An Analytical Study on Pippalyasava

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ABSTRACT

Pippalyasava is one of the important and common preparation used by practitioners for various ailments. Lot of references are available regarding Pippalyasava in classics and are abundant in market. As a part of study Pippalyasava is prepared and observed for 6 months also these samples were subjected to following analytical parameters like organoleptic characters, physical characters, chemical characters and TLC during 2nd month and 6th month to ensure the quality of the prepared sample.

Key words: Asava, Arishta, Analysis, Pippalyasava.

INTRODUCTION

Ayurveda is an Upaveda of Atharvaveda, which is an ancient literature on earth. Many plants described in Vedas are in use for curing various diseases. Since the very beginning these plants are the chief sources for Ayurvedic preparations. But to make these drugs therapeutically fit for administration, they are to be processed.

Our Acharyas have always tried to make the preparations more palatable and potent. Keeping the prepared medicines for a longer duration for further use was a big challenge before them. An unabated try in this direction yielded Sandhana Kalpana. This Sandhana Kalpana has Asavas and Arishtas as the two major out comes to gain popularity as Asavarista Vignana.

Asava and Aristas are known for their longest shelf life, quick onset of action, better palatability and highest therapeutic value with many added advantages over other dosage forms.

Fermentation is the key process in Sandhana Kalpana. Self-generated alcohol facilitates the dissolution of active principals of the drugs in the liquid media, which helps for quick absorption and efficacy.

The general procedure of preparation of Pippalyasava, all the ingredients are mixed in water and kept for fermentation. Here Pippalyasava is prepared and continuous monitoring of the sample was done till 6 months, analysis was done during 2nd month and 6 months to ensure the quality of same.

MATERIALS AND METHODS

Available References - Pippalyasava
2. Bhaishajya Ratnavali, Grahani, 622[2]
3. Sahasrayoga[3]

Assessment criteria
On set and completion of fermentation:
1. Taste
2. Odour
3. Sound
4. Froth
5. Floating of Prakshepa Dravyas
6. Candle test

**Finished Product**
1. Organoleptic characters
2. Chemical characters

**Method of Preparation**

**Sample 1**
Name of Practical: Preparation of Pippalyasava
Vessel used: Mud pot

**Ingredients**

<table>
<thead>
<tr>
<th>SN</th>
<th>Dravyas</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Draksha</td>
<td>576 gms</td>
</tr>
<tr>
<td>2</td>
<td>Jala</td>
<td>5 ltr</td>
</tr>
<tr>
<td>3</td>
<td>Guda</td>
<td>2.8 kg</td>
</tr>
<tr>
<td>4</td>
<td>Prakshepa Churnas</td>
<td>4.8 gms each</td>
</tr>
<tr>
<td>5</td>
<td>Dhathaki Pushpa</td>
<td>96 gms</td>
</tr>
</tbody>
</table>

**Procedure**

**Poorvakarma**
- Selection of Sandhanapatra - mud pot (capacity - 8 ltr)
- Patrasamskara done
- Draksha (576 gms) washed, dried and crushed
- Guda (2.8 kg) powdered, Prakshepa Churnas powdered coarsely, Dhataki Pushpa cleaned

**Pradhana Karma**
- Powdered Guda is mixed in 5 ltrs of warm water filtered and cooled.
- It is then transferred to Dhoopita mud pot and crushed Draksha, Prakshepa Churnas and Dhataki Pushpa were added respectively.
- The vessel is then covered and tied with a cloth.

**Paschat Karma**
- Onset of fermentation was observed after 3 days
- Candle test became positive 1 week after preparation
- Proper Sandhi Bandhana was carried out
- Sandhi Bandhana was opened after 2 months and found that the fermentation was complete.

