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A CRITICAL REVIEW OF STANDARDIZATION OF AYURVEDIC ASAVA-ARISHTA

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ABSTRACT

The global demand for ayurvedic formulation has been rising for long. Ayurvedic formulations have been classified in various subtypes depending upon many factors. The demand has been growing continuously due to the medicinal benefits of traditional Ayurvedic dosage forms such asavasarishta, which are liquid dosage forms based on self-generated alcohol. These forms have a longer shelf life, faster absorption, and greater consumer compliance. Therefore, it is desirable to examine the current state of this dosage form's manufacture and standardization when it comes to the procedure, final product quality, and product efficacy. The assessmentanalyse and discusses the value of modifications made to the conventional methods of preparation, components, and materials utilized in the process, along with any potential effects on its efficacy, in spite of attempting to give quality and standards parameters.

KEYWORDS: Aasava, Sandhaan, Kalpana, Arishta, Ayurveda, Fermentation.

INTRODUCTION

Based on Ayurveda's sandhanakalpana, asava-arishta are traditional liquid dose forms made by fermenting natural components by infusion or decoction with self-generated alcohol.[1] Fermentation is the process for making formulations in which the medicinal properties of a combination of ingredients are extracted from either swarasa, which is freshly extracted plant juice, or kwatha, which is a decoction performed in water with the aid of microbial or biochemical fermentation and anaerobic respiration.[2] considering its long-term importance, efficacy, and ease of administration, asava-rishta is recommended and prescribed for the treatment of a variety of illnesses. In "A Critical Evaluation of Ayurvedic Asava-Arishta Standardization,"

In Part I, Review and Status, we provided extensive material from traditional Ayurvedic books as well as a few modern publications. It is a critical and comparative analysis that clarifies the concepts used in the techniques used to prepare asava-arishta. A review of methods used to standardize asava-arishta preparations is presented in this study along with an in-depth discussion of the results.

APPROACHES TO STANDARDIZATION

Ayurvedic product standardization is a subject of interest for industries and science. Traditionally Ayurvedic product formulations must be altered for massive operations. Before introducing new techniques, careful consideration must be given to how to meet the demands of mass production while sustaining Ayurvedic principles. To standardize these self-generated derived from alcohol liquid, numerous guidelines have been adopted. Multiple approaches to standardize asava-arishta have been considered over a number of years. Three major categories can potentially be used to classify these quality control approaches: Methodpertaining to equipment and raw materials

Mechanism for standardizing the production process
Method for standardizing the final product's qualities and attributes
Method dealing with equipment and raw materials

Both the process and the final result are significantly impacted by the quality of the herbs, raw materials, and other materials utilized in these preparations. The initial components usedin these preparations need to be verified and checked for the necessary quality. Since these may affect the primary fermentation process and specific contaminants may be

maintained throughout the process, testing of the limitations of heavy metals, microbial load, and residual pesticides is planned. Before these raw materials are used in the core manufacturing process, it is preferable that the proper storage conditions be met.[3] Factors that will affect the process include the kind of equipment utilized, the supplies that are used for the fermentation and storage containers, the treatment applied to the vessels, and the temperature and storage conditions.

strategy pertaining to manufacturing process standardization
Temperature effect;
Use of various containers and circumstances for fermentation

EFFECT OF TEMPERATURE

The temperature invariable prdeprecated influence on the fermentation process. The following temperatures and the point of time for introducing sugar components to the formulation are taken from qualitative studies done to know the effects. Draksharishta, whose first batch was a subject of a research, was prepared by combining jaggery with kashaya, an herbal infusion for two minutes followed by boiling. Jaggery was added to one of the batches after the decoction temperature settled around 40 degrees Celsius. The mixture was then transferred to a fermenting container. It has been stated that the arishta which was cold had less specific gravity, total solids and total sugars in comparison to the arishta which was hot.

On the other hand, the cold arishtahad 7.64% alcohol produced content while the heated arishta has none, Al Arishtahad has an alcohol on date of filtering. The two however contained equal amount of tannin. Enormous amount of pH and very low level of titratable acidity was characteristic of the arishta from decoction applied with heat than of the cold arishta, which had fresh juice as its source. Higher temperature of the hot Kashaya formulation was said to have disabled or killed the yeast cells making fermentation process irrelevant, while on the other side cool kashaya was said to have contributed immensely to the fermentation process since yeast cells were not destroyed,[4,5]

FERMENTATION TIME

For a year, the impact of retaining the arishta for a longer duration of time was examined for Amritarishta. The findings demonstrated that as time increased, the specific gravity, total solid content, and sugar content all gradually decreased. The alcohol concentration increased in parallel, reaching its peak after six months. The pH value remained constant. 6. In order to

determine when the fermentation process began and ended, a research was conducted. It began on day five of Drakshasava and ended on day twenty-five." It was shown that fermentation occurs in six days during the fall and summer, ten days during the winter, and seven to ten days during the rainy season. In the hot tropical environment, a maximum of thirty days is permitted in the cold climate, when biological activity is at its lowest.8.

USE OF VARIOUS VESSELS AND PREPARATION CONDITIONS

The utilization of clay pots as well as of other vessels is referenced within the Ayurvedic texts. For example, when making Saraswatharishta the process of fermentation is done in a gold vessel 10. Materials like glass, aluminum, tinned copper, jars, stainless steel, porcelain and earthen fell into the category of asava-arishta containers and the following results were observed. The analytical value of arishtas made from decoction cooked in vessels of different materials when subjected to comparison did not vary. However, in the AARS study, there were traces of aluminum that were present in the asbestos prepared from the aluminum vessels. More so, this research also showed that tinned copper containers were a better choice for fermentation.

The preparation of Draksharishta and Drakshasava in both glass containers and clay pots did not lead to any observable difference in the quantity of alcohol produced. It was found that dishes prepared in glass containers had about a greater amount of acid than those made in clay pots. All TLC patterns and analytical data remained the same. On the other hand, earthen pots limited the solubility of compounds because the amount of water loss by evaporation was high. This change in pH level, in turn, changed the performance of the organisms. Indian Pharmacopoeia states that sterilization of vessels can be done by either means, radiation gas, chemical, or physical.

Approach related to standardization of properties and quality of the end product:

1. Physicochemical characteristics
2. Studies that use analysis
3. Research on microbes

PHYSICOCHEMICAL PARAMETERS

Asava-arishta is often uniformed using physicochemical characteristics such as total solid content, specific gravity, pH, density, extractive values, viscosity, surface tension, and refractive index, as well as phytochemical parameters such as tannins, alkaloids, reducing and

non-reducing sugars, alcohol, and total sugar. Iron, magnesium, calcium, phosphate, sulphates, ash value, sodium, and potassium levels in the asava-arishta formulations have also been examined by several studies. days, and 8 days in the spring. As is customary, there was significant variance between the laboratory and market samples' pH, extractive value, ash content, specific gravity, reducing sugar, potassium, and sodium contents in the Kumariasava research. Different pharmaceutical firms' samples showed less effectiveness in animal experiments than the conventional formulation, and variations were noted in the phytochemical contents.

Samples of Aravindasavaand Ashwagandharishta from 20 different brands were gathered and kept at room temperature in sealed bottles. These were gathered at random and examined for pH, acidity, ethanol content, and percentage of total alcohol. Each brand of Ashwagandharishta had a varied alcohol percentage, ranging from a high of 13.13% to a low of 7.27%. The pH value was tested when the bottles were opened, seven days later, and fourteen days later. Aravindasava and ashwagandarishta exhibited somewhat acidic qualities.

2. ANALYTICAL STUDIES OF ASAVA-ARISHTA

To test for asava-arishta, the Thin Layer Chromatography (TLC) method is performed. As extra test parameters, research has also been done on the quantitative measurement of proteins, lipids, and nitrogen content.

