



## Research article

## An approach to standardize Arjunarishta: a well-known ayurvedic formulation using UV and Colorimetric method

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**Received** - 29 November 2012, **Revised** - 15 December 2012, **Accepted** - 24 December 2012 (DD-MM-YYYY)

### Refer This Article

Ragini Hajari, Amita Patel, A K Jain, 2012. An approach to standardize Arjunarishta: a well-known ayurvedic formulation using UV and Colorimetric method. Journal of medical pharmaceutical and allied sciences, V 1 - I 1, Pages - 1 – 3. Doi: <https://doi.org/10.55522/jmpas.V1I1.0001>.

### ABSTRACT

The most known Indian Traditional systems such as Ayurveda, Siddha, Unani and Homeopathy were being practiced all over the world and are gaining demand these years. Ayurveda originated in India some 6500 years ago, and is considered to be the mother doctrine of today's holistic health care. The word is combination of Ayur, meaning "life" and Veda, meaning "science". Literally translated from Sanskrit, Ayurveda means "the science of prolonging life". Information on the quantitative parameters of Arishta i.e. Arjunarishta to guarantee the quality and the safety of the product to the consumer is less. In recent study quantitative parameters of self-made & few brands of Arjunarishta have been evaluated as per Ayurvedic pharmacopoeial guidelines.

**Keywords:** Arishta, Ayurveda, Standardization, UV, Colorimetri, Quantitative parameters.

### INTRODUCTION

Ayurveda was first recorded in the Veda, the world's oldest existing literature. The three most important Veda texts containing the original and complete knowledge of Ayurveda, believed to be over 1200 years old, is still in use today. The word 'Veda' means knowledge. The evolution of the Indian art of healing and living a healthy life comes from the four Vedas namely: Rig Veda, Sama Veda, Yajur Veda and Atharva Veda <sup>[1]</sup>. More than 1,200 species of plants, nearly 100 minerals and over 100 animal products comprise the Ayurvedic Pharmacopoeia. Asava and Arishta are unique dosage form discovered by Ayurveda having indefinite shelf life and it was said that the "older the better it is". Because this dosage form has an inherent attribute of continuous hydro-alcoholic extraction and probably formation of natural analogues of the chemical compounds present in the medicinal plants <sup>[2]</sup>.

*Arishtas* and *asavas* 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 the addition of sugars. *Arishtas* are made with

decoctions of herbs in boiling water while *asavas* are prepared by directly using fresh herbal juices <sup>[3]</sup>.

Preparation of arishta can be done by decoction and infusion process. In this process, the crude drug is boiled in a specified volume of water for a defined time; it is then cooled and strained or filtered. This procedure is suitable for extracting water-soluble, heatstable constituents <sup>[4]</sup>. Fresh infusions are prepared by macerating the crude drug for a short period of time with cold or boiling water. *Woodfordia fruticosa* are mostly used in asava and arishta for fermentation <sup>[5]</sup>. Arjunarishta is a cardiac tonic. It is an excellent adjuvant in the management of chronic cardiac diseases. It is also useful in the treatment of hypertension. Arjunarishta is very safe and natural & gives excellent results in Heart & respiratory Problem. The study aims to understand the benefits of Ayurvedic formulations like Arishtas and need to standardize and validate them. Study of such formulations in current scenario is of immense importance because Asava, Arishtas, the self-fermented products can undergo continuous chemical transformation which goes on beyond hydro-alcoholic extraction of the

suspended material. This may result in novel natural molecules with enhanced therapeutic activity. Arjuna is one of the best cardio-protector agents. Sincetime immemorial, Arjuna has been an herb of choice in dealing various Problems [6].

## MATERIAL AND METHOD

### Method of preparation

In preparation of Arjunarishta, Arjuna bark, Draksha, Madhupusha, Guda and Dhataki, was used. All the ingredients of pharmacopoeial quality were washed, dried and powdered and passed through the specified amount of water to the powdered drugs and soak overnight. After that heated it to reduce the amount of water one fourth of its quantity and filter through muslin cloth to obtain Kvatha. Add Guda to the Kvatha and allowed to dissolved and filter through the muslin cloth [7].

Transfer the filtrate to a clean container, and add Dhataki and sealed the mouth of the container. Shift the container to the fermentation room and constantly check for the signs of completion of fermentation process. Filter the fermented material through a clean muslin cloth. Pack in air tight containers and allow for maturation [8].