**Observations**
1. Before the onset of fermentation,
   - a. Dark brown coloured liquid
   - b. Prakshepa Churnas were floating
   - c. Temperature was same as room temperature
2. After onset of fermentation
   - a. Mild alcoholic odour and smell
   - b. Effervescence was present
   - c. Prakshepa Churnas were floating
   - d. Hissing sound was present
   - e. Candle test was positive
3. After the completion of fermentation
   - a. It took 2 months for the completion of fermentation
   - b. Confirmation tests indicating completion of fermentation were positive
   - c. Alcoholic smell as present
   - d. Prakshepa Churnas were settled down
   - e. The liquid was dark brown in colour and tasted sweet

**Precautions taken**
- The vessel was washed properly and dried.
- Gritha Lepana was done as it is a mudpot
- After putting all ingredients, sufficient space was left in Sandhanapatra for the circulation of CO₂

**Sample 2**
Name of the Practical: Preparation of Pippalyasava
Vessel used: Plastic container

Ingredients

<table>
<thead>
<tr>
<th>SN</th>
<th>Dravyas</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Draksha</td>
<td>2.88 kg</td>
</tr>
<tr>
<td>2</td>
<td>Jala</td>
<td>24.5 ltr</td>
</tr>
<tr>
<td>3</td>
<td>Prakshepa Churnas</td>
<td>24 gm each</td>
</tr>
<tr>
<td>4</td>
<td>Guda</td>
<td>14.4 kg</td>
</tr>
<tr>
<td>5</td>
<td>Dhataki Pushpa</td>
<td>480 gm</td>
</tr>
</tbody>
</table>

Procedure

Poorva Karma
- Same as Sample 1

Pradhana Karma
- 14.4 kg of powdered Guda is mixed with 24.5 ltrs of warm water, filtered and cooled
- The filtered liquid is transferred to sterilized plastic vessel and crushed Draksha, Prakshepa Churnas and Dhatakipushpa were added in order.
- Vessel is then covered by a clean cloth

Paschat Karma
- Onset of fermentation was observed after 18 days
- Candle test became positive 20 days after preparation
- Proper Sandhi Bandhana was carried out
- Sandhi Bandhana opened after 2 months and found out that fermentation was still going on

Observations

1. Before the onset of fermentation
   a. Observations were similar to Sample 1
2. After the onset of fermentation
   a. Effervescence was present
   b. Alcoholic smell and hissing sound were present
3. After the completion of fermentation
   a. Totally three and a half months for the completion of fermentation
   b. Test indicating completion of fermentation were positive

Result

Organoleptic characters

<table>
<thead>
<tr>
<th>Characters</th>
<th>Pippalyasava 2 months</th>
<th>Pippalyasava 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Dark brown, (honey like colour)</td>
<td>Dark brown, (honey like colour)</td>
</tr>
<tr>
<td>Odour</td>
<td>Alcoholic +</td>
<td>Alcoholic ++</td>
</tr>
<tr>
<td>Taste</td>
<td>Madhura ++</td>
<td>Madhura ++</td>
</tr>
<tr>
<td>Consistency</td>
<td>Liquid (thicker than water)</td>
<td>Liquid (thicker than water)</td>
</tr>
</tbody>
</table>

Physical characters

<table>
<thead>
<tr>
<th>Characters</th>
<th>Pippalyasava 2 months</th>
<th>Pippalyasava 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity</td>
<td>1.1154g</td>
<td>1.1147g</td>
</tr>
<tr>
<td>pH</td>
<td>4.21</td>
<td>4.09</td>
</tr>
<tr>
<td>Refractive index</td>
<td>1.3855</td>
<td>1.38473</td>
</tr>
<tr>
<td>Alcohol content</td>
<td>8.25%</td>
<td>11.5%</td>
</tr>
<tr>
<td>Total solids</td>
<td>28.67%</td>
<td>30.97%</td>
</tr>
</tbody>
</table>

