**ABSTRACT:**

Tankanadi Churna is a Herbo-mineral Formulation mentioned in the classical text called Siddha Bhashaja manimala. It is a Dadruhara Lepa which contains Tankana, Gandhaka, Navasadara and Mishri as ingredients. Tankanadi Churna is in Churna form(powder) which should be mixed with Nimbu swarasa(lemon juice) and applied on the affected area. Preparation of the Churna and Lepa are explained in the Sharangadhara samhitha. In the present study, Shuddha Tankana(Borax), Shuddha Gandhaka(Sulphur), Shuddha Navasadara (Ammonium Chloride) and Churna of Mishri (Rock sugar) were taken in a Khalwa yantra and properly mixed to prepare Tankanadi Churna. Step by step pharmaceutical procedures were carried out according to classical reference and SOP. Loss during the process, total yield is noted. Pharmacological action of the Tankanadi Churna is discussed in brief.

Keywords: Tankanadi Churna, Dadru Kushta, Churna nirmana, Pharmaceutical study,
Tankanadi Churna is a Dadruhara Lepa used for the treatment of Dadru i.e Tinea. Ingredients of this Churna are Tankana (Borax), Gandhaka (Sulphur), Navasadara (Ammonium- Chloride) and Mishri (Rock Sugar).[1]

In the present study, Tankanadi Churna was prepared following the classical reference, pharmaceutical guidelines and SOP. Shodhana of Tankana, Gandhaka, Navasadara was done and Churna of Mishri was prepared following standard operating procedure and the process involved from the purchase of drug to packing was documented in a step by step procedure.

MATERIALS AND METHODS

Literature Review

All the data was collected from classical texts and pharmaceutical procedures involved in the preparation of Tankanadi Churna were carried out in PG Department of Rasa Shastra and Bhaishajya Kapana, S.V Ayurvedic College, T.T.D, Tirupati.

Total Pharmaceutical Study was carried out in Three stages

Stage I
Gandhaka shodhana
Tankana Shodhana

Stage II
Navasadara Shodhana
Preparation of Mishri Churna

Stage III
Preparation of Homogenous mixture of Tankanadi Churna.


Reference: Rasatarangini

Materials: Ashuddha Gandhaka-500g, Cow Milk-4 lit, Goghrita-20g, Water-As required

Principle: Dhalana

Apparatus: Earthern pot, Stainless steel vessel, Gas stove, Iron pan, Cotton cloth, Khalwa Yantra.

Procedure: Milk was taken in a glass vessel. A cloth was tied to its mouth. Ashuddha Gandhaka was taken in a Khalwa Yantra and made into fine powder. Go-Ghrita was taken in a Lohadarvi and was heated on Mandagni. Fine powder of Ashuddha Gandhaka was added to Lohadarvi and heated till it get’s completely melted. Melted Ashuddha Gandhaka was poured into cow milk through the cloth. Gandhaka was taken out from milk and washed with hot water. Above process is repeated for 2 more times. Fresh cow milk was taken
each time. After completion of process, *Shuddha Gandhaka* was taken out, washed with hot water, dried, pounded in a *khalwa yantra* and made into fine powder, weighed and stored in a glass container.

**Observations:**

- On pouring molten *Gandhaka* through cloth, impurities like small stones, mud, etc were filtered over the cloth.
- Melted *Gandhaka* looked like ghee.
- After *Shodhana*, *Gandhaka* colour was changed from dull yellow to thick, bright yellow colour with increased luster.
- *Go-Dugdha* and *Go-Ghrita gandha* was observed in *Shuddha Gandhaka*.
- Cow milk was hot after *Dhalana*.

**Precautions:**

- *Mandagni* was maintained throughout the process.
- During melting, *Gandhaka* was constantly stirred.
- Care was taken while pouring *Gandhaka* to avoid spilling.

**Results:**

**Table No.1: Showing the result of *Gandhaka Shodhana***

<table>
<thead>
<tr>
<th>Initial weight</th>
<th>Final weight</th>
<th>Loss in weight</th>
<th>Loss percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>200g</td>
<td>180g</td>
<td>20g</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Probable reason for loss in weight:**

Impurities were removed. *Gandhaka* was stuck to the cloth.

