



## Review Article

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### ASAVA AND ARISHTA UNDER UMBRELLA OF SANDHANA KALPANA

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#### ABSTRACT

Sandhana Kalpana is very common Kalpana described in Ayurvedic literature. We can find many footprints of Sandhana Kalpana in Vedas also. Asava and Arishta are popularly used in Ayurvedic practice. These preparations occupy unique position in pharmaceutics on account of their superiority to other preparations. These are defined as the preparations which contain self-generated alcohol. They can be stored for long time without losing their potency instead there is increase in the potency as these preparations becomes old. Asava and Arishta preparations preserve their qualities even if they become old. This clearly indicates their long shelf life. Asava and Arishta have quick absorbable nature and high therapeutic effectiveness. The self-generated alcohol plays an important role in making these preparations more superior from pharmaceutical as well as therapeutic point of view.

**Keywords:** Ayurvedic, Sandhana Kalpana, Asava, Arishta, Pharmaceutics

#### INTRODUCTION

Sandhana Kalpana is very common Kalpana described in Ayurvedic literature. We can find many footprints of Sandhana Kalpana in Vedas also e.g. Soma Rasa and Sura. Asava and Arishta are popularly used in Ayurvedic practice. These preparations occupy unique position in pharmaceutics on account of their superiority to other preparations. In Ayurveda, the pharmaceutics is dealt under the heading of Bhaishajya Kalpana. Bhaishajya Kalpana deals with wide range of medicinal preparations primarily Panchavidhya kashaya kalpana, namely Swarasa (Expressed juice), Kalka (Paste), Kashaya (Decoction), Hima (Cold water infusion) and Phanta (Hot water infusion) and secondary preparations like Churna (Powder), Vati (Tablets), Sneha (Medicated oils), Avaleha (Linctus), Asava and Arishta Kalpana (Alcoholic preparations).

When some liquids Kashaya, Swarasa etc. and some drugs either medicinal or food drugs like Guda (Jaggery), Honey etc. are mixed and put together for sometimes to achieve fermentation, are known as Sandhana. Dictionary meaning of word Sandhana are mixing, compounding, Distillation of Liquors.

Sharangadhara gives clear difference between Asava and Arishta i.e. Asava is prepared without boiling the drug in water. It may be prepared by Hima Kalpana or Swarasa Kalpana whereas, Arishta is prepared by making use of decoctions<sup>1</sup> but before the period of Sharangadhara our ancient Acharya did not follow this rule e.g. Although being Asava in Vasakasava, Madhukasava etc. decoction is used instead of Swarasa and in Takrarishta even though it is named as Arishta, no Kashaya (decoction) is prepared.

It seems that Shargandhara Acharya has standardized this preparation and classified the formulations accordingly.

#### Charaka Samhita

In Charaka Sutra 25th chapter while describing Madya Varga Acharya Charaka quotes: "Esham asutvat asava sanjya."

Asava are those formulations which are prepared by "Asuta Prakriya" (fermentation)<sup>2</sup>.

In the same chapter 9 Yoni of Asava and total 84 fermentative products are described. In Chikitsa Sthana, 24 different Asava Arishta are given for the treatment purpose as Shamana therapy, even in Kalpasthana 4 Asava-Arishta are explained for Virechana (for Shodhana).

Chakrapani also opines that Arishta are prepared with Aushadha, Kwatha, Madhu etc.

#### Sushruta Samhita

Acharya Sushruta mentioned use of Madya prior to surgery. In comparison with Charaka Samhita, we get less description about Sandhana in Sushruta Samhita. He described total 11 Asava-Arishta and 46 Madya Varga - Madya, Sura, Prasanna, Jagala, Surasava, Madhvasava, Shukta, Dhanyamla etc.

As per Acharya Sushruta, Asava is one type of Madya, which includes different medicines, Guda, Dhataki etc<sup>3</sup>.

#### Ashtanga Sangraha and Ashtanga Hridaya

During Sangraha period the classical literature of Sandhana Kalpana was more compiled, reclassified and arranged in proper manner. Use of Dhataki Pushpa is first time seen in Ashtanga Hridaya. Total 8 Asava-Arishta in A. H. and 14 in A. S. are quoted.