Chemical characters

<table>
<thead>
<tr>
<th>Characters</th>
<th>Pippalyasava 2 months</th>
<th>Pippalyasava 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ash</td>
<td>0.15%</td>
<td>1.01%</td>
</tr>
<tr>
<td>Total phenolic</td>
<td>3.21%</td>
<td>0.31%</td>
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</tbody>
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<thead>
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<tbody>
<tr>
<td>Total sugar</td>
<td>29.19</td>
<td>25.26%</td>
</tr>
<tr>
<td>Reducing sugar</td>
<td>26.35%</td>
<td>25.09%</td>
</tr>
<tr>
<td>Non reducing sugar</td>
<td>2.84%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Presence of methanol</td>
<td>Absent</td>
<td>Absent</td>
</tr>
</tbody>
</table>

Thin Layer Chromatography

**Pippalyasava**

TLC - Reference standard material - Piperine

Under UV 254nm

Major spots at Rf 0.13, 0.22, 0.66 (all light black)

TLC - Reference standard material - Gallic acid

Under UV 366nm

Major spots at Rf 0.08 (light yellow), 0.13 (light black), 0.13 (light blue), 0.22 (light black), 0.30 (dark black), 0.48 (dark blue)

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**Fig. 1: TLC - Pippalyasava**

**Fig. 2: Candle Test**

**Fig. 3: Fermentation**

**Fig. 4: Pippalyasava**
DISCUSSION

Asavarishtas are the modification of Madyakalpana. References regarding Asavarishtas are available since Vedic period. They are occupying an unique position in pharmaceutics due to their longer shelf life, faster absorption and enhances therapeutic effect in smaller doses.

Pippalyasava is widely used Asava preparation by practitioners and it is indicated for Kshaya, Gulma, Udara, Karshya, Grahani, Pandu and Arshas. These references of Pippalyasava is mentioned in Sarangadhara Samhita, Bhaishajya Ratnavali, Sahasra Yoga. In all these text books same reference has been mentioned.

In classical texts while explaining Pippalyasava, it is clearly mentioned that during preparation, three Tula of Guda should be put in two Drona of Jala and ten Pala of Dhathaki, sixty Pala of Draksha and twenty four Pala of Prakshepa Churnas should be put togetherly in a mudpot and kept until the therapeutic active principles of the drugs got absorbed. Hence it is understood that this preparation has to be prepared by Anagnisiddha method.

In sample, which is prepared in mud pot, worm infestation could be seen 6 months after filtration. It might be due to the entry of oxygen through the pores of mudpot even though Gritha Lepana has done. Oxygen promotes the growth of microorganisms in Asava, and lead to worm infestation. Hence it is better to change the mudpot after filtration or use plastic vessel for preparation and storage.

In sample 1 and sample 2, onset of fermentation happened within 3 days, and 18 days respectively. Large variation in sample 2 might be due to climatic variations and may be due to more quantity than first sample.

Both samples were dark brown in colour and with strong alcoholic odour after 60 days. Specific gravity of sample coming under prescribed limit of API. pH ranges of the sample reduced to 4.09 from 4.21 after 6 months. Refractive index of alcohol will be more than that of water. Here, the refractive index of analysed sample is approximately 1.38 and it is more than that of distilled water during second month and sixth month.

The alcohol percentage of sample is above the range mentioned by API during their second month and the alcohol percentage got increased within six months. Total solids got increased after 6 months. Total ash content was less, the absence of adulteration is evident. Sample has more percentage of phenolics during second month, which is quiet reduced after 6 months. This indicates the reduction of anti-oxidants in sample. Sample had more percentage of reducing sugar during second month and got reduced after 6 months. So it is clear that the conversion of alcohol from the sugar has happened properly in the preparation. The percentage of non-reducing sugar was above the limits of API during second month and after 6 months, the percentage got reduced and was within the limits.

CONCLUSION

Sandhana Kalpana is a unique preparation in Bhaishajya Kalpana and plays an important role in therapeutics. Manufacturing oh Asavarishta plays a very important role in Ayurvedic pharmaceutics. Standardization and quality control of products are important during the manufacturing of a product to obtain better result during treatment. From the above study, it is observed that, plastic vessel is more beneficial than mud pot for the preparation of Asavarishta. The analytical reports obtained for prepared samples are within the limits mentioned by API, and hence it is safe for use.

REFERENCES