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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*.

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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*

1. *Sharangadhara Samhita, Madhyama Khanda, Asavarishtadi Sandhana, Sloka no. - 28-33*^[1]
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

SN	Dravyas	Quantity
1	<i>Draksha</i>	576 gms
2	<i>Jala</i>	5 ltr
3	<i>Guda</i>	2.8 kg
4	<i>Prakshepa Churnas</i>	4.8 gms each
5	<i>Dhathaki Pushpa</i>	96 gms

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, *Dhathaki 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 *Dhathaki 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

SN	Dravyas	Quantity
1	<i>Draksha</i>	2.88 kg
2	<i>Jala</i>	24.5 ltr
3	<i>Prakshepa Churnas</i>	24 gm each
4	<i>Guda</i>	14.4 kg
5	<i>Dhataki Pushpa</i>	480 gm

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 *Dhatakpushpa* 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

- Observations were similar to Sample 1

2. After the onset of fermentation

- Effervescence was present
- Alcoholic smell and hissing sound were present

3. After the completion of fermentation

- Totally three and a half months for the completion of fermentation
- Test indicating completion of fermentation were positive

RESULT

Organoleptic characters

Characters	<i>Pippalyasava 2 months</i>	<i>Pippalyasava 6 months</i>
Colour	Dark brown, (honey like colour)	Dark brown, (honey like colour)
Odour	Alcoholic +	Alcoholic ++
Taste	<i>Madhura</i> ++	<i>Madhura</i> ++
Consistency	Liquid (thicker than water)	Liquid (thicker than water)
- negligible, + mild, ++ moderate, +++ severe		

Physical characters

Characters	<i>Pippalyasava 2 months</i>	<i>Pippalyasava 6 months</i>
Specific gravity	1.1154g	1.1147g
p ^H	4.21	4.09
Refractive index	1.3855	1.38473
Alcohol content	8.25%	11.5%
Total solids	28.67%	30.97%

Chemical characters

Characters	<i>Pippalyasava 2 months</i>	<i>Pippalyasava 6 months</i>
Total ash	0.15%	1.01%
Total phenolic	3.21%	0.31%

content		
Total sugar	29.19	25.26%
Reducing sugar	26.35%	25.09%
Non reducing sugar	2.84%	0.17%
Presence of methanol	Absent	Absent

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 Rf0.08 (light yellow), 0.13 (light black), 0.13 (light blue), 0.22 (light black), 0.30 (dark black), 0.48 (dark blue)

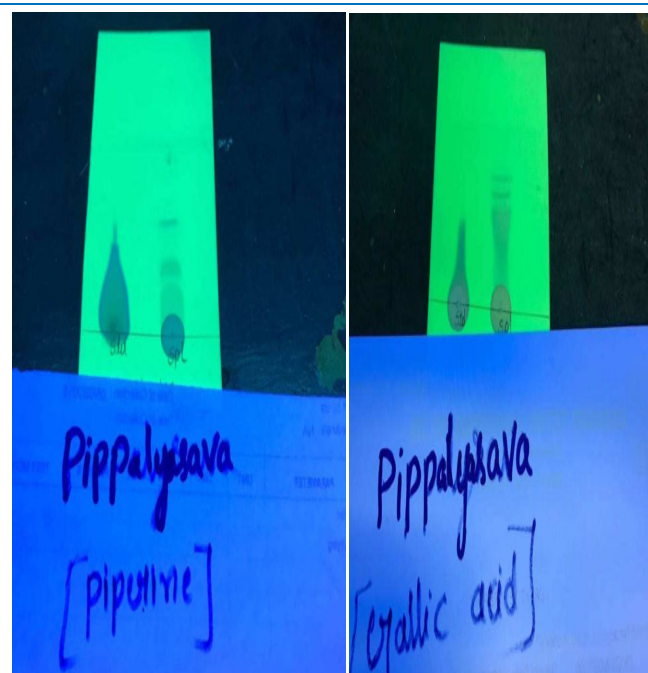


Fig. 1: TLC - Pippalyasava



Fig. 2: Candle Test



Fig. 3: Fermentation

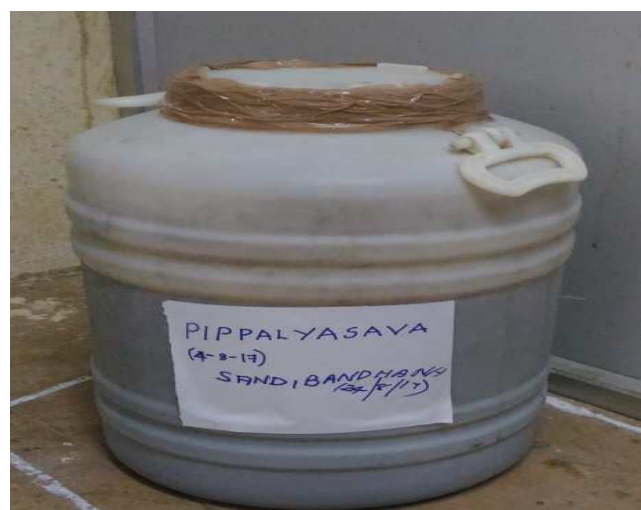


Fig. 4: Pippalyasava

DISCUSSION

Asavarishtas are the modification of *Madyakalpana*. References regarding *Asavarishtas* are available since vedic period. They are occupying an unique position in pharmaceuticals 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. P^H 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 of *Asavarishta* plays a very important role in Ayurvedic pharmaceuticals. 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.

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