When developed with the proper solvent system (Chloroform - Methanol - Ammonia solution; 16:8:0.1), the alkaloids isolated from the standard Kutajarishta sample displayed at least five Dragendroff's staining spots on a chromatogram, according to a TLC study. The TLC of Kharjoorasava showed that the flowers utilized to initiate fermentation, Hapusha (Juniperus communis L.) and Dhataki (Woodfordiafruticosa), were quite similar. Using silica gel GF-254 as the stationary phase and chloroform: ethylacetate (75:25) as the mobile phase, TLC analysis of Drakshasava were conducted in accordance with pharmacopoeia. Spots were seen in both visible and ultraviolet light. The components' Rf values were 0.94, 0.62, and 0.46 for the hydro-alcoholic extract, 0.98, 0.38, and 0.32 for the benzene extract, and 0.96 for the chloroform extract. The necessary pharmacopoeia tests were passed by the Drakshasava market sample.

It pointed out that Kanakasava has weak acidic qualities. Kanakasava'sethanol concentration was determined using two methods: gas chromatography and specific gravity. Within the

labeled claims, the ethanol content from the two procedures was similar. This study came to the assumption that methods for standardizing and ensuring the quality of asava-arishta could be developed using the alcohol, acidity, and pH levels of commercially available Kanakasava.24 Gas chromatography is a quick way to identify volatile substances. Within 15 minutes, 18 nonethanol volatile chemicals were extracted from a typical mixture.

3. MICROBIOLOGICAL STUDIES

The fermentation process in asava-arishta uses ingredients including Woodfordiafruticosa, Madhuka (Madhuca longifolia) flowers, yeast cells, jaggery, honey, and straight alcohol. According to a comparative study on the effects of including W. fruticosa and yeast (Saccharomyces cerevisiae) as fermenting media for Kutajarishta, the fermentation process with yeast began on the second day and was finished in one month, while with W. fruticosa, it began on the fifth day and was finished in two months. Because yeast cells multiply more quickly than flowers do naturally, fermentation may be delayed.

Two fungus, Rhizopus nigridans Ehrenberg and Aspergillus niger Van Tieghem, were isolated from W. fruticosa flowers in a research on Kumariasava. Eventually it was discovered that under optimal circumstances, these microbes were unable to ferment sugar. In a further investigation, W. fruticosa flowers were put to a sterilized mixture of jaggery and Kumariasava components and left for a month. The preparation showed no signs of alcoholic fermentation. However, regardless of whether W. fruticosa flowers were added or not, alcohol was created in the standard mixture, ruling out the likelihood that W. fruticosa was the sole source of the organism. In accordance to research on W. fruticosa flowers in Nimba-Arishta fermentation, the flowers aid in the formulation by releasing enzymes such as invertase, but not yeasts. Because there were less active yeast cells from the nectoriferous zone accessible to act as inoculums, fermentation triggered by W. fruticosa flowers proceeded more slowly. Actually, it took almost a week to establish a sufficient number of cells to start fermentation. The anti-invertase substances found in W. fruticosa flowers may also be responsible for this lag, since they may slow down fermentation during formation. Wild yeasts found in W. fruticosa flowers are able to withstand high sugar concentrations and are obviously capable of accelerating the fermentation process in asava-arishta. It is also clear that the traditional approach of using osmophilic yeast and initiating fermentation with a greater sugar concentration worked well for making asava-arishta. Another study showed

unequivocally that the inoculum of these yeasts may significantly shorten the fermentation period without sacrificing their biological activity or quality characteristics.

CONCLUSION

The micro-organisms assist in the fermentation process in production of alcohol in medicinal wines known as asava-arishta, which helps in the extraction of the substance's vital qualities and enhances the bioavailability of the elements. The aim is to use modern technology and modifications to the fermentation process in controlling the quality and maintaining its consistency. Some of the metrological standards for asava-arishta have been established with the help of galvanometry, spectroscopy, chromatic techniques such as TLC, HPTLC or gas chromatography methods. The various methods have produced various results. Some of these strategies may also serve to advance the development of more effective standardization measures for this particular liquid dosage form. There are very few comparative analytical studies conducted for the traditional and the modern techniques of preparing the dosages. There is no doubt that comparing traditional and modern techniques of preparation, and so verifying the clinical and even therapeutic efficiency evaluation, would provide better guidance towards more advanced preparation techniques and more reliable standardized criteria. With the help of a critical appraisal of Ayurvedic principles, modern technology will be used innovatively to formulate better standardized, safer and more therapeutically effective asava and arishta.

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