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A REVIEW ON ASAVA- ARISHTA AYURVEDIC FERMENTED FORMULATIONS

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ABSTRACT

Ayurveda practice is profoundly rooted in the use of polyherbal mixtures and medications to treat a wide range of illnesses. It contains a wide range variety of medicines, two of which are fermented: Asava and Arishta. Herbal liquids or decoctions are fermented with the addition of sugars to produce these alcohol-based medicines. Ayurveda medications such as Asava and Arishta are quite popular because they have special properties that make them more beneficial than other preparations. It is noteworthy that they have no negative side effects and are pleasant, steady, safe, and effective. In addition to other factors taken into account in the development of commercial formulations of these medicines and their standardization, this study offers an overview of the most recent information available on Aristhas and Asavas.

INTRODUCTION

Ayurveda, which means "The Science of Life" in Sanskrit, is considered by many researchers to be the oldest healing science. It originated in India over 5,000 years ago and is often called the "Mother of All Healing". Ayurveda is a medical system still widely practiced in the Indian subcontinent and translates into knowledge (Veda) of life (Ayur). Ayurvedic medicine aims to promote health rather than cure illness. In daily life, Ayurveda focuses on maintaining harmony between nature and the individual, ensuring optimal health. (Mishra *et. al*).

According to Ayurveda, eight branches of science and ten diagnostic tools are based on the theory of tridosha (three humours of the body). Ayurveda employs various medicines,

including fermented forms such as Arishtas (fermented decoctions) and Asavas (fermented infusions). These medications are considered effective and desirable due to their useful features.

Asava-Arishta is a continuous hydro-alcoholic extraction method that has been used in Ayurveda for a long time but is not widely known. This advanced dosage form is thought to transform several phytochemical compounds present in the herbs that are used to prepare it, making them less toxic or more potent, as well as helping them to be absorbed faster. Arishtas and Asavas are herbal fermentations that are generated by the traditional Ayurvedic system. They are alcoholic medicines made by allowing herbal juices or their decoctions to ferment with the addition of sugars. Arishtas are made with decoctions of herbs in boiling water, while Asavas are prepared directly using fresh herbal juices.

Both preparations undergo fermentation by adding a source of sugar and dhataki (Woodfordia fruticosa Kurz) flowers (Srikantha et al). Some preparations also include additional spices to improve assimilation. These preparations have a moderate alcohol content (up to 12% by volume) and a sweetish taste with a slightly acidic and pleasant aroma. The presence of alcohol in the preparation offers several advantages, such as better preservation, improved therapeutic properties, better extraction of drug molecules from the herbs, and enhanced drug delivery to the human body. (Mishra *et. al*).

Charaka Samhita, Sushruta Samhita, Astanga Hridaya, Bhaishajya Ratnavali, Sarngadhara Samhita, Khadhanigragam, Arsaschikitsha, Sagasrayogam, Chikitsasthanam, Yogaratnagaram, AsavArishtasangragam, and Astangasangraham are Indian Ayurvedic texts that include Arishta and Asava. (Mishra *et. al*).

PROPERTIES OF ASAVA AND ARISHTA (Gihrepunje *et al*.**)**

1. **These** formulations are very stable the bioactive products of fermentation are continuously exposed to a low alcohol concentration. Indeed, the medicinal properties of Asava and Arishta are thought to increase with time.
2. **The** constant presence of alcohol in these formations may detoxify certain phytochemicals and increase the potency of others.
3. **These** fermented extracts have rapid therapeutic effects at low doses. Thus, the extract's aqueous nature may promote increased drug uptake by the target organs. Improvement in

the efficiency of the extraction of drug molecules from the herbs also improves drug delivery in the human body sites.

4. **They** are moderately alcoholic (up to 12 % by volume) and mostly sweetish with a slightly acidic and agreeable aroma.

REQUIREMENTS (Gihrepunje *et al.*)

1. The basic equipment required is an earthen pot sufficiently large and strong with a gazed exterior or gazed porcelain jar of suitable size, a lid of the correct size to close the vessel, a cloth to seal the vessels, a paddle-like stirrer, a clean cloth of fine and strong texture for filtering, vessels to keep the juices or boil the drugs
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3. The main herbs from which the extract or decoction is taken out as the case may be.
4. The name of the medicine is derived from these herbs denoting their importance.
5. The flavoring agents are herbs, and besides contributing to the flavor of the medicine have their pharmacological action.
6. The fermentation initiator (Woodfordia fructicosa) provides inoculums for the fermentation to start. The medium of sugar (Jaggery) is required for the fermentation.

