

Arjunarishta for Thrombocytopenia

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Abstract: *The concepts of drug dosing and route of administration of drugs play a vital role in the biological efficacy of drugs. The selection of proper dosage forms and frequency of drug administration are essential for acquiring desired biological effects of drugs. In Ayurveda, the term Kalpana resembles various dosage forms, i.e., liquid, semisolid, and solid. Kalka, Vati, Bhasma, Asava/ Arishta, Churna, etc., are various dosage forms utilized in Ayurveda therapies mainly for internal administration of drugs. Arista is an important Ayurvedic formulations, have been used for more than 3000 years for the treatment of various diseases. They are effective, palatable, stable, and most importantly, they have no side effects. Arishtas are self-generated herbal fermentations of traditional Ayurvedic system. They are alcoholic medicaments prepared by allowing the herbal juices or their decoctions to undergo fermentation with added sugars. Arishtas are made with decoctions of herbs in boiling water. The formulation prepared by fermentation of decoction is called arishta. Acharya Sarangadhara described the preparation and properties of different Arista. This paper aims to document the available information about the different Arista with their therapeutic applications. This arishta was prepared to treat the Thrombocytopenia .[9].*

Keywords: Arishtas

I. INTRODUCTION

Thrombocytopenia :-

A low number of platelets in the blood platelet count that falls below the lower limit of normal, i.e., 150000/microliter (for adults) is defined as thrombocytopenia.

Symptoms of thrombocytopenia are:

- Easy bruising
- Abnormal bleeding (nosebleeds, bleeding gums, heavy heavy periods)
- Blood in your poo or urine (wee)
- Pinpoint bleeding in your skin^[8]

Thrombocytopaenia can be caused by:

- Medical conditions (such as problems with your bone marrow, liver disease, infections, immune conditions and blood clotting disorders)
- Cancers (such as leukaemia, lymphoma or myeloma)
- Some medicines, including heparin
- Cancer treatments, including chemotherapy
- Heavy alcohol use
- Some nutritional deficiencies (vitamin b12 and folate deficiency)
- Some genetic conditions
- Pregnancy and some pregnancy complications.^[7]

Herbal Preparation for Thrombocytopenia

Ayurvedic herbal dosage forms are formulated through the transference of active ingredients by different manufacturing processes.

Among these dosage forms, ‘Sandhana kalpana’ is a unique form in which acidic and alcoholic fermented formulations are prepared.

In order to manufacture these medicines, liquid basic drugs (juices or decoctions) are kept for fermentation as indicated in the classics.

In this process, self-generated (in these dosage forms) ethyl alcohol is produced by in-source material used in pharmaceutical procedure, and is not added from outside. Here, ethyl alcohol is not the only product yielded but is a part of many other organic compounds; further, alcohol/acetic acid (as per desired indications) is formulated and extraction of active principles of the herbal drugs is done. Thus, these formulations have longer shelf life, quick absorption and action and excellent therapeutic efficacy as compared to other Ayurvedic herbal medicines.^[2]

Arishtas

Arishtas are self-generated herbal fermentations of traditional Ayurvedic system. They are alcoholic medicaments prepared by allowing herbal juices or their decoctions to undergo fermentation with the addition of sugars.

Arishtas are made with decoctions of herbs in boiling water.

Fermentation of this preparation is brought about by the addition of a source of sugar with dhataki (Woodfordiafruticosa Kurz) flowers.

They are moderately alcoholic (up to 12% by volume) and mostly sweetish with slight acidity.^[2]

Our arishta was prepared from Carica Papaya Leaves for the treatment of Thrombocytopenia.

Formulation Table :^[1]

Ingredients	Quantity Given For 50 Litre	Quantity Taken For 1 Litre	Role Of Ingredient
Carica Papaya Leaves	4.80 Kg	120 gm	Antipyretic
Jaggery	4.80 Kg	120 gm	Substrate for the fermentation
Dhataki Pushpa	0.96 Kg	24 gm	Antiinflammatory
Haritaki	0.96 Kg	24 gm	Antibiotic
Jiraka	0.96 Kg	24 gm	Antioxidant
Shrunti	0.96 Kg	24 gm	Painkiller
Water	50 Litres	1000 ml	Solvent

Role :

1) Carica Papaya :

Act as Antipyretic

Treats Dengue Fever

2) Jaggery :

Substrate for the fermentation

3) Dhataki Pushpa :

Quick healing wounds

Decrease swelling

Reduce inflammation

4) Haritaki :

Antibiotic

5) Jiraka :

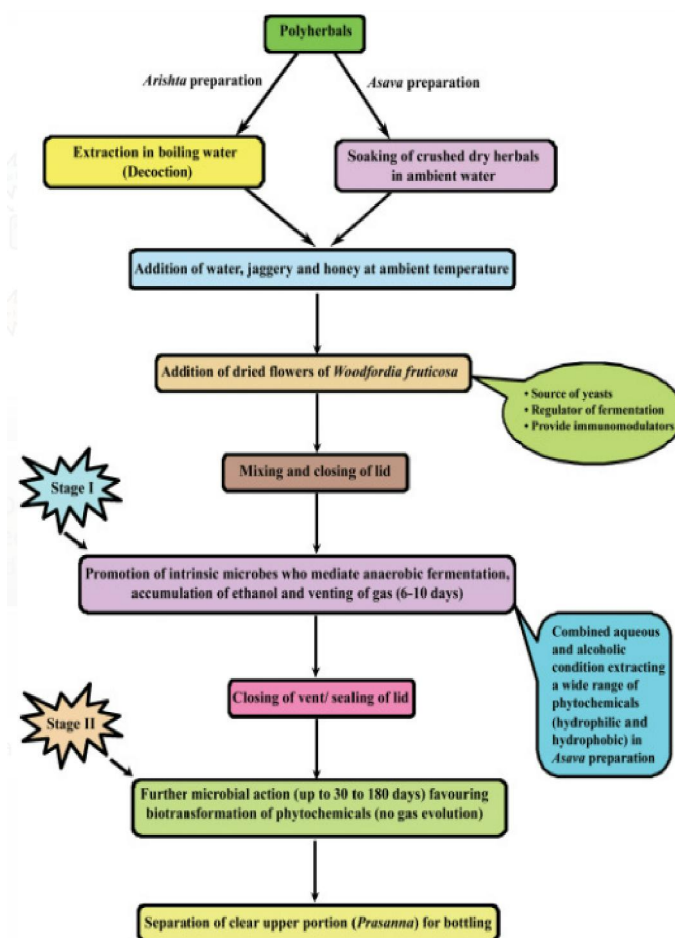
Antioxidant

6) Shrunti :

Relieves pain and inflammation

Method Of Preparation :

The drug is coarsely powdered and Kasaya is prepared.
 ↓
 The Kasaya is strained and kept in fermentation vessel.
 ↓
 Sugar, jaggery or honey, as required, is dissolved, boiled and added.
 ↓
 The mouth of the vessel is covered with an earthen lid and the edges sealed with clay- smeared cloth wound in seven consecutive layers.
 ↓
 A constant temperature is maintained for fermentation by keeping the container either in a special room, in an underground cellar or in a heap of paddy.
 ↓
 After a specified period the lid is removed and the contents examined to ascertain whether fermentation has been completed.
 ↓
 The fluid is first decanted and then strained after two or three days. When the fine suspended particles settle down, it is strained and bottled.^[3]





Standardization of Arishta:

Standardization of arishta is broadly divided into three categories:

- Approach related to raw material and equipment.
- Approach related to standardization of the manufacturing process.
- Approach related to standardization properties and quality of end product.

(1) Approach related to raw material and equipment:

The quality of raw material, herbs and other ingredients used for this preparation has a strong bearing on the process and the finished product. The raw material for this preparation must be authenticated and examined for required quality. Material used in this process have an impact on the main fermentation process and certain impurities may get retained through the process.

The right storage condition should be followed for these raw materials before being taken up for the main production process.

The type of equipment used, the material used for fermentation and storage vessels, treatment methods, temperature and storage condition are the factors that will impact the process.

(2) Approach related to standardization of manufacturing processes:

The three main parameters for the standardization of arishta are:

- Effect of temperature
- Fermentation time
- Use of various vessels and fermentation conditions

Effect of temperature

Temperature effect the process of fermentation. The specific gravity, total solids and total sugars are less in the cold arishta than hot arishta.

When arishta is cooled after fermentation of decoction, the alcohol is generated whereas no alcohol is found on the day of filtration.

Lower pH values and higher titratable acidity can be observed in arishta prepared from decoction with heat than cold one from fresh juice.

In high temperature, the yeast cells destroy; hence it is not favourable for the fermentation process. In less temperature yeast cells do not destroys.

