ABSTRACT

**Purpose:** Taila Kalpana is one of Sneha Kalpana procedure which is widely used and mostly preferred dosage forms of Ayurvedic system of medicine. It is followed to produce an oleaginous medicament from. Taila Kalpana involves 2 methods viz, Agnipakavidhi and Adityapakavidhi. Agnipakavidhi(Heating through Fire) is a method where fire is used as source to prepare the medicine Adityapakavidhi (Heating through sunlight), where the preparation is subjected to intense heat from Sun rays until the Taila Siddhi Lakshana (Tests of perfection) are observed, Adityapaka Guduchi Taila is selected for study to Pharmaceutical as well as Analytical parameters the results obtained are differed as compared with Agnipaka Vidhi Siddha Taila due to its unique method of preparation.

**Keywords:** Adityapaka Vidhi, Taila Kalpana, Adityapaka Guduchi Taila,

INTRODUCTION

Ayurveda being ancient system of medicine having uniqueness and diversity of preparation to eradicate the diseases and also to maintain the health. Rasashastra and Bhaishajya Kalpana is the greatest contribution to Ayurveda. Acharya Charaka has described primary dosages forms i.e. Swarasa (Juice), Katka (Paste), Kwatha (Decoction), Hima (Cold infusion) & Phanta (Hot infusion) and mentioned them as Panchavidha Kashaya Kalpana (5 types of Primary preparations). Keeping these as the basic preparations, number of secondary preparations have been derived from these five preparations viz. Asavarishta (Fermentation), Lepa (Paste), Churna (Powder), Sneha Kalpana (Fatty preparation), Vati (Pills) etc Sneha Kalpana is well known...
among them. Taila Kalpana is one of Sneha Kalpana procedure which is widely used and mostly preferred dosage forms of Ayurvedic system of medicine. It is followed to produce an oleaginous medicament from. The substances such as Kalka, Kwatha, and Drava Dravyas, in specific proportions by subjecting them to a specified heating pattern and duration will get converted into potent medicament. By this process, one can ensure transformation of the active therapeutic properties of the ingredients to the solvents and hence, one can recover fat-soluble as well as water-soluble chemical constituents. Taila Kalpana involves 2 methods 1. Agnipakavidhi (Heating through fire) 2. Adityapakavidhi (Heating through sunlight). Agnipakavidhi is a method where fire is used as source to prepare the medicine, due to its flexibility it is the most common method to prepare the most of preparations. Another one is Adityapakavidhi, where the preparation is subjected to intense heat from Sun rays until the Taila Siddhi Lakshana (Test of perfection) are observed, this kind of preparations are used only external application purpose and very effective in Skin disorders, hair and scalp areas. this Adityapaka Sneha absorbs the UV rays from sun, the sun’s Ultraviolet rays are made up of UVA and UVB rays. UVB rays are more effective at treating skin disorders because they penetrate more and helps for rapid skin shedding and growth. It helps to reduce the inflammation of skin. So, the analytical study is time in need to prove the surprise results of Adityapaka Vidhi, Adityapaka Guduchi Taila is one such preparation which is mentioned in Bhaishajya Ratnavali specially for Khalita (Hair fall). Adityapaka Guduchi Taila is prepared as per the Adityapaka Vidhi and various analysis are done to know the efficacy of Adityapaka Vidhi.

**Objectives**

1. Preparation and Pharmaceutical observations on Adityapaka Guduchi Taila.

**Materials and Methods:**
Pharmaceutical Study of Adityapaka Guduchitailla:

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Drug</th>
<th>Latin Name and Family</th>
<th>Role as</th>
<th>Part Used</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Guduchi</td>
<td>Tinospora cordifolia /Menispermaceae</td>
<td>Drava dravya</td>
<td>Panchanga</td>
<td>5 Litters</td>
</tr>
<tr>
<td>2</td>
<td>Vata</td>
<td>Ficus bengalensis /Moraceae</td>
<td>Kalka dravya</td>
<td>Aerial roots</td>
<td>1.25 kg</td>
</tr>
<tr>
<td>3</td>
<td>Jatamansi</td>
<td>Nardostachys jatamansi / Valerianaceae</td>
<td>Kalka dravya</td>
<td>Tubers</td>
<td>1.25 kg</td>
</tr>
<tr>
<td>4</td>
<td>Tila</td>
<td>Sesamum indicum /Pedaliaceae</td>
<td>Sneha dravya</td>
<td>Seeds</td>
<td>5 Litters</td>
</tr>
</tbody>
</table>

**Steps Involved:**
- Collection of the raw materials.
- Preparation of Guduchi Swaras.
- Preparation of Jatamansi and Vatapraroha Kalka.
- Mixing it with Moorchita Tilataila.
- Keeping in the sunlight.

**Selection and Collection of the raw materials:** Fresh Stem and leaves of Guduchi, Ariel's roots of Vata are collected from a garden, Moorchita Tila Taila and Roots of Jatamansi are procured from the BVVS Ayurveda Pharmacy, all ingredients are selected after proper authentication by experts in the Dravyaguna department of the institution, taken quantities are tabulated in Table No. 1.

**Preparation of Guduchi Swaras (Fig no.1 & 4):**
**Ingredients:** Freshly collected Guduchi Plant (Stem and Leaves)

**Pre-Procedure:** Fresh Guduchi leaves are collected and cleaned with water, then made them into paste form by pounding in Khalwa-yantra, then juice is extracted by squeezing it with through a double layered cotton cloth. Thus, obtained juice is Guduchi Swaras.

**Preparation of Jatamansi and Vatapraroha Kalka (Fig. No. 5 & 6):** Fresh wet drugs of Vatapraroha and Jatamansi root are collected and cleaned with water and made into paste in the Khalwa-yantra.

**Preparation of Adityapaka Guduchi Taila (Fig No. 7 to 12):** In a broad mouthed stainless steel vessel, the extracted juice of Guduchi 1 part is poured and equal
quantity of Moorchita Tila Taila is added after that the prepared Kalka of Jatamansi and Vatapraroha taken 1/4th part then it is mixed homogeneously kept exposed to sunlight and stirred frequently to facilitate the absorption of active principles of Guduchi, Vatapraroha and Jatamansi into the Taila media. After proper mixing, it is kept in a place where complete sun rays fall on that and the procedure of stirring is continued for every 1 hours so that the complete evaporation of water molecules takes place during Aditya Pakavidhi and Taila Siddhi Lakshanas are observed.

**Analytical study:** In the present study, analytical evaluation of APGT was carried out to develop preliminary standards. The samples are analysed first of all on the basis of organoleptic characters. The organoleptic characters involved the testing of samples using sensory organs. These are four subjective parameters – Colour, Odour, Taste and Form tested by the experts. Physico-chemical parameters such as Specific gravity, Refractive index, Acid value, Saponification value, Iodine value, HPTLC are done (Fig no.13 to 18).

**Observation and Results:**

**Table 2:** Observations on Pharmaceutical Study

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Day</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; Day</td>
<td>On stirring Suspended Vatapraroha and Jatamansi in Guduchiwarasa and taila taila was clearly visible. Color: Light green and dark Brown color Smell: Smell of guduchi Swarasa and Jatamansi.</td>
</tr>
<tr>
<td>2.</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Amount of fresh Guduchi Swarasa was reduced. Color: Guduchi Swarasa turned from light green color to Green color Smell: Guduchi and Jatamansi smell.</td>
</tr>
<tr>
<td>3.</td>
<td>10&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Watery bubbles in vessel with light brown Guduchi Swarasa in contact with Tilataila. Color: brownish green color, Smell: Light pungent smell</td>
</tr>
<tr>
<td>4.</td>
<td>20&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Water quantity reduced little bit, Guduchi Swarasa turned from light color to dark color Color: Brownish green color., Smell: Pungent</td>
</tr>
<tr>
<td>5.</td>
<td>30&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Total quantity of preparation reduced to half, sticky glue-like substance forming at bottom Color: Brown color, Smell: Jatamansi dominant pungent smell</td>
</tr>
<tr>
<td>6.</td>
<td>40&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Less of water, More of Taila in preparation, dark glue-like substance settled at bottom of the vessel Color: Brown color, Smell: Jatamansi dominant pungent smell</td>
</tr>
<tr>
<td>7.</td>
<td>50&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Taila with thick consistency, Kalka stick to the bottom. Shabda Hino Agni Nikshepa was Negative Color: Dark brown color, Smell: Punget smell reduced, Ugragandha of Jatamansi was started to appear.</td>
</tr>
<tr>
<td>8.</td>
<td>55&lt;sup&gt;th&lt;/sup&gt; Day</td>
<td>Taila with thick consistency, Kalka stick to the bottom. Shabda Hino Agni Nikshepa was Positive Color: Dark brown Color, Smell: Punget smell reduced, Ugragandha of Jatamansi persists.</td>
</tr>
</tbody>
</table>

**Table 3:** Showing duration of Paka, yield of APGT, and % of loss in gravimetric as well as volumetric form.

<table>
<thead>
<tr>
<th>Name of Taila</th>
<th>Duration of Paka</th>
<th>Initial volume of oil in ml</th>
<th>Final yield of oil in ml</th>
<th>Initial weight of oil in gm</th>
<th>Final yield of oil in gm</th>
<th>% loss of oil in ml</th>
<th>% loss of oil in gm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adityapaka Guduchi Taila</td>
<td>55 days</td>
<td>5200</td>
<td>4100</td>
<td>6200</td>
<td>5250</td>
<td>11%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>
Observations and Results of Analytical Study:

Table 4: Organoleptic Characters of Adityapaka Guduchi Taila:

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Name of Preparation</th>
<th>Colour</th>
<th>Odour</th>
<th>Taste</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Adityapaka Guduchi Taila</td>
<td>Rusty Orange</td>
<td>Jatamansi odour</td>
<td>Bitter</td>
<td>Oil</td>
</tr>
</tbody>
</table>

Refractive Index\(^6\)(Fig. No. 13):
The refractive index (n) of a substance with reference to air is the ratio of the sine of the angle of incidence to the sine of the angle of refraction of a beam of light passing from air into the substance. It varies with the wavelength of the light used in its measurement.
- Refractive Index of APGT: 1.4660

Specific Gravity\(^7\)(Fig. No. 14): Specific gravity is the specific gravity of a liquid is the weight of a given volume of the liquid at 25° (unless otherwise specified) compared with the weight of an equal volume of water at the same temperature, all weighing are being taken in air.
- Specific gravity: 0.912

Determination of Saponification Value\(^8\)(Fig. No. 17): The saponification value is the number of mg of potassium hydroxide required to neutralize the fatty acids, resulting from the complete hydrolysis of 1 g of the oil or fat.
Formula: \[
\text{Saponification Value} = \frac{(b-a) \times 0.02805 \times 1.000}{W}
\]

Where ‘W’ is the weight in g of the substance taken.
- Saponification value of Aditya Paka Guduchi Taila: 152.69

Determination of Iodine Value\(^9\)(Fig. No.15): The Iodine value of a substance is the weight of iodine absorbed by 100 parts by weight of the substance.
Formula: \[
\text{Iodine value} = \frac{(b-a) \times 0.01269 \times 100}{W}
\]

Adityapaka Guduchi Taila: a- 27.6., b- 38.8. W- 0.251.
- Iodine Value of APGT: 56.624

Determination of Acid Value\(^10\)(Fig. No.16): The acid value is the number of mg potassium hydroxide required to neutralize the free acid in 1 g of the substance.
Formula: \[
\text{Acid Value} = \frac{a \times 0.00561 \times 1000}{W}
\]
Where ‘a’ is the number of ml. of 0.1 N potassium hydroxide required and ‘w’ is the weight in g of the substance taken.
- Acid Value: 54.496

Rancidity test (Kreis Test)\(^11\)(Fig. No. 17):
The test depends upon the formation of a red colour when oxidized fat is treated with conc. HCl and a solution of phloroglucinol in ether. The compound in rancid fats responsible for the colour reaction is epiphydrin aldehyde. All oxidized fats respond to the Kreis test and the intensity of the colour produced is roughly proportional to the degree of oxidative rancidity.
- Adityapaka Guduchi Taila: Slightly Oxidised.