PREPARATION OF ARISHTA (Gihrepunje *et al.*)

i. The drug is coarsely powdered and kasaya is prepared, strained, and then kept in a fermented vessel.
ii. Sugar, jaggery, or honey, is dissolved, boiled, and added as per the prescribed formula. At the end, dhaiphool/dhataki or madhukapushpa are added as per the formula.
iii. The mouth of the vessel is covered with an earthen lid.
iv. The edge is sealed with a clay-smeared cloth and covered in seven consecutive layers.
v. A constant temperature is for fermentation by keeping the vessel either in an underground chamber or in a pile of paddy.
vi. The lid is removed after a specified period and the contents are examined to ensure completion of fermentation.

vii. Now fluid is decanted and strained after two or three days. When the fine suspended particles settle down, Arishta is filtered to ensure no particles shall sediment in the glass bottles after transfer.

Preparation of Asavas (Gihrepunje *et al.*)

i. The jaggery or sugar is dissolved in the quantity of water, boiled, and cooled
ii. This is poured into the fermentation vessel. Fine powder of the drugs is added in the container which is covered with a lid and the further procedure is the same as that followed in the preparation of Arishta.

Transformation of chemical compounds during self-fermentation (Mishra *et. al*)

Fermentation is a process that helps in breaking down the cells of herbs, exposing their contents to bacteria and enzymes for transformation. Through fermentation, dissolved constituents from herbal material can be transported actively. It is claimed that yeast cell walls naturally bind heavy metals and pesticide residues, acting as a natural cleaning system. This makes self-fermentation of herbal products a safer alternative to powder decoctions.

Merits of the Fermentation Process (Mishra *et. al*)

Prahst has mentioned some of the benefits of fermented herbal products which are summarized below:

1. Fermentation removes most of the undesirable sugars from plant material, makes the product more bio-available, and eliminates side effects such as gas and bloating.
2. Fermentation extracts a wider range of active ingredients from the herb than any extraction method since the menstruum undergoes a gradient of rising alcohol levels.
3. Yeast cell walls naturally bind heavy metals and pesticide residues and, therefore, act as a natural cleansing system.
4. Fermentation not only removes contaminants, but it can also lower the toxicity of some of the toxic components in plants.
5. Fermentation actively ruptures the cells of the herb, exposing it openly to the menstruum and bacteria have enzymes that break down cell walls to further assist in the leaching process. Fermentation also creates an active transport system that moves the dissolved constituents from the herbal material to the menstruum.

There are several potential herbs used in the preparation of Asava and Arishta and a list of important potential herbal plants used in the formulation of Asava and Arishta is listed in Table 1. (API)

ARISHTA AND ASAVA PRODUCTS FOR TREATMENT (Sekar *et al*. Newman *et al*)

The product of Arishta and Asava could end up with 79 products, of which 37 fall into the category of Asava, 38 into Arishta, and the remaining 4 Arishta are named Amirtha (Viswamritha, Balamritha, and Swasamrutha, Vyoshamritha). These products have also been commercialized. Arishta and Asava are used for the treatment of various problems in pediatrics, nervous system, blood and circulatory system, respiratory system, digestive and excretory system, urinary system, reproductive system, immune system, skin problems, worm infections, general illness, infectious diseases, etc. Important formulations of Asava and Arishta used in the treatment of different diseases are listed in Table 2. (API).

Table 1: Name of Plant Used In Preparation of Asava and Arishta.