2. **Tankana Shodhana**[^3]

**Reference**: *Rasa Tarangini* 13/77-78

**Materials**: *Ashuddha Tankana*-200g

**Principle**: *Nirjalikarana*

**Apparatus**: *Khalwa yantra*, Earthen Plate, Gas stove, Spatula

**Procedure:**

- *Ashuddha Tankana* was taken in a clean and dry *Khalwa yantra* and pounded into powder.
- It was taken in an earthen plate and heated on *Mandagni*.
• Heat was continued until the water content in the *Tankana* was completely evaporated.

• Then it is powdered and stored in an air tight glass container.

Observation:

• *Tankana* changed to pale white colour after *Shodhana*.

• Crackling sounds were observed during the process.

• *Tankana*, after *Shodhana* bloomed and turned into white opaque substance.

Precautions:

• Moderate heat should be given.

Result:

<table>
<thead>
<tr>
<th>Initial weight</th>
<th>Final weight</th>
<th>Loss in weight</th>
<th>Loss percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>200g</td>
<td>120g</td>
<td>80g</td>
<td>40%</td>
</tr>
</tbody>
</table>

Reason for loss in weight:

The weight of *Tankana* was reduced after *Shodhana* due to evaporation of water content.

3. **Navasadara Shodhana**

Reference: *Rasa Tarangini* 14/3-4

Material: *Ashuddha Navasadara* - 200g

Principle: Pounding, Filtering and Evaporation.

Apparatus: Earthen plate, Stove, cloth

Procedure:

• One part of *Ashuddha Navasadara* and three parts of water were taken in a vessel.

• After complete dissolving of *Navasadara* in water, it was filtered through a cloth.

• The filtrate was kept on fire and heated till water is evaporated.

• Crystalline form of Pure *Navasadara* is obtained.

Observations:

• After *Shodhana*, *Navasadara* becomes white in colour due to removal of physical impurities.

Precautions:

• Filtration should be done properly.
Table No 4: Showing the result of Navasadara Shodhana:

<table>
<thead>
<tr>
<th>Initial weight</th>
<th>Final weight</th>
<th>Loss in weight</th>
<th>Loss percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>200g</td>
<td>190g</td>
<td>10g</td>
<td>5%</td>
</tr>
</tbody>
</table>

4. Mishri Churna Nirmana\(^5\)

Reference: Sharangadhara Samhitha.M.K.6/1

Materials: Mishri

Apparatus: Khalwa yantra, Stainless steel vessel, Cloth.

Procedure

- Mishri was checked for any external impurities and cleaned.
- It was taken in Khalwa yantra and pounded.
- Pounded material was sieved through cloth to obtain very fine powder.
- Then it was stored in air tight container.

Observations

- Very fine powder of Mishri was obtained.

Precautions

- Care should be taken to avoid spillage of drug.

Result

Table No.4: Showing the result of preparation of Mishri Churna

<table>
<thead>
<tr>
<th>Initial weight</th>
<th>Final weight</th>
<th>Loss in weight</th>
<th>Loss Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>200g</td>
<td>180g</td>
<td>20g</td>
<td>10%</td>
</tr>
</tbody>
</table>

Probable reasons for weight loss

- The reason for weight loss is due to spillage during pounding.

5. Preparation of Homogenous Mixture of Tankanadi Churna

Reference: Siddha Bheshaja Manimala

Materials:

- Shuddha Gandhaka - 150g
- Shuddha Tankana - 150g
- Shuddha Navasadara - 150g
- Mishri Churna - 150g
**Apparatus:** Khalwa yantra, Weighing machine, Spoon.

**Procedure:**
- Fine powders of *Shuddha Gandhaka, Shuddha Tankana, Shuddha Navasadara* and *Mishri* were taken in *Khalwa yantra* and mixed to form a homogenous mixture.

**Observations:**
- Pale yellow coloured *Tankanadi churna* was obtained.

**Precautions:**
- Care should be taken during mixing to avoid spilling of the drug.

**Result**

**Table No.6: Showing the result of preparation of Tankanadi Churna**

<table>
<thead>
<tr>
<th>Initial weight</th>
<th>Final weight</th>
<th>Loss in weight</th>
<th>Loss Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>600g</td>
<td>590g</td>
<td>10g</td>
<td>2%</td>
</tr>
</tbody>
</table>

