47223/IRJAY.2022.5812](https://doi.org/10.47223/IRJAY.2022.5812)Development and Evaluation of Traditional *Pinda Taila* Loaded Gel FormulationShruti Sharma <sup>1</sup> , Priyanka Chaudhary <sup>2</sup>, Ravinder Kumar<sup>3</sup>, Rakesh Thamman<sup>4</sup>

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## ABSTRACT:

The Indian system of Medicine; the Science of life, originated in the *Vedic* times of India, emphasizes on preventing the disease and maintaining the health. *Sneha Kalpana*, an *Ayurvedic* dosage form includes products of medicated *taila* and ghee, widely used internally as well as externally to treat various disorders. *Pinda taila*, herbal medicated oil intended for *vatarakta* (gout) and *daha* (burning sensation) in *Ayurvedic* system of medicine. It is applied topically in the form of *Abhyanga*. The name *Pinda taila* is because of *pinda* (semisolid) like appearance of final *kalpana*. The viscous appearance is marked by the presence of *Sarja rasa* and *Madhucchishta*. The dravyas present in the *Pinda taila* pacify the vitiated *vata* and *dosha* and *rakta*. *Vatarakta*, a painful condition, is a disorder where *vata* is vitiated by *rakta* or vice-versa. The symptoms include *ruk* (pain), *daha* (burning sensation), *toda* (pricking pain) and *shotha* (inflammation) and managed with both internal and external *chikitsas* using *gutika*, *niruha*, *lepa* and *sneha kalpana*. In *Ayurveda*, *Taila kalpana* are included in *Sneha Kalpana*. In ancient literature there is immense description regarding manufacture of *Sneha kalpana* (*ghrta* and *taila kalpanas*) The Nomenclature of *Sneha Kalpana* is sum of two words *Sneha* and *kalpana*; where *Sneha* means 'fat' and *kalpana* means 'pharmaceutical process of medicaments'. 63 medicated *tailas* preparations are listed in official "Ayurvedic Formulary of India". The present work aimed to develop a patient compliant gel preparation of *Pinda taila* as a substitute of oil for external application and its evaluation.

**Keywords:** *Bhaisajya kalpana*, *Sneha Kalpana*, *Pinda Taila*, *Pinda Taila gel*, *Vatarakta*

## INTRODUCTION

*Pinda taila* is one of the *Ayurvedic* medicated oil formulation used as topical anti-inflammatory agents in humans.<sup>1</sup> *Vatarakta* is a disease explained in *Ayurveda*

involving *Vata Dosha* imbalance affecting *Rakta Dhatu* (Blood tissue). Joint pain is one of the main symptoms of this disease. *Vatarakta* usually starts from the big toe or



from hands and gradually involves other joints or tissues.<sup>2</sup> In *Gambhira vatarakta*, the involvement of joints is mainly seen and therefore it can be compared with Gout. In *Uttana Vatarakta* the pathology of diseases afflicts the superficial tissues (skin and muscles). In *uttana vatarakta*, the symptoms are moreover seems like a skin disease or *kustha* with the skin lesions and muscle pain.<sup>3</sup>

**Classical description of Pinda Taila in Samhitas<sup>4</sup>:**

**Charaka Samhita:** *Acharya Charka* has explained *Pinda Taila* under the context of *Vatarakta Chikitsa* in the *Chikitsa Sthana* 29<sup>th</sup> chapter. The ingredients mentioned are: *Madhucchishta* (bee-wax), *Manjishta* (Indian Madder), *Sarjarasa* (raal) and *Sariva* (anantmoool). *Tila Taila* as *Sneha Dravya* and *jala* as *Drava Dravya*. Although, the method of preparation has not been described elaborately by the *Acharya*, it is inferred to follow the general method of preparation of *Sneha Kalpana*. **Ashtanga Hridaya:** In Chapter 22 of *Ashtanga Hridaya*, *Acharya vaghbatta* elaborated the ingredients of *Pinda taila* with in the context of *chikitsa Sthana*. The ingredients described in this text are analogous to those explained by *Acharya Charka*.

**Ingredients used in the preparation of Pinda Taila:**

**Madhucchista** (*Cera alba*) belongs to family *Apiaceae*.<sup>5</sup> It is used for cosmetic and therapeutic purposes in *Ayurveda*. Action (*karma*) of *madhucchista* is *vranaropana*, *vataghana*, *atisara*.<sup>6</sup>

**Manjistha** (*Rubia cordifolia*) consists dried roots and belongs to Family *Rubiaceae*. In *Ayurveda* its indication (*karma*) are *Raktadosahara*, *kusthgana*.<sup>7</sup> It is known as Indian madder in English. It is found in Asian countries like India, China, Japan, Afghanistan, Vietnam, and Malaysia.<sup>8</sup>

**Sariva** (*Hemidesmus indicus*) belongs to Family *Asclepidaceae*. Also known as Indian Saraspilla in English. Its indication in *Ayurveda* is *Raktasodhaka*, *Dahaprasamana*.<sup>9</sup> It is found in India from the upper Gangetic plain eastwards to Assam and in some places in Central, western and South India.<sup>10</sup>

**Raal** (*Shorea robusta*) belongs to family *Dipterocarpaceae*. Its indication (*karma*) *vranaropana*.<sup>11</sup> It is widely distributed in India, Nepal and Bhutan.<sup>12</sup> It is dominantly distributed on the plains and lower foothills of the Himalayas and also along the valleys.<sup>13</sup>

**Tila Taila** (*Sesamum indicum*) belongs to Family *Pedaliaceae*. It indicates its uses in *Twachya*, *Vranaropana*.<sup>14</sup> It is distributed in tropical and southern Africa, south and Southeast Asia and Tropical Australia.<sup>15</sup>

**Method of preparation of Pinda Taila:**<sup>16</sup>

*Kalka dravya:* *Manjistha*, *sariva*, *raal* (equal in each quantity) - 1 part

*Sneha dravya:* *Tila Taila* - 4 parts

*Dravadravya:* *jala*(water)16parts

All the ingredients of prescribed quality were taken as described in *Ayurvedic Pharmacopoeia of India*. Other ingredients i.e; *kalka dravyas* were taken in dried form; powdered coarsely and passed through sieve no. 85. The powdered ingredients were triturated with sufficient quantity of water and made in *Kalka* form with the help of *khalva yantra* (mortar & pestle). Then *Tila taila* in a wide mouthed vessel was heated over *mandagni* (mild heat) until the foam was produced and then *kalka* was added to it with continuous stirring to prevent *kalka* from sticking at the bottom of the vessel. Then *Drava Dravya* (water) was added in the vessel with continuous stirring. Beeswax was added to the mixture and allowed to boiled until all the water had been evaporated ,and the moisture in the *Kalka* additionally becomes to evaporated ; At that stage, it has to be stirred more carefully to make sure that *Kalka* doesn't stick to the bottom of the vessel. The *Kalka* was taken out from the ladle and tested from time to time to know the condition and stages of the *sneha paka*. Or *sneha siddhi lakshanas*. Then filtered the hot oil through muslin cloth and allowed to cool (*kalka* should be squeezed if necessary). Stored the prepared oil in a air tight container.

**Sneha siddhi lakshans:**<sup>17</sup>

1. *Phena* (foam) *pariksha*: foam starts appearing in *Taila*.
2. *Varti pariksha*: when *kalka* is rubbed in between two fingers, *Varti* forms.
3. *Shabda pariksha*: when *kalka* is put on flame or fire, it burns without producing any crackling sound.

**GEL:** A gel is a semisolid preparations of at least two constituents, consists a condensed mass enclosing and interpenetrated by a liquid.<sup>18</sup> **The I.P. defines** Gels are

homogeneous, semisolid preparations usually consisting of solutions or dispersions of one or more medicaments in suitable hydrophilic or hydrophobic bases. **As per the definition of U.S.P.** Gels as a semisolid system consisting of dispersion made up of either small inorganic particle or large organic molecule enclosing and interpenetrated by liquid. The inorganic particles form a three-dimensional “house of cards” structure.<sup>19</sup>

## MATERIALS AND METHODS

Chemicals used in the preparation of gel are described in Table-1 respectively. Carbopol(1%w/w) was used as a gelling agent.

**Main Drug:** *Pinda Taila* was prepared as mentioned in *Ayurvedic Pharmacopeia of India by Astanga Hridaya*.

### Method of preparation of *pinda taila* gel:

Carbopol (1%) was mixed in required quantity of lukewarm water in a beaker (1) with constant stirring for 30 minutes. HPMC was mixed in another beaker (2) consisting lukewarm water and stirred continuously for 30 minutes. Then beaker (2) i.e. HPMC is mixed in the beaker (1) containing Carbopol and stirred the mixture for 15 minutes. Polyethylene Glycol 400, Propylene Glycol and Glycerin were added and stirred the mixture for 30 minutes. Then Drug (*Pinda Taila*) and Benzalkonium chloride was added and the mixture was stirred for 15 minutes. Then water was added in sufficient quantity to the mixture to make up required volume of the gel. pH was adjusted by the addition of triethanolamine.