### Kashyapa Samhita

Brihatrayi explains Sandhana Kalpana as separate but Kashyapa Samhita includes it in 7 basic Kalpana of Bhaishajya Kalpana.

### Gadanigraha

Gadanigraha text written by Acharya Shodhala in 12th century and Acharya Sharangadhara followed this text. This book is compiled according to Kalpana wise. In this text I Part, 6th chapter i.e. Asavadhikara, total 60 Asava Arishta are mentioned.

### Sharangadhara Samhita

Sharangadhara Samhita is one and unique text of Bhaishajya Kalpana. In this Samhita change is made from routine description of Bhaishajya according to disease wise. One most remarkable thing about this Samhita is that it is most important text about Bhaishajya Kalpana as it explains preparation, proportion, dose, Saviryata (shelf life) etc. fully and completely about formulation. Total 13 Asava Arishta are mentioned, among them four are Asava and nine are Arishta.

### Yogaratanakaar

Compilation of 12 Asava-Arishta are mentioned in this text.

### Bhaishajya Ratnavali

Acharya Govind Das has mentioned 44 Asava-Arishta. Among them 12 are Asava and 31 are Arishta and remaining 1 is Sura (definition of Asava-Arishta given by Acharya Sharangadhara is strictly followed in the formulation of Asava-Arishta). Acharya has first time used Sura in another formulation e.g. Mrigamadasava<sup>4</sup>. (Figure 1)

**ASAVA:** The root word meaning of Asava indicates fermentation process which occurs in Asava. Acharya Charaka defines

“Esham Asutvat Asava Sanjya.”

Asava are those formulations which are prepared by “Asuta Prakriya” (fermentation)

**ARISHTA:** One which does not get spoiled easily is known as Arishta. Hence these two terms denote different aspects of same preparation.

“Na Risahyateya Iti Arishta.”

### General properties of Asava Arishta

“Manahshariragnibalapradanaam Aswapanashokaruchi Nashnama”<sup>5</sup>

The general properties of Asava are Mana Sharira Vardhana (~enriches mind and body), Agni Vardhana (appetizer), Bala Vardhana (~strengthening body), Shoka Nashana (~reduces sadness), Aruchi Nashana (appetizer) and Harsha Pradhana (~induces happiness)<sup>6</sup>.

Arishta are Rochana, Deepana, Pachana, Sara, does not increase Pitta, make the body free from Kaphaja Vikara, Grahani, Arsha, Shosha, Adhmana, Pliha, Jwara. Also have qualities depending upon qualities of Substrate used<sup>7</sup>.

Arishta are Laghu in Paka, Shreshta (superior) among Sandhana Kalpana and potent than Asava<sup>8</sup>.

Arishta gains supreme position in the group of Madya because it imbibes the therapeutic activity of the drug used as source material besides retaining the benefits of Madya<sup>9</sup>.

### Mode of action of madya<sup>10</sup> (Figure 2)

#### Advantages over other dosage forms

- Easy to administration
- Long shelf life
- Can be useful for longer duration without losing their potency<sup>11</sup>
- Palatable
- Gunadhikya = More effective
- Pleasant taste
- Safe in use and Economic.
- Accepted by all age groups

#### Requirements for asava-arishta preparation

As per the Ayurvedic Pharmaceutics Asava-Arishta needs following materials;

- Dravya (Drug substance used for decoction / juice)
- Drava Dravya (Liquid media)
- Madhura Dravya (Sweetening agents Sugar, Jaggery, Sugar candy etc.)
- Sandhana Dravya (Fermentative agents)
- Prakshepa Dravya (Drugs for additives /perfuming)
- Sandhana Patra (Fermentation vessel)
- Patra Samskara (Process especial)
- Sandhana Kriya (Fermentation process)
- Sandhana Sthala (Location)
- Sandhana Avadhi (Duration of fermentation)

**Dravya (Drug substance):** The drugs in Asava are generally Mridu, volatile in nature viz; Chandana, Ushira etc. and these are made as Hima (cold infusion)/ Phanta (hot infusion)/ Swarasa (expressed juice). The drugs commonly used in Arishta are Twak (bark), Mula (root) which are Kathina or Madhyama Dravyas and these are made into Kwatha. There are 9 yoni for the preparations of Asava-Arishta making at total of 84 in number<sup>12</sup> as shown in Table 1.

Table 1: Different Yoni of Asava-Arishta with their formulations

Sr. No.	Yoni	Number
1.	Sharkra	01
2.	Patra	02
3.	Kanda	04
4.	Twak	04
5.	Dhanya	06
6.	Pushpa	10
7.	Mula	11
8.	Saara	20
9.	Phala	26

**Drava Dravya (Liquid media):** Arishta in general are prepared using Kwatha whereas Hima (cold decoction), Jala, Swarasa (expressed juice) etc. are used for Asava preparation but there are exceptions for this common rule. For the Kwatha preparation Dravya and Drava i.e. water percentage depends upon the nature and quantity i.e. hardness of drugs. In order to extract maximum quantity of

water soluble extract of ingredients present in the drug general ratio of Dravya and water is 1:16 which is boiled and reduced to 1/4th. But if a particular ratio is mentioned in any reference then it should be followed accordingly. Sharangadhara and Yadavaji have given ratio according to the nature of drug and quantity of drug.

**Table 2: Amount of water required according to nature of drug**

Sr. No.	Dravya	Water Required
1.	Mridu Dravya	4 times Water
2.	Madhyama Dravya	8 times Water
3.	Kathina Dravya	8 times Water
4.	Atyanta Kathina Dravya	16 times Water

**Table 3: Amount of water required according to quantity of drug**

Sr. No.	Quantity of Drug	Water Required
1.	1 Karsha to 1 Pala	16 times Water
2.	1 Pala to 1 Kudava	8 times Water
3.	> 1 Kudava	4 times Water

**Madhura Dravya (Sweetening agents):** Major sweetening agents used in Asava-Arishta are mainly obtained from herbal sources e.g. Guda (jaggery), Sharkara (sugar), Phanita (molasses), Sitopala (candy sugar). In addition, honey an animal source is used as a sweetening agent either independently or along with Guda or Sharkara. Out of these most commonly used is Guda and One year old Guda is best. 40% of sugar (sweetening substance) is most ideal for fermentation. As per Acharya Sharangadhara, if Dravadravya is one Drona, jaggery and honey should be taken One Tula and half Tula respectively. As per above rule, the general ratio of Guda (to prepare Asava-Arishta) is 39.06%. Guda should be added for appropriate fermentation. But this ratio is not followed by every Acharya in their texts.

As the yeasts are fairly tolerant to high concentration of sugar and grow well in solutions containing about 30 - 40% sugar, it is quite important to mention the above reference. In some cases, the Madhura Dravya will be equal or double the quantity of Dravyas. This causes difficulty in dissolution of sweet substances and the whole mixture will become thick and viscous. This may result in less chance of fermentation.

**Sandhana Dravya (Fermentative agents):** To initiate or potentiate the fermentation process in desired direction, varying no. of ingredients are required which serve as natural carriers of the fermenting organism. E.g. Dhataki Pushpa, Madhuka Pushpa Surabeeja / Kinwa, Yeast and rarely Puga, Badara Twak, Babbula Twak are used. Acharya Vagbhatta firstly used Dhataki Pushpa for Sandhana<sup>13</sup>. Acharya Charaka describes properties of Dhataki<sup>14</sup>, but Acharya Charaka have not used Dhataki for preparation of Asava-Arishta. Acharya Sushruta mentioned Surabeeja or Kinwa as Sandhana Dravya. In Sharangadhara Samhita references regarding Madhuka Pushpa and Dhataki Pushpa as Sandhana Dravya are also found<sup>15</sup>. Now a days, dried active yeast granules can also be used for the purpose of fermentation.

**Prakshepa Dravya (Additives):** Drugs which are added afterward are called Prakshepa Dravya e.g. Lavanga, Ela,

Twakpatra, Nagakesara, Trikatu etc. These drugs act as adjuvants to the therapeutic action as far as the main drug is concerned; contribute to the aroma, colour & taste of the particular formulation as far as patient acceptability is concerned, render the media safe from the contaminants because of their Tikshana Guna (anti-fungal, anti-septic, bactericidal properties-pharmacologically). The Prakshepa Dravya are coarsely powdered and added to Sandhana Patra as per the formulation. In other formulation Prakshepa Dravya's Churna is very fine but in Asava-Arishta very fine powder is not added.

In some Asava-Arishta Loha, Tamra, Swarna like metals are mentioned as ingredients. E.g. in Sarasvatarishta, it is told to add thin golden leaves. Metal does not dissolve in Sandhana Dravya but it only enhances the property of material.

**Sandhana Patra (Fermentation vessel):** In ancient texts mostly earthen vessels are recommended for Asava-Arishta preparation. However Swarna, Rajata, Loha and other metallic containers are also recommended. Earthen Pot are easily available, cheap and temperature can be maintained but major disadvantage is chance of breakage are more and water oozes out and there will be a loss in the yield and excessive concentration. So Lepana (Coating/Smearing) has to be done on both sides i.e. internal and external surface of the earthen pot. In one pharmaceutical study it is proved that Arjunarishta prepared in porcelain pot shows more yield than Arjunarishta prepared in mud pot<sup>16</sup>. Hence for commercial purpose earthen pot is not considered to be ideal one. So now a days steel tanks are commonly used for commercial purpose.

**Patra Samskara (Process especial):** This Lepana Samskara (Coating/Smearing) has been mainly developed to compete with the need, to reduce the porosity of earthen pots and prevent the loss of Asava-Arishta. It also possesses its own significance for preventing contamination and stabilizing the temperature. Lepana (Coating/Smearing) is commonly done with Ghrita but other drugs are also used for Lepana like Lodhra, Jatamansi, Pippali, Honey etc.

Dhoopana (Fumigation) should be done after Lepana. The inner surface of Sandhana Patra is fumigated (Dhoopana) with different drugs such as Guggulu, Jatamansi, Vacha, Nimbatwak, Chandana, Agar, Shweta Sarshapa, Maricha, Karpura etc. This process of Dhoopana prevents contamination and adds the fragrance and increases the medicinal value of Sandhana Kalpa.

**Sandhana Kriya (Fermentation process):** Purana that is filling of the wort into the fermenter should be done after speculating the head space i.e. the space to be left vacant within the fermenter vessel. Head space must be left at the top of the fermenter above the liquid medium/ wort to allow for splashing, foaming and aeration of the liquid. This head space usually occupies a fifth to a quarter or more of the volume of the fermenter. We should fill the Patra as 3/4<sup>th</sup> part only, remaining empty part left for the accumulation of gases liberated in the process of Sandhana. After insuring about onset of fermentation, Sandhi

Bandhana of Patra will be done. Then container is placed at suitable place for process of fermentation. After the completion of fermentation the necessary tests should be carried out to ensure that if the fermentation is complete or going on.

**Sandhana Sthala (Location):** In Classics, it is mentioned that fermentative vessel should be kept in open space or kept in Dhanyarashi (heap of barley). But after this Shodhal has contributed some new places like Bhugarbha, Suryatrapa, Koshthasara etc. Yogendra Chintamani added one new place for Sandhana i.e. Ashwashala for Jambirdrava. The main reason behind keeping Sandhana Patra in Dhanyarashi is maintenance of temperature during Sandhana Kriya (Fermentation) because the temperature of Dhanyarashi is more than room temperature and remains constant. As temperature between 25°C– 30°C is considered ideal for proper fermentation<sup>17</sup>. Now a days, most of the pharmaceutical companies use air conditioner to maintain uniform temperature.

**Sandhana Avadhi (Duration of fermentation):** Ancient scholars have precisely appreciated the role of Desha, Ritu and Dravya in the completion of the fermentation reaction. References available are of 7 days to 6 month time period. It varies because of different nature of constituents, amount of sweetening agent, place, season and use of fermentation initiators etc. but most important is the season due to temperature variation.

During summer fermentation may complete within one or two weeks where as it may take a month during winter. It denotes the microbial activity desirable for the fermentation slows down during winter and increases during summer season when favourable temperature obtained.

## OBSERVATIONS

- The confirmatory test for completion of fermentation are mentioned in classics are Jatarasam<sup>18</sup>, Vyaktha Amla Katuka Jatam<sup>19</sup> etc. and even like other Kalpana, Gandha Varna Rasautpatti are also described.
- Burning matchstick will continue to burn even when brought near the fermenting media.
- No change can be found in lime water test when fermentation is complete.

**Dose:** General dose of Asavadi is one Pala (40 ml)<sup>20</sup>.

**Anupana:** Equal quantity of water.

## General proportion of constituents<sup>21</sup>

Table 4: Anukata maana for preparation of Asava-Arishta

Sr. No.	Dravya	Quantity
1.	Jala (Water)	1 Drona (12.288 litre)
2.	Guda (jaggery)	1 Tula (4.8kg)
3.	Madhu (honey)	½ Tula (2.4kg)
4.	Prakshepaka Dravya (Additives)	1/10 Tula (480gm)

## General steps of preparation of asava-arishtha

### Pharmaceutical Procedure

#### (i) Purva Karma includes

- a. Selection of Sandhana Patra (Container)
- b. Lepana of Patra (Coating/Smearing)
- c. Dhoopana of Patra (Fumigation)
- d. Collection of drugs.

#### (ii) Pradhana Karma Includes

- a. Swarasa / Kwath Nirmana (DravaDravya)
- b. Mixing of the Madhura Dravya (Sweetening agent)
- c. Mixing of the Sandhana Dravya (Fermentative agent)
- d. Mixing of the Prakshepa Dravya (Additives)
- e. Filling and sealing of Patra
- f. Sthanvimarsha (Placing of Sandhana Patra)
- g. Kala Samskara (Duration of fermentation).

#### (iii) Pashchata Karma includes:

- a. Observations (Sandhana Pariksha)
- b. Filtering
- c. Packing / Maturation

## Drug act in relation with asava-arishtha kalpana

In Drug and Cosmetic Rules, 1945 under Part – XVII, Rule-161 (labelling, packing and limit of alcohol in Ayurvedic or Unani drug) is mentioned.