Fermentation time

Effect of keeping the arishta over long period results into fall into specific gravity, total solid content and sugar contents, with increasing time.

The corresponding increase in the alcohol content can be obtained maximum in six months.

However the pH remains constant.

Duration of fermentation vary according to different seasons.

Literature revealed that fermentation takes place in 6 days during autumn and summer seasons, 10 days in winter and 8 days in rainy and spring seasons.

Generally in hot tropical climate 7-10 days are enough and 30 days in cool temperature climate.

Duration of fermentation ranges from 7 days to 180 days with different formulation.^[8]

Use of vessels and preparation conditions

Material like glass, aluminium, porcelain jars and earthen pots can be used for different preparations of arishta.

In glass vessels and earthen pots, there is a no significant difference in quantum or alcohol production.

Preparations in glass vessels will be more acidic than those from an earthen pot.

(3) Approach related to standardization of properties and quality of the end product

This includes

- Organoleptic evaluation:
- Physical and chemicals parameters

Organoleptic evaluation

The colour, odour and taste of the formation are evaluated.

The arishta are clear liquid without any froth.

They possess the pleasant aromatic odour of alcohol with a slightly sweet taste.

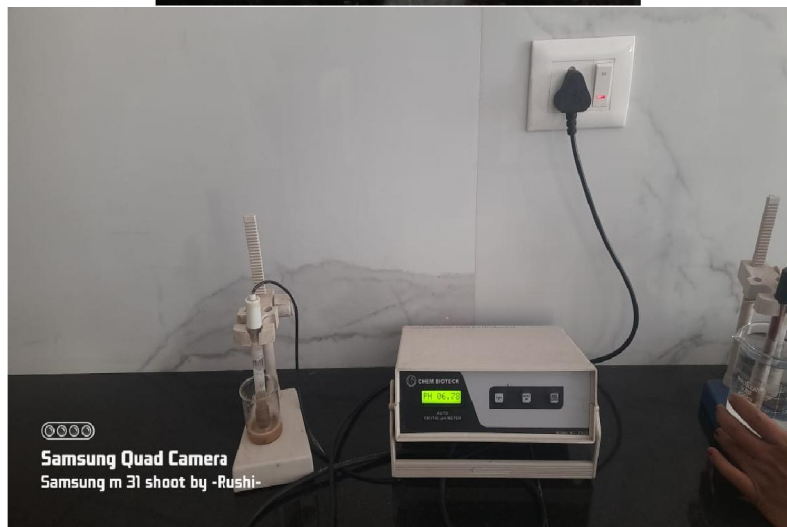
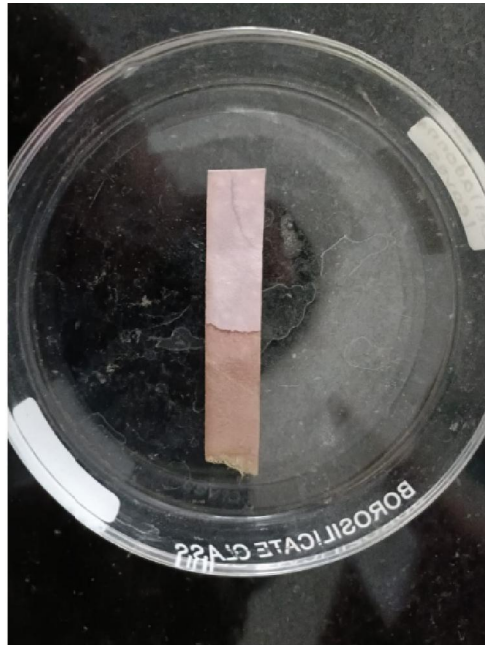
Physical and chemical parameters:

Physicochemical properties like total solid content, specific gravity, pH, density, extractive value, viscosity, surface tension, refractive index.

PH :

3-4 .

Acidic phdue to fermentation process and storage which causes oxidation of alcohols and responsible for sour taste.^[1]

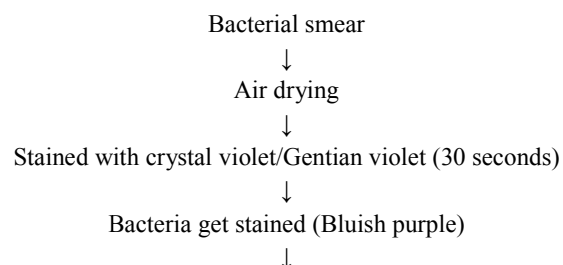


Blue litmus paper turns into red.