HPTLC\(^12\)(Fig. 18): It was done in solvent system Toluene Ethyl Acetate, HPTLC Study of APGT shows 8 Rf value in Short UV and 5 in Long UV and 2 after derivatization.
Table 5: HPTLC study of APGT

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Short UV</th>
<th>Long UV</th>
<th>After derivatisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0.08 (Green)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>0.31 (Green)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>0.35 (Green)</td>
<td>0.35 (F. blue)</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>0.46 (Green)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>-</td>
<td>0.51 (F. aqua blue)</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>0.55 (Green)</td>
<td>-</td>
<td>0.55 (Purple)</td>
</tr>
<tr>
<td>7.</td>
<td>-</td>
<td>0.59 (F. blue)</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>0.61 (Green)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>0.65 (Green)</td>
<td>-</td>
<td>0.65 (Pink)</td>
</tr>
<tr>
<td>10.</td>
<td>-</td>
<td>0.73 (F. blue)</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>0.88 (Green)</td>
<td>0.88 (F. blue)</td>
<td>-</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Adityapaka Vidhi (Heating through sunlight) is one of the unique Pharmaceutical procedure of Sneha Kalpana (Oleaginous Medicament), where the uniform temperature from the Sun-rays for longer duration are utilized for the purpose of Shena Pakar this allows volatile and High temperature non-stable active ingredients to imbibe completely into the preparation and show their clinical efficacy. Pharmaceutical study of Adityapaka Guduchi Taila revealed that, for complete appearance of Taila Siddha Lakshana (Test of perfection) through Adityapaka Vidhi (Heating through sunlight) requires longer duration, as heat from the Sun is sustained and less amount of heat is utilized. Hence, that takes longer duration to evaporate total quantity of water portion from the preparation. After the preparation 11% of loss of oil in ml and 9.5% loss of oil in gms over a period of 55 days is observed and it is having strong smell of Jatamansi suggests imbibement of volatile principle of ingredients into the preparation. When it is analysed it has shown the color of Adityapaka Guduchi Taila looks as rusty orange due to long exposure to the sunlight and presence of Jatamansi as one of the Kalka Dravya. Smell also resembles Jatamansi. Analytical parameters of Adityapaka Guduchi Taila are, Refractive Index is less and Specific gravity more, Acid Value in highly increased, Saponification value is more, Iodine value is more, Rancidity is slightly oxidized due to longer exposure, HPTLC: 8 is Rf value in Short UV and 5 in Long UV and 2 after derivatization suggests all active ingredients imbibed into the preparation with the aid of Aditya Paka Vidhi (Heating through sunlight).

**CONCLUSION**

Study shows that Adityapaka (Heating through sunlight) is a Unique method of preparation which differs in all parameters of pharmaceutical as well as Analytical parameters as compared to commonly prepared Taila Kalpana (Agnipaka Vidhi- Heating through Fire). It is time in need to bring light on such different pharmaceutical procedure-based medicine and clinical study on such preparation will reveals the miraculous health benefits.
Preparation of Adityapaka Guduchi Taila (APGT):

Fig.1: Guduchi Panchanga.
Fig.2: Vata Praroha
Fig.3: Jatamansi

Fig.4: Guduchi Swarasa
Fig.5: Vata Praroha Kalka
Fig.6: Jatamansi Kalka

Fig.7: Suspending Mixture;
Fig.8: Constant steering.
Fig.9: Keeping in Sunlight for 55 days

Fig.10: Collection of APGT; Fig.11: Extraction of APGT
Fig.12: APGT Final Product

Analytical Study:

Fig.13: Refractive Index Test
Fig.14: Specific Gravity Test
Fig.15: Iodine Value Test

Fig.16: Acid Value Test.
Fig.17: Saponification Test
Fig.17: Rancidity Test
REFERENCES


2. Sri Rajeshwara Data Shastri “BHAISHAJYA RATNAVALI” with Shri Ambika data shastri Commentary, (Kshudra Rogadhikara 60/146),2004 reprint, Choukamba Samskrita Samsthanam Vananashi; Page no. 670


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