### Physicochemical analysis of Arjunarishta

#### Determination total solids

Determination of total solids in Asava/Aristha is generally required. Asava/Aristha containing sugar or honey should be examined by method 1, sugar or honey free Asava /Aristha and other material should be examined by method 2.

#### Method- 2

Transfer accurately 50 ml of the clear Asava /Aristha to an evaporable dish, which have been dried to a constant weight and evaporate to dryness on a water bath at 105. For 3 hours .After cooling the dish containing the residue in a desiccators for 30 min, Weigh it immediately. The weight of residue should comply with the requirement stated under the individual monograph.

#### Determination specific gravity

Select a thoroughly clean and dry pycnometer.

#### Determination of pH

The pH value of an aqueous liquid can be determined potentiometrically by means of the glass electrode, a reference electrode and a pH meter either of the digital or analogue type [9].

#### Determination alcohol content (By specific gravity method)

This method is intended only for certain liquid preparations containing ethanol. Where the preparation contains dissolved substances that may distil along with ethanol [10].

#### Determination of absence of methanol

Take 1 drop of the sample in a 15 ml test tube. Add 1 drop of water with 1 drop dilute phosphoric acid (10% w/v of water) followed by 1 drop of potassium permanganate solution (1% w/v of water). Add sodium bisulphate solution drop wise until the permanganate color is discharged. If brown color remains add 1 drop of dilute phosphoric acid followed by 5 ml of chromo tropic acid solution (5 mg chromo tropic

acid Na salt in 10 ml mixture of 9 ml Sulfuric Acid & 4 ml water) and heat to 60° C for 10 minutes. If no violet color is produced it indicates the absences of methanol. All results are shown in table 1

**Table 1:** Physicochemical analysis of Arjunarishta

Name of Parameter	Sam. ml	Sam .m2	Sam .m3	Sam. P1	Sam. P2	Sam. P3
Total solid content	8.48 %	20.0 %	13.6 %	20.52 %	22.64%	24.72 %
pH	4	4	4	4	5	5
Alcohol content	5.4%	6.8%	6.5%	7.2%	6.9%	6.5%
Specific gravity	0.901	1.040	0.949	1.029	1.066	1.068
Absence of methanol	-	-	-	-	-	-

### Colorimetric analysis of gallicacidin Arjunarishta using folincioalteu reagent

#### Standard solution preparation

100 mg of standard Gallic acid was dissolved in a 100 ml volumetric flask and make up the volume up to 100 ml using distilled water. Take suitable aliquots of this solution to make 0.1 ug \ml solution.

#### Sample preparation

Take 1 ml of formulation in 10 ml volumetric flask and diluted it with distilled water (5ml). Add 0.25 ml of Folin ciocalteu reagent and 1.25 ml of sodium carbonate solution and make up the volume up to 10 ml using distilled Water and stand the flask for 30-50 min. after 30 min. record the absorbance at 420 nm. Calculate the amount of Gallic acid in Arjunarishta formulation from the calibration curve equation of standard Gallic acid.

#### Preparation of the calibration curve of the gallic acid

The standard solutions were filled in cuvette 5 times and the mean absorbance of Gallic acid was calculated (Table 2) and plotted against the concentration of Gallic acid. The regression.

**Table 2:** Colorimetric analysis of Arjunarishta

Name of sample	Amount of Gallic acid present(µg/ml)
Sam.m1	0.220
Sam m2	0.362
Sam.m3	0.237
Sam. p1	0.242
Sam.p2	0.340
Sam.p3	0.413

## CONCLUSION AND DISCUSSION

The quality of the herbal drugs and reproducibility of the activity are challenging aspects to be equation was found out by using this curve. A typical calibration curve (Figure 1) was obtained.

#### UV analysis of Arjunarishta standard solution preparation

100 mg of standard Gallic acid was dissolved in a 100 ml volumetric flask and make up the volume up to 100 ml using distilled water. Take suitable aliquots of this solution to make 0.1 µg\mL solution.

#### Sample preparation

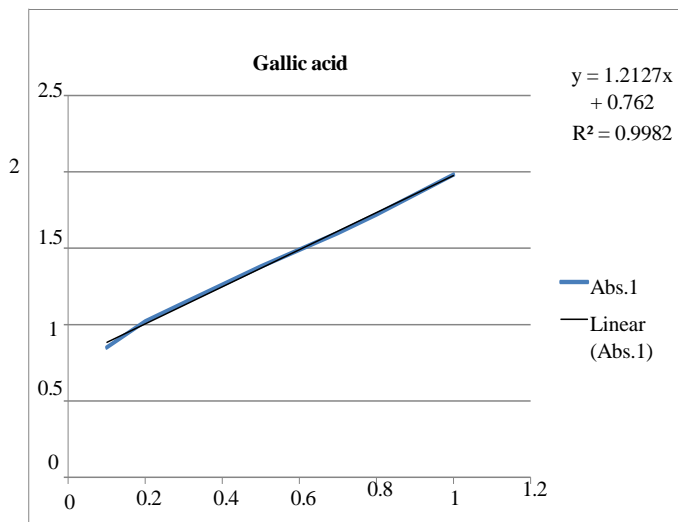
Take 1 ml of formulation in 10 ml volumetric flask and diluted it with distilled water (9ml).Take 1ml of the solution from above solution and make up the volume up to 10 ml and record the absorbance at 260 nm .Calculate the amount of Gallic acid in Arjunarishta formulation from the calibration curve equation of above

standard Gallic acid.

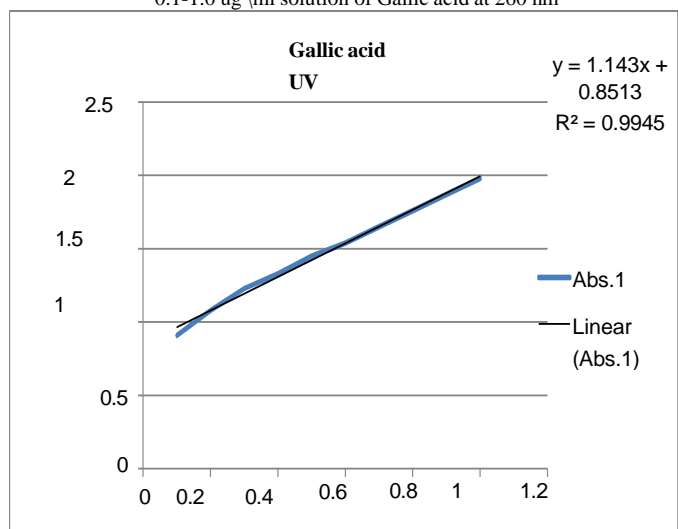
Preparation of the Calibration Curves of the Gallic acid The standard solutions were filled in cuvet 5 times and the mean absorbance of Gallic acid was calculated (Table 3) and plotted against the concentration of Gallic acid.

The regression equation was found out by using this curve. A typical calibration curve (Figure 2) was obtained.

**Figure 1:** Standard curve of Gallic acid at 420 nm using 0.1-1.0 µg/ml solution



**Figure 2:** Standard curve of Gallic acid by UV spectroscopy using 0.1-1.0 µg/ml solution of Gallic acid at 260 nm



**Table 3:** UV analysis of Arjunarishta

Name of sample	Amount of Gallic acid present(µg/ml)
Sam.m1	2.94
Sam.m2	1.79
Sam.m3	2.72
Sam.p1	2.67
Sam.p2	1.90
Sam.p3	1.56

Controlled for a safe and effective use. The research work dealing with standardization is an essential measurement for ensuring the quality control of the herbal drugs “Standardization” expression is used to describe all measures, which are taken during the manufacturing

process and quality control leading to a reproducible quality. It also encompasses the entire field of study from birth of a plant to its clinical application. Arishta have been used as medicines for over 3000 years to treat various disorders. Arishta are liquid preparations containing self-generated alcohol, thus contain water soluble as well as alcohol soluble substances of the drugs. Due to their medicinal value, sweet taste, and easy availability people are prone to consume higher doses of these drugs for longer periods.

The formulation were developed using the formula mentioned in the Ayurvedic pharmacopoeia of the India and another modified method. The advantage of modified method is that it takes lesser time as comparisons with the traditional method. The present work holds its novelty in the fact that a newer method has been developed for the preparation of Arjunarishta formulation not shows any significant change in their phytoconstituents and physicochemical parameters. The procedures available till now involve minimum 30-45 days for completion of fermentation of Asava & Arishta. The present work emphasizes the need to develop a procedure that consumes less time as compare to conventional ones.

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