S. No.	Formulation		Plant used	
		Botanical name	**Family**	**Plant part**
1.	AbhayArishta	*Terminalia chebula*	Combretaceae	Whole plant
2.	AmîtArishta	*Tinospora cordifolia*	Menispermaceae	Stem
3.	AravindAsava	*Nelumbo nucifera*	Nelumbonaceae	Flower
4.	AsokArishta	*Saraca asoca*	Fabaceae	Stem, bark
5.	AshvagandhadyArishta	*Withania somnifera*	Solanaceae	Root
6.	BabbulArishta	*Acacia Arabica*	Leguminosae	Bark
7.	BalArishta	*Sida cordifolia*	Malvaceae	Root
8.	DashamulArishta	*Aegle marmelos*	Rutaceae	Stem, bark
9.	DrakshArishta	*Vitis vinifera*	Vitaceae	Dry fruit
10.	DrakshAsava	*Vitis vinifera*	Vitaceae	Dry fruit
11.	JirakadyArishta	*Cuminum cyminum*	Apiaceae	Fruit
12.	KanakAsava	*Datura metel*	Solanaceae	Plant
13.	KhadirArishta	*Acacia catechu*	Fabaceae	Gum, bark
14.	KumaryAsava	*Aloe barbadensis*	Asphodelaceae	Leaf
15.	KutajArishta	*antidysenterica*	Apocynaceae	Stem, bark
16.	LohAsava	*Iron*		Dust
17.	Mustakaristha	*Cyperus rotundus*	Cyperaceae	Rhizome
18.	ParthadyArishta	*Terminalia arjuna*	Combretaceae	fruit
19.	PippalyadyAsava	*Piper longum*	Piperaceae	Fruit
20.	PunarnavadyArishta	*Boerhavia verticillata*	Nyctaginaceae	Root
21.	PunarnavAsava	*Zingiber officinale*	Zingiberaceae	Rhizome
22.	RohitakArishta	*Tecomella undulata*	Bignoniaceae	Stem, bark
23.	SarivadyAsava	*Hemidesmus indicus*	Asclepiadaceae	Root
24.	UsirAsava	*Vetiveria zizanioides*	Poaceae	Root

Table 2: Important formulation of Asava and Arishta used in the treatment of various diseases.

S. No	Name of Asava / Arishta	Disease treated by Asava/Arishta
1	AshokArishta	Menstrual cycle regulator, especially to control excessive bleeding for prolonged periods during menstrual cycle, urinary disorder
2	DashamulArishta	Normalization of physiological processes childbirth in women; anti-inflammatory, Piles, jaundice, sterility in female, Pneumonia,
3	AravindAsava	Pediatric tonic, Appetizer
4	ArjunArishta	Cardiotonic
5	DrakshAsava	General tonic, influenza, Blood toner/nourishment
6	KumaryAsava	Liver disorders, piles, constipation, enlargement of spleen, cooling effect, Endocrinal deficiency, Blood toner/nourishment
7	LohAsava	Anemia, Piles, spleen disorder, diabetes, Ascites
8	DrakshArishta	Constipation
9	SaraswathArishta	Seminal weakness
10	MrithasanjeevaniArishta	Sexual stimulating tonic, Weakness
11	SarivadyArishta	Syphilis
12	ChandanAsava	Autoimmune disease
13	AswagandhArishta	Weakness, appetizer
14	MahamanjisthadyArishta	Rejuvenator
15	ChandanAsava	Cooling Effect, Spermatorrhoea, appetizer
16	KhadirArishta	Cancer
17	KutajArishta	Fever
18	DevadarvyArishta,	Diabetes
19	AmritArishta / AmritArishta	Malaria
20	SirishArishta	Poisonous bites
21	SrikhandAsava	Alcoholism
22	VasakAsava	Leprosy
23	AhifenAsava/ MuktakArishta	Cholera
24	AragwadhArishta/Chitrakasava	Leucoderma
25	VidaryadyAsava	Body Ache
26	PatrangAsava	Spermatorrhoea
27	VasAsava/ PunarnavArishta	Oedema
28	LohArishta/ LodharAsava	To reduce obesity
29	Balarish/ DevadarvyArishta	Rheumatism

STANDARDIZATION OF ASAVA AND ARISHTA

1. **Organoleptic evaluation:** The color, odor, and taste of the formation are evaluated. The Asava and Arishta are clear liquids without any froth. They possess the pleasant aromatic

odor of alcohol with a slightly sweet taste. It should be noted that they should not have a sour taste

2. **Physical and chemical parameters:** Physicochemical properties like total solid content, specific gravity, pH, density, extractive value, viscosity, surface tension, and refractive index. The phytochemical screening for tannins, alkaloids, reducing sugars, non-reducing sugars, alcohol, and total sugar is a commonly used parameter for the standardization of Asava and Arishta. Iron, magnesium, calcium, phosphate, sulphates, ash value, sodium, and potassium are also done.
3. **Analytical studies of Asava and Arishta:**
4. The thin layer Chromatography (TLC) technique is used to test Asava and Arishta. Studies have also been conducted for quantitative analysis of nitrogen content, proteins, and lipids as additional test parameters. Apart from all the evaluation parameters, the determination of alcohol content is very important therefore it has been described here.

DETERMINATION OF ALCOHOL CONTENT IN ASAVA AND ARISHTA (Bajaj *et al.*)

The specific gravity method determined the alcoholic content in Arishtas by specific gravity method using the following procedure. To the distillation flask, 25 ml of preparation was added and its temperature was noted. It was diluted with an equal volume of water. Afterward, it was distilled, and distillate about 2 ml less than the total volume collected. Water was added to measure the same volume of the original test liquid and adjusted to temperature which was already noted before. The specific gravity of this liquid was determined and the alcohol content was analyzed using a relative density table, which is prescribed by United States Pharmacopoeia and the alcohol content was found to be 6.42% w/w. (Sayyad et al.)

MATERIALS AND METHODS (Bajaj *et al.*)

Only two reagents were used; a marketed formulation of Asava and analytical-grade ethanol. The alcoholic content was determined from Asava by the specific gravity method because this method provides an approximation of the alcohol content only; also this method assumes that the difference in specific gravity, before and after fermentation is due solely to the conversion of sugars before fermentation into alcohol. The experiment was performed in triplicate.

Step 1: Distillation of sample of Ayurvedic formulation

For liquids presumed to be containing <30% v/v of alcohol

I. A 25 mL sample was taken in a suitable distilling apparatus and the temperature was noted, at which the volume was measured
II. An equal volume of water was added and it was distilled
III. Distillate was collected 2 mL less than the original volume of thetest liquid (i.e., 23 mL)
IV. The temperature was adjusted at which the original test liquid was to be measured (room temperature)
V. Water was added to make up the volume up to 25 mL and mixed.

The distillate must be clear (and not more than slightly cloudy and should not contain more traces of volatile substances other thanalcohol and water).

Step 2-Determination of the specific gravity of the sample

i. The specific gravity method is the easiest and simplest method to determine the concentration of ethanol volume/volume in the given sample
ii. The specific gravity of 100% alcohol (ethanol) at 25°C is 0.7899
iii. While the specific gravity of distilled water at 25°C is 1
iv. The mixture of water and alcohol (ethanol) will have a specific gravity between these two limits, i.e., 0.7899 and 1
v. The more the water content in the given sample the specific gravity is near 1
vi. When the concentration of alcohol (ethanol) in the sample is higher, the specific gravity falls near 0.7899
vii. Hence, the specific gravity of a mixture of water and ethanol cannot be more than 1 and cannot be <0.7899
viii. To find out the concentration of alcohol (ethanol) practically the requirement is a specific gravity bottle
ix. The weight of an empty specific gravity bottle (SGB) along with its stopper requires to be measured (W_1)=……..
x. Then, the specific gravity bottle is required to be filled with pure distilled water up to its rim, and put the stopper
xi. The excess amount of water comes out of the stopper, it must be wiped out.

The below-mentioned calculations were carried out to find the alcoholic content.

Weight of empty specific gravity bottle (SGB)=W1

Weight of SGB + distilled water = W_2

Weight of water = (W_2-W_1)

Weight of SGB + distillate = W_3

Weight of distillate = (W_3- W_1)

Apparent specific gravity = Weight of distillate/Weight of water

CONCLUSION

Arishta and Asava are highly regarded formulations in Ayurveda due to their better-keeping quality, which is likely attributed to the process of fermentation. The microbes involved in this process play a crucial role in enhancing the therapeutic properties of these formulations by biotransforming the initial ingredients into more effective end products. Additionally, the alcohol-aqueous milieu produced by the microbes improves the delivery of drugs in the body, making them more potent. These formulations, in general, have preservative properties and potentize drugs due to biotransformation mediated by native microbes.

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