### Evaluation Parameters Of *Pinda Taila*:<sup>[19]</sup>

**Organoleptic Evaluation:** Physical standards of oil such as color, odor, texture, touch, consistency etc, parameters of oil were evaluated.

**Physico-chemical evaluation:** It include

**Refractive Index:** Refractive index of *Pinda Taila* was measured by Handheld Refractometer.

**Specific Gravity:** Specific gravity of oil was measured by Pycnometer.

**pH:** pH of *Pinda Taila* was measured by using pH paper.

### Evaluation Parameters Of Gel:<sup>20 21</sup>

**Appearance:** Colour, touch, Odour, consistency and texture of gel has been evaluated.

**Homogeneity:** Homogeneity of gel was evaluated by visual observations.

**Measurement of pH:** The pH was determined by using a digital pH meter. The measurement of pH has done in triplet readings and calculated the mean values.

**Viscosity study:** Viscosity was determined by the usage of Rotational viscometer. Rotated the gels at 0.6 rpm (spindle-3). Noted down the corresponding dial reading at 0.6rpm speed.

**Spread ability:** It indicates the extent of the area of a gel readily spreads on application to the skin. It is determined by spreading 1 gm of gel between the two glass slides (7.5cm in length) and standard weight of 100 gm is applied on upper slide for 1 minute. Lesser is the time taken for the separation of two slides, higher is the spread ability.

### Formula used to calculate the spread ability:

$$\text{Spread ability (S)} = M \times L / T$$

Where,

M = weight tied to upper slide

L = length of glass slides

T = time required to move the slides

## OBSEVATIONS AND RESULT

Table-2 represents the organoleptic characteristics of the prepared *Pinda Taila*. Table-3 represents the Analytical values of the prepared *Pinda Taila*. Table-4 represents the Analytical study of the prepared *Pinda Taila*

## DISCUSSION

Raw materials used for formulation were of analytical grade. Physico-chemical parameters are selected as the minimum parameters required to evaluate the *Taila* preparations. Organoleptic evaluation (Table-2) showed that colour of the *Pinda Taila* was reddish brown, aromatic odour, oily in texture and free from grittiness. Analytical parameters of *Pinda Taila* gel are within the limits mentioned by *Ayurvedic Pharmacopeia of India* showed in Table-4 respectively.

## CONCLUSION

*Pinda taila* associated as an *Ayurvedic* oil used for *Abhyanga* to alleviate pain especially due to gout arthritis i.e. *vatarakta*. Oils exhibit a significant approach to preserve the structure of the skin. The formulated gel possess the expected efficacy as that of *Pinda Taila*. The water and the oil together efficiently hydrate the skin. So the objective of gel formulation is to provide substitute to

oils. The various parameters revealed its ease for external application.

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**Figure 1: Ingredients of *Pinda Taila***



a) *Manjistha*



b) *Sariva*



c) *Raal*



Fig.2: All ingredients were added



Fig.3: Boiled the Mixture



Fig.4: Prepared *Pinda Taila*

**Table 1- Composition of *Pinda Taila* loaded gel:**

S.No.	Chemicals name (100%W/W)
1.	Carbopol (1%w/w)
2.	Hydroxypropyl methylcellulose (HPMC)
3.	Polyethylene glycol 400
4.	Propylene glycol
5.	Glycerin
6.	Benzalkonium chloride
7.	Triethanolamine

**Table 2- Organoleptic characteristics of *Pinda Taila*:**

S.No.	Organoleptic character	Result
1.	Colour	Reddish brown
2.	Odour	Aromatic
3.	Texture	Smooth
4.	Consistency	Oil consistency

**Table 3 - Analytical values of *Pinda Taila*:**

S.No.	Parameter	Result
1.	pH	6
2.	Refractive Index	13.8
3.	Specific Gravity	0.86

**Table 4- Analytical study of *Pinda Taila* loaded gel:**

<b>S.no.</b>	<b>Parameter</b>	<b>Result</b>
1.	Colour	Light pinkish
2.	Odour	Characteristic
3.	Homogeneity	Good
4.	Touch	Smooth
5.	Consistency	Semi-solid
6.	pH	6.46
7.	Spread ability	210.76 g.cm/s
8.	Viscosity	2093.62 poise