**Probable reasons for weight loss**

The reason for weight loss is due to spillage during pounding.
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ashuddha Gandhaka</td>
</tr>
<tr>
<td>2</td>
<td>Melting of Gandhaka</td>
</tr>
<tr>
<td>3</td>
<td>Pouring molten Gandhaka into milk</td>
</tr>
<tr>
<td>4</td>
<td>Shuddha Gandhaka Churna</td>
</tr>
<tr>
<td>5</td>
<td>Ashuddha Tankana</td>
</tr>
<tr>
<td>6</td>
<td>Heating of Ashuddha Tankana churna on mild flame</td>
</tr>
</tbody>
</table>
Figure 7  Nirjalikarana of Tankana
Figure 8  Shuddha Tankana Churna
Figure 9  Ashuddha Navasadara
Figure 10  Ashuddha Navasadara Churna
Figure 11  Shuddha Navasadara Churna
Figure 12  Mishri
Figure 13  Mishri Churna
Figure 14  Mixing of All powders
DISCUSSION:

- Pharmaceutical study was carried out in several stages to obtain the contents in desired form for the preparation of Tankanadi Churna.

- Tankanadi Churna contains Shuddha Gandhaka (Sulphur), Shuddha Tankana (Borax), Shuddha Navasadara (Ammonium Chloride) and Mishri (Rock sugar) as ingredients.

- The pharmaceutical procedures adopted in this study are Shodhana, Nirjalikarana, Dhalana, Churna nirmana and preparation of Tankanadi Churna.

- Shodhana procedure plays an important role in Rasashastra. Shodhana is defined as the process which is done to remove the impurities present in a drug by adopting procedures like trituration, boiling in liquids etc using the drugs advocated by the texts.

Preparation of Tankanadi Churna:

Tankanadi Churna is a preparation mentioned in Siddha Bheshaja Manimala, Kushta Roga chikitsa. Gandhaka Shodhana was done by subjecting Gandhaka to Dhalana in Cow milk for 3 times. Navasadara and Tankana Shodhana was done by Nirmalikarana and Nirjalikarana method. Churna Nirmana was done by adding fine powders of Shuddha Gandhaka, Shuddha Tankana, Shuddha Navasadara and Mishri.

All these fine powders are taken in a Khalwa yantra and mixed well to form a homogenous mixture of Tankanadi Churna. The churna obtained was packed and stored in air tight containers. While applying, the churna is mixed with nimbu swara to form a Lepa which can be applied on the affected area.

Mishri having Madhura rasa, Snigdha, Sheeta and Sara gunas is a Natural coolant and Anti-inflammatory in action. It has Sheeta virya and Madhura Vipaka.

Shuddha Gandhaka has Madhura, Katu, Tikta rasa, Katu Vipaka, Ushna Virya and Kaphavatahara Guna. It has Amapachana, Deepana, Kushtaghna, Kandughna, Krimighna, Jantughna, Vishahara and Rasayana properties. It is indicated in Kushta, Dadru, Visarpa, Pama, Pliha, Kshaya, Adhmana, Jwara, Netra roga etc.

By the virtue of Dadrughna, Krimighna and Kandughna properties, Shuddha Gandhaka is useful in curing Dadru Kushta.

Shuddha Tankana has Katu rasa, Tikshna guna, Ushna virya and Katu vipaka. It has Deepana, Balya and Shoolaghna properties. It is indicated in Shula, Gulma, Kasa, Adhmana, Jwara and Swasa.

Shuddha Navasadara has Deepana, Kaphanissaraka, Kushtanashaka and Tridoshahara properties. It has Anti-bacterial, Anti-Asthmatic, Muco-expectorant and Anti-inflammatory properties.

Nimbu swaras has Madhura-ama rasa, Teekshna, laghu guna, Sheeta virya and Madhura Vipaka in Nature.

So Tankanadi Churna has Kushtaghna, Krimighna, Kandughna, Dadrughna, Lekhana, Vranashodhana and Vranaropana properties. So it can be used effectively in Dadru Kushta.
Conclusion:
Pharmaceutical standardization is an important requisite for the establishment of an efficient drug. *Lepa Kalpana* are meant for external application. The pharmaceutical procedures involved in this study are *Shodhana*, *Dhalana* and *Churna nirmana*. *Shodhana* is done in order to make the drug free from internal and external impurities and make it fit for therapeutic purpose. *Churna nirmana* procedure helps in size reduction thereby making the drug more bio-available. The ingredients of *Tankanadi Churna* are having *Lekhana, kushtaghna, dadrughna, krimighna, vrana shodhaka and vrana ropaka* properties which are beneficial for the management of *Dadru Kushta*.

REFERENCES:
12. Raja Nighantu – Amradi varga, Phala varga