Antimicrobial Test :-

It is a determination of least amount of an antimicrobial chemotherapeutic agent that will inhibit the growth of microorganism invitro.

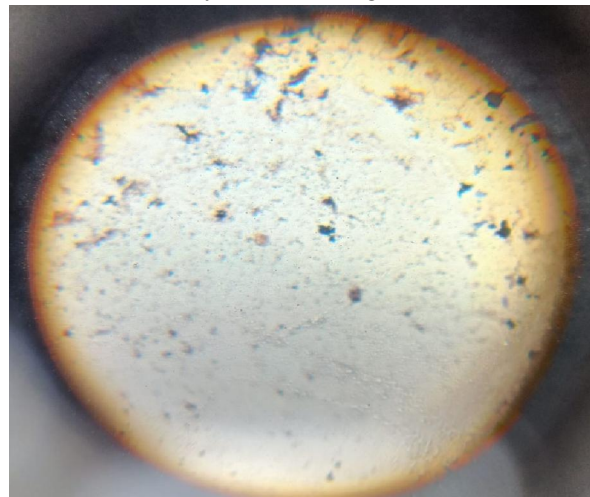
Staining for gram negative bacteria E.coli.



Washed with water
↓
Iodine staining (0.5% solution) (Iodine works as mordant)
↓
Formation of crystal violet iodine (CVI) complex
↓
Treatment with alcohol
↓
Destained bacteria
↓
Counter Staining with Safranin
↓
Pink colour appears
↓
Gram negative^[6]



Colony formation in agar media



Three beakers are taken :-

In first beaker there is nutrient media having gram negative bacteria E.coli and sample solution arishta.

In second beaker there is agar media having gram negative bacteria E.coli and sample solution arishta.

In third beaker there is nutrient media and sample solution arishta .



II. RESULT

After three days we observe the all three beakers and observation is as follows-

In first and second beaker sample solution is clear and in third beaker there is turbidity, it means the prepared solution has antimicrobial activity as shown in figure .



Alcohol contain :-

Generally, the amount of alcohol content in arishta is about 5 to 10% this is due to fermentation process Not less than 25ml of preparation being examined was transferred to the distillation flask and its temperature is noted .It was diluted with equal volume of water. Afterwards it distilled and distillate about 2 ml less than the total volume collected. Water was added to measure exactly same volume of original test liquid and adjusted to temperature noted before.^[1]

Total Solid Content :

10g of a formulation was taken in evaporated dish which was previously weighed and allowed to evaporate so that only solid content remains in the dish and rest of the fluid gets evaporated. Then it again weighed and the solid content of formulation calculated.^[6]

Viscosity :

Viscosity of our arishta was determined by Ostwald Viscometer.^[1]

Pharmacokinetics :

Route of Administration :

Taken orally .

Shake well before use .

Dose :

One pala .(Approximately 48 ml)^[1]

Dosing Frequency :

At morning empty stomach to avoid food interaction and rapid action .as directed by the physician .

Packing :

225 ml ,450 ml , 680 ml .^[1]

Storage :

Stored in well packed air tight container ,stored in dark place ^[4].

III. DISCUSSION

Arishtas are made with decoctions of herbs in boiling water.

The arishtawas self generated alcohol, which reduces natural sugar level. Earthen pots where used for fermentation which are being replaced by plastic and steel tanks. Dhatakipushpa is commonly used sandhaneeyadravya.

Effect of keeping the arishta over long period results into fall into specific gravity, total solid content and sugar contents, with increasing time.

It was found that the pH of Arishtasis in the range of 3.60 to 4.30 which clearly signifies the acidic character of drug.

The self generated alcohol is found in the range of 5 to 8% v/v. Alcohol content increases with increasing storage time .

It shows the antimicrobial activity .

They possess the pleasant aromatic odour of alcohol with a slightly sweet taste.^[9]

IV. CONCLUSION

Arishta formulation is considered as medicated wine where microbial transformation initiate alcohol formation which helps in extraction of therapeutic attributes and thereby increases the bioavailability of the ingredients.

In these dosage forms multiple phytochemicals having therapeutic values are transformed into liquid form to provide safe, potent and better administered liquid form. It shows pharmacological activity for the treatment of thrombocytopenia ,which minimizes the fever and body or joint pain .^[10]

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