CLINICAL EFFICACY OF FERMENTATIVE MEDICINAL FORMULATIONS (ASAVA-ARISHTA) - A REVIEW

Rahul K Shingadiya*, Suhas A Chaudhary‡, Prashant Bedarkar†, B J Patgiri‡, P K Prajapati§

1,3,4,5Dept. of Rasa Shastra & Bhaishajya Kalpana Including Drug Research, Institute for Post Graduate Teaching & Research In Ayurveda, Gujarat Ayurved University, Jamnagar, India
2 Dept. of Kaumarbhitra, Institute for Post Graduate Teaching & Research In Ayurveda, Gujarat Ayurved University, Jamnagar, India.

*Correspondence for Author: Dr. Rahul K Shingadiya
Dept. of Rasa Shastra & Bhaishajya Kalpana Including Drug Research, Institute for Post Graduate Teaching & Research In Ayurveda, Gujarat Ayurved University, Jamnagar, India.

ABSTRACT
Background- Asava and Arishta are one of the most popular dosage forms of Ayurvedic medicaments due to their long shelf life, quick action and high therapeutic effectiveness. Various clinical studies have been carried out at department of RS & BK of IPGT & RA to evaluate clