



Review Article

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REVIEW ON PHARMACOLOGICAL PROPERTIES OF ARISHTA KALPANA WITH A GLANCE ON ARISHTA KALPAS OF BHAISHAJYA RATNAVALI

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ABSTRACT

Arishta Kalpana is a type of Sandhana Kalpana comes under Madya Kalpana. It's clearly mentioned that Arishtas are having superior quality as compared to Asavas because of Aushadh Dravya Sanskar Vishesh (decoction process). Arishta Kalpana has greater therapeutic value as compared to other Sandhana Kalpana. These self generated alcoholic preparations are retaining their pharmacological properties even if they become old; indicating their long shelf life and making these preparations more palatable, effective with superior pharmaceutical as well as great therapeutic point of view. Ushna, Teekshna, Sukshma, Vyavayee Gunas of these Arishtas are beneficial and having immediate action and effective in nature. Bhaishajya Ratnavali is the classical text; in which disease oriented treatment is given in collective dosage forms including primary Kashaya Kalpanas, secondary Bheshaj Kalpana including Sneha, Vati, Arishtas and Rasoushadhis. 27 Arishta Kalpas are mentioned in this classical book.

Keywords: - Arishta Kalpana, Bhaishajya Ratnavali, Madya Kalpana, Sandhana Kalpana

INTRODUCTION

The role of Dravya in Chikitsa Chatushpada is not fulfilled unless and until we are using Yukti Pramana to convert the Dravya into palatable and effective dosage form and then we called it as Bheshaj. In Charak Siddhi Sthana, it's mentioned that the Matrayukta Aushadha having Laghupakam, Sukhaswadam, Preenanam, Vyadhinashana properties¹. Most commonly used five basic formulations of Ayurveda has some drawbacks like less shelf life, high dosage, not easily palatable, difficult to carry, time consuming preparations, higher chances of microbial growth etc.^{2,3}. Therefore, in accordance with time, Acharyas had developed some secondary preparations like medicated oil and ghee (Taila & Ghrita), pills (Vati), fermented preparations by using basic formulations; they have longer shelf life i.e. stability and palatability and are effective in smaller dosage form. Recent advances and strong competition in modern pharmaceutical industries and newly invented dosage forms also decline the use of basic formulations.

Primary formulations- Swarasa, Kalka, Kashaya, Phanta, Hima

Secondary formulations: - Churna, Sneha, Avaleha, Sandhana

Sandhana is the process of fermentation of liquids alone or with drugs, by keeping them in a closed vessel for a specified period. In Ayurvedic classics it is clearly described that all the fermentation (Sandhana) processes are coming under the umbrella of Madya Kalpana^{2,3}. Charaka in Chikitsa Sthana stated that Yoni, Sanskar, Nam is the different peculiarities from which different types of formulations are to be prepared but among all of them Mada Lakshana is a common characteristic⁴.

Asava & Arishtas are Madya Kalpana also known as Sandhana Kalpana because they are prepared through Sandhana process².

Only Bhaishajya Ratnavali mentioned the Arka extraction process in Mritsanjeevani Sura by using Mochikayantra⁵.

Asava and Arishtas are medicinal preparations made by soaking the drugs either in powder form or in the form of decoction (Kashaya) in a solution of jaggery for a specified period, during which it undergoes a process of fermentation generating alcohol, thus facilitating the extraction of the active principles contained in the drugs. The alcohol so generated also serves as a preservative. Most commonly, while preparing Asava, powder form is used along with water and in Arishtas decoctions are used^{2,3}.

Arishtas have the same medicinal properties of the drugs from which the formulation is prepared. Arishtas have utmost medicinal value and they are the best among all Madya Kalpanas. Arishtas can be used in Grahani, Pandu, Kushtha, Shopha, Shosha, Udara, Jwara, Gulma, Krimiroga and Pleeha Vikaras^{8,9}.

Modern concept of Fermentation

An anaerobic (in the absence of oxygen) process of the cells digesting carbohydrates causes fermentation. Carbohydrates are converted into energy and an alcohol or an acid. The process is mostly performed by bacteria, yeast and animal muscles. Yeasts perform ethanol fermentation, which generate both ethanol and carbon dioxide. This process is used for alcoholic beverages and bread preparations. Lactic acid fermentation requires water and carbohydrates. In this type of fermentation, gas is not generated as a by-product. Depending on the type of species, bacteria can perform either ethanol or lactic acid fermentation. Some fungi also perform lactic acid fermentation. Some types of organisms perform both lactic acid and ethanol fermentation¹⁰.

The process of alcohol fermentation can be divided into two parts¹¹

- The yeast breaks down glucose to form pyruvate molecules, this also known as glycolysis.
- Pyruvate molecules are converted into 2 carbon dioxide molecules and two molecules of ethanol, otherwise also known as alcohol.

Overall chemical formula for alcoholic fermentation is



From the above point of view, we may correlate the Madya Sandhana as an Ethanol fermentation and Shukta Sandhana as Lactic acid fermentation¹².

Pharmacological properties of Arishta

Arishtam Laghupaken Sarvataccha Gunadhikam
Arishtasya Guna Dneya Beejadravya Gunaih Samah¹³ (Iti Vaidyake shabdakalpadruma)

Arishto Dravyasanyoga Samskarat Adhiko Gunaih Bahudoshaharach eva Doshanam Shamanamchh sah Deepanah Kaphavataghnah Sarah Pittavishodhanah Shoola Adhmana Udara

Pleeha Jwara Ajeerna Arshasa Hitah^{9,13} (Iti Sushrut Shabda kalpadruma)

After taking alcohol in the body, around 33% of it gets absorbed immediately into the blood, through the stomach lining. The remaining alcohol is absorbed into the blood through the small intestine very slowly. After entering in the blood circulation, alcohol diffuses into almost every biological membrane and in blood brain barrier^{14,15}. Property of blood alcohol to cross the blood brain barrier is may be responsible for Madakari symptom of Madya. All this description is clearly supporting the Vyavayee, Sukshma, Teekshna, Laghupaka properties of Arishta formulations.

Sushruta has clearly mentioned that Arishtas having superior quality than Asavas because of Aoushadh Dravyas Sanskar Vishesh (decoction process)⁹.

It is advisable to take always old (Kala Sanskar) Arishta & Asavas because newly prepared Madya formulations are Tridoshakara while old ones are Tridoshshamak⁸.

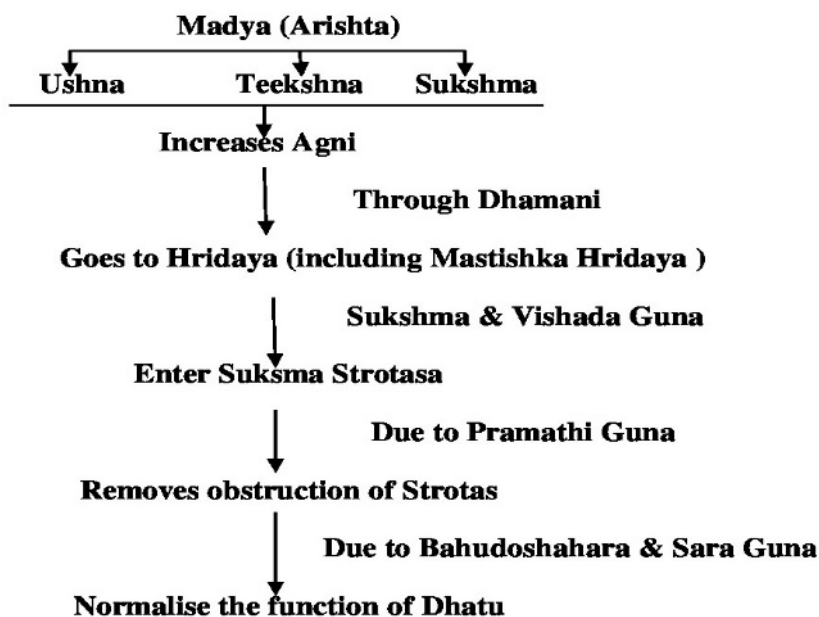


Figure 1: Probable mode of action of Arishta kalpas¹²

STANDARDIZED PARAMETERS FOR ARISHTA PREPARATIONS

Minimum manufacturing space required: 200 square feet (For GMP certified pharmacies)¹⁶

Machinery and equipment required for preparation

Exhaust fan, fly proof, Bhatti section, Bottle washing machine, Filler press, Gravity filter, Tinctum press, Liquid filling machine, P.P capping machine, Fermentation tanks, Containers and distillation plants as necessary, Filler press (For GMP certified Pharmacies)¹⁶.

Temperature and environmental factors affecting

It's essential to maintain the minimum temperature variation. In ancient time it was achieved by placing the containers in Dhanya Rashi (heap of paddy), Bhugarbha, Koshtasara, etc. In general, the optimum temperature range is 20⁰ to 35⁰ C to initiate the fermentation. Now days due to advance technology it is possible to control the temperature variation and other factors which brings uniform quality product in the benefit of users¹⁷.

In preparation of Loharishta, Ratnavalikar specifically advised Yavapalve Nidhapayet and for Dashmoolarishta advised Bhumou Nikhanayed Bhandam as Sandhana Sthala to maintain minimum temperature variation^{6,7}.

Sandhana Patra/Container

All the classical texts including Bhaishajya Ratnavali advised to use earthen pots for fermentation process. In Bhaishajya Ratnavali, they mostly used Bhande & Mritbhande words for fermentation and they also advised Ghritlepana, Madhu Lepana as well as Dhoopana process in different formulations accordingly. In some of the formulations like Dantyarishtha, Ratnavalikar advised lepana of Dhataki and Lodhra powder inside from container as a preparatory procedure before addition of Sandhaneeya Drava Dravyas. In some formulations they advised Kachapatra and Suvarna Kumbha as a Sandhana Patra. But with development of modern technology in pharmaceuticals these earthen pots were replaced by the steel, plastic and wooden containers and found to be equally effective as well as feasible^{3,5,6,7}.

Sandhana Kala/Duration

Jatam or Jatarasam are the words which implies the completion of fermentation period. In Bhaishajya Ratnavali wherever there is no specific period mentioned they used these two words Jatam and Jatarasam. Fermentation period varies with formulation and according to seasonal variation which ranges from seven days (Asraharishta) to four month (Loharishta). It is observed that the fermentation period is inversely proportional to the seasonal temperature; means maximum the temperature minimum is the fermentation period and vice versa^{5,6,7}.

Method of preparation

Decoction is prepared by using coarsely powdered drugs mentioned according to the formulation. After straining the decoction, it kept in fermentative pot. Sweetening ingredient mentioned in the formulation is dissolved, boiled filtered and added in the fermentative pot. Prkshepa Dravyas mentioned in formulation are finely powdered except Dhataki and added. Dhataki should be added lastly if mentioned in formulation. Containers mouth is closed by earthen lid and sealed with clay smeared cloth one by one in seven consecutive layers to prevent exchange of air. The container is kept either in a heap of paddy or in the place which is advised in the formulation for the specific period according to the classical reference or until the fermentation is completed. As far as possible, it is necessary to maintain the constant temperature to impede or accelerate the fermentation. After the completion of fermentation, the lid is removed first then the fluid decanted first and then strained after two or three days. When the fine suspended particles settle down, it is strained again and bottled³.

General precautions

If the earthen vessel is used in fermentation it should be old or at least water should be boiled first then it used. Proper hygiene and cleanliness is required during the process. Fumigation is advised with Pippali Churna and smeared with ghee before the liquids poured into it. Honey should be added as such without being dissolved or boiled. (In large scale manufacturer wooden-vats, porcelain jars or metal vessels are used in place of earthen vessels)³.

Characteristics

The filtered Arishtas should be clear without froth at the top. It should not become sour (Chukra). The preparation has the characteristic of aromatic alcoholic odour³.

Dose

General dose advised is One Pala² (48 mL).

15-30 ml orally with equal quantity of water after meal³ (According to API)

Storage condition

Store in cool place in tightly closed amber bottle, protect from light and moisture³.

Shelf life

Long term stability/No expiry date¹⁶

Standards of Asava And Arishtas [Chapter IV A (Part XIX) 168]

The upper limit of Alcohol as self generated alcohol should not exceed 12% v/v excepting those that are otherwise notified by the Central Government from time to time¹⁶.

DISCUSSION

Nothing is permanent except change and this change is also seen in Ayurvedic pharmaceutical industries. As the technology became advanced, dramatic modification and changes are seen in the Ayurvedic pharmaceuticals. In the busy life of public, it's not possible for physician to prepare their own medicine, and treat the patients; so ultimately, we depend on commercial market for quality drugs. But in this advanced era and in the world of technology, it is also essential not to harm the basic concepts of Ayurveda. The primary Kashaya Kalpanas are nearly about outdated and physicians are mostly preferring the secondary Kalpanas like Tablet, Capsule, Syrup, Taila, Churna, Asava-Arishta in their day to day practice. Asava-Arishtas are the alcoholic fermentative product having unique position in the market and are popularly used in the Ayurvedic practice. Arishtas are superior to Asavas because of Aushadha Dravya Sanskar Vishesha (decoction process). It is advisable to take always older Arishta & Asavas because newly prepared formulations are Tridoshakara while old ones are Tridosha shamak. Asava Arishta have longer shelf life and they retain their property for longer duration. Bhaishajya Ratnavali is considered as one of the best classical reference books in the subject of Ayurveda Pharmaceuticals.

CONCLUSION

In Bhaishajya Ratnavali, collective information of treatment is given according to disease. Ratnavalikar advised the different Kalpas like Svarasa, Kwatha, Churna, Vati, Rasa, Taila- Ghritha and Asava-Arishtas according to diseases. Total 44 Asava Arishtas are mentioned in Bhaishajya Ratnavali; out of them 27 are Arishta Kalpas. In these formulations we see different peculiarities and variations in preparation. Arishtas have some characteristic properties like Sukshma, Ushna, Vyavayi Gunas; they are easily assimilating in the body. Arishtas having agni deepana property and are popularly used in different conditions successfully.

Table 1: Physiochemical parameters for standardization of Arishta³

Parameters
1) Organoleptic Parameters (Colour, Odour, Taste, Appearance etc.)
2) pH
3) Total Phenolic Contents
4) Total Solids
5) Total Acidity
6) Specific Gravity at 25 ⁰ C
7) Reducing Sugar & Non-reducing sugars
8) Alcohol content & Test for Methanol
9) Microbial Load
10) Aflatoxins

Table 2: Arishta kalpas mentioned in Bhaishajya ratnavali* with their Rogadhikar -original reference and indications^{5,6,7}

Sl. No.	Name of the Formulation with original references	Indications
1	Amritarishta* Jwara Chikitsa	Jwarachikitsa; All types of fever
2	Babbuladyarishta Atisara (Sharandhar Samhita)	Khsaya, Kushtha, Atisara, Prameha, Shwasa, Kasa
3	Kutajadyarishta Atisara (Sharandhar Samhita)	Jwara, Grahani, Raktatisara,
4	Takrarishta Grahani (Charaka)	Deepana, Shotha, Gulma, Arsha, Krimi, Meha, Udara, Grahani
5	Hapushadi Takrarishta Arsha (Yogratnakara)	Deepana, Rochana, Balya, Kaphavatanuloman, Gudashotha, Kandu, Arsha
6	Dantyarishta Arsha (Charaka)	Grahani, Panduroga, Vatanulomana, Deepana, Aruchi, Arsha
7	Abhayarishta* Arsha	Arsha, Ashta Udara, Difficulty in passing urine and stool, Agneedeepana
8	Mustakarishtha Agnimandya (Yogaratanakar)	Ajeerana, Agnimandya, Visuchika, Grahani
9	Draksharishta Rajyakshma (Sharandhar Samhita)	Urakshat, Kshay, Kasa, Shwasa, Galaroga, Balavardhan, Mala Shodhan.
10	Asrahararishta Rajyakshma (Chakradatta)	Kasa, Rajyakshma, Urakshat, Dhatukshay, Raktapitta, Raktatisara, Raktapradar.
11	Vasakarishtha* Kasa	Raktapitta, Shwasa, Kasa, Galaroga, Urakshat and likewise
12	Ashwagandhadyarishta* Murchha Roga	Murchha, Apasmriti, Shosha, Unmada, Karshya, Arsha, Mandagni.
13	Balarishta* Vatvyadhi	Severe types of Vataroga, Appetizer
14	Vrishchidyarishta Gulma Roga (Chakradatta)	All types of Gulma
15	Parthadyarishta* Hridroga	Hridroga Chikitsa
16	Devadarvyarishta Prameha Roga (Sharangadhar Samhita)	Prameha, Vataroga, Grahani, Arsha, Mutrakrichha, Dadru, Kushtha
17	Loharishta Medoroga (Bhavapraksh)	Sthoulya, Shotha, Kushtha, Meha, Gulma, Pandu, Pliha, Udara, Vishamjwara, Abhishyanda
18	Rohitakarishtha Plihayakrida Roga (Gadanigraha)	Gastrointestinal Disorders, Pliha, Gulma, Udara, Ashtheela, Arasha, Kamala, Kushtha, Shotha, Aruchi,
19	Punarnavadyarishta Shotha Roga Chikitsa (Charaka)	Hridroga, Pandu, Shvyathu, Plihavridhi, Bhrama, Arochaka, Meha, Gulma, Bhagandara, Kasa, Grahani, Kushtha, Kandu, Constipation, Hikka, Kilas, Haleemak, Vitiated Vata
20	Khadirarishta Kushtha (Yogaratanakar)	Mahakushtha, Hridroga, Pandu, Arbuda, Gulma, Granthi, Krimi, Kasa, Plihodara, All Kushthas
21	Eladyarishta* Masurika	Visarpa, Masurika, Romantika, Shitpitta, Visphota, Visham Jwara, Nadivrana, Dustavrana, Kasa, Shwasa, Bhagandara, Upadamsha, Prameha Pidika

22	Ashokarishta* Pradar Roga Chikitsa	Rakta Prdara, Jwara, Raktapitta, Arsha, Mandagni, Arochaka, Meha, Shotha,
23	Laxmanarishta* Pradar Roga Chikitsa	Stree Gadan Krita
24	Jeerakadyarishta* Sutika Roga	Sutikaroga, Grahani, Atisara, Agnimandya
25	Shirisharishta* Vishrog Chikitsa	Vishrog Chikitsa
26	Sarswatarishta* Rasayana	Rasayana
27	Dashmoolarishta* Vajikarana	Grahani, Aruchi, Shula, Shwas, Kasa Bhagandara, Vatvyadhi, Kshay, Pandu, Kamala, Kushtha, Arsha, Meha, Mandagni, Udara, Ashmari, Mutrakrichha, Dhatukshaya, Vandhyatva, Vajikarana

Table 3: Variation in Sandhana kala (fermentation period) of different Arishta kalpas^{5,6,7}

Sandhana Kala (Fermentation period)	Sandhana Kalpa (Bhaishajya Ratnavali)
7 Days	Asrahararishta, Vasakarishtha,
10 Days	Vrishchiradyarishta,
15 Days	Dantyarishtha
1 Month	Amritarishta, Babuladyarishta, Kutajadyarishta, Abhayarishta, Mustakarishtha, Ashwagandharishta, Balarishta, Parthadyarishta, Devadarvyarishta, Rohitakarishtha, Punarnavadyarishta, Khadirarishta, Eladyarishta, Ashokarishta, Laxmanarishta, Jeerakadyarishta, Shirisharishta, Saraswatarishta
3 to 4 Month	Loharishta
Not Mentioned	Takrarishta, Draksharishta, Hapushadi Takrarishta, Dashmoolarishta,

Table 4: Different peculiarities of Arishta kalpas of Bhaishajya ratnavali^{5,6,7}

Metal Containing Arishta Kalpas	Loharishta (Medoroga) Sarsvatarishta (Rasayana)
Arishta Kalpas without Dhataki	Amritarishta, Takrarishta, Hapushadi Takrarishta, Dantyarishtha, Asrahararishta, Vasakarishtha, Vrishchiradyarishta, Loharishta, Punarnavadyarishta, Shirisharishta
Special container Advised in Sandhana Process	Saraswatarishta- Suvarna Kumbhe or Mritbhajane Vasakarishtha: - Mritpatra or Kachapatra
Arishta Kalpas in which Madhura Dravya is not used	Takrarishta, Hapushadi Takrarishta, Asrahararishta, Vasakarishtha, Ashokarishta
Arishta Kalpas in which Sura used as a Sandhaneeya Drava-Dravya	Asrahararishta, Vasakarishtha (Mritsanjeevani Sura)
Arishta Kalpas with maximum & minimum number of Ingredients	Dashmoolarishta (Max. Ingredients-72) Asrahararishta & Vasakarishtha (Min. Ingredients-Two)

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