### (a) Preparation of Asava with high content of alcohol as base

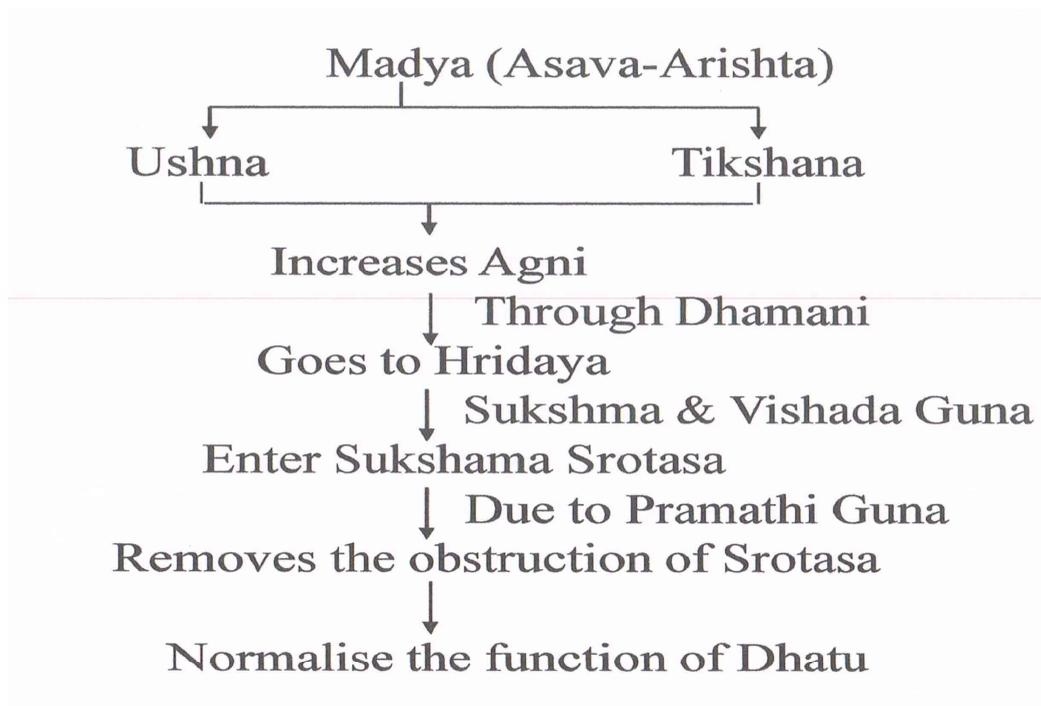
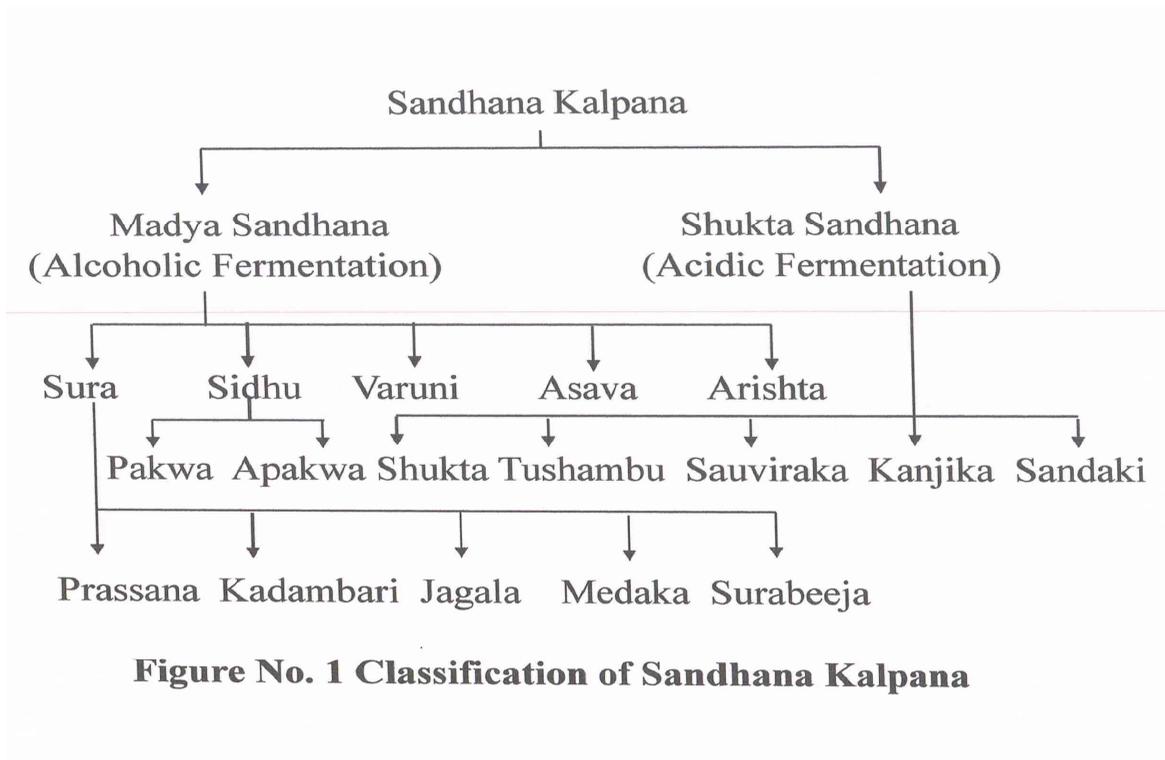
Table 5: Formulations with maximum size of packing

Sr. No.	Name of the drug	Maximum size of packing
1.	Karpurasava	15 ml
2.	Ahiphenasava	15 ml
3.	Mrigamadasava	15 ml

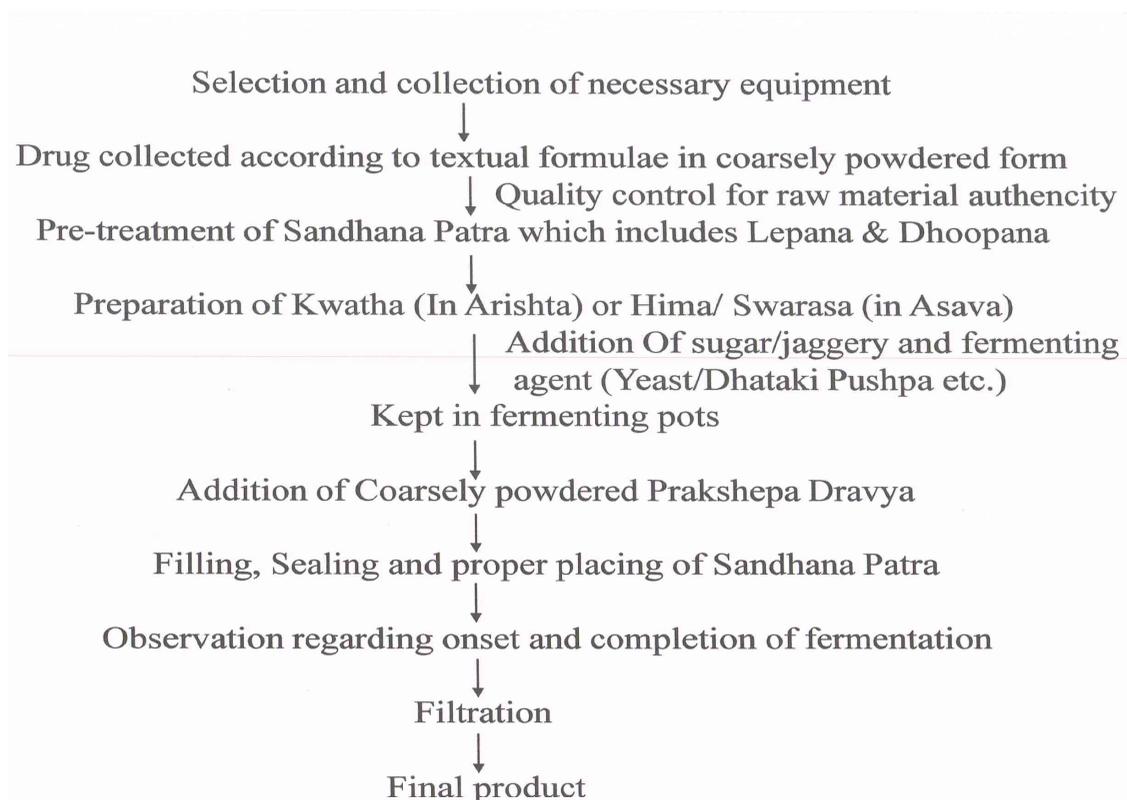
### (b) Preparations containing self-generated alcohol

Table 6: Formulations with maximum Alcohol content and size of packing

Sr. No.	Name of the drug	Maximum content of alcohol (Ethyl alcohol v/v)	Maximum Size of packing
1.	Mritasanjivani Sura	16%	30 ml
2.	Mahadrakshasava	16%	120 ml



**Figure No. 2 Mode of action of Madya**



**Figure No. 3 Pharmaceutical procedure of Asava-Arishta**

## DISCUSSION

Asava and Arishta are popularly used in Ayurvedic practice. These preparations occupy unique position in pharmaceutics on account of their superiority to other preparations. The Asava-Arishta formulations are very well standardized since the Samhita period. We can find many footprints of Sandhana-Kalpna in Vedas also. In Arishta, Kathina drugs are used which are made into Kashaya whereas in Asava volatile and Mridu drugs are made into Hima/ Swarasa with some exceptions to this rule as in Takrarishta and Kumaryasava. Earthen pots are used for fermentation which are being replaced by plastic and steel tanks. Dhataki Pushpa is commonly used as Sandhana Dravya but now some pharmacies are using yeast as a Sandhana Dravya. Lot of variation is seen in classics regarding Madhura Dravya but in Anuktha Maana the ideal percentage (40%) of sweetening agents is mentioned. For large scale production air conditioned room as Sandhana Sthala, yeast as Sandhana Dravya etc. is commonly used. The common norm is still followed in the present era of modern pharmaceutics with a variation in technology.

## CONCLUSION

Asava and Arishta are two popular Ayurvedic formulations which are widely used for therapeutic purpose of various disorders. Asava and Arishta are considered as one of best formulation in Ayurveda as they possess self-generated

alcohol which acts as self-preservative. Because of the virtue of properties like Palatability, Quick action, Easy to dosage form and important one is their Long shelf life, these preparations are most appreciated by consumers.

These two preparations comes under the umbrella of Sandhana Kalpana. The main difference between Asava & Arishta lies in the preparation of Kashaya with few exceptions. Drugs used for preparing Arishta are found to be Kathina or Madhyama where as in case of Asava are Mridu and volatile in nature. There remains a wide scope to revalidate them scientifically by means of other sciences for the betterment of mankind. Because of high therapeutic value many Ayurvedic pharmaceuticals companies are having their maximum turnover with the preparation of these Asava-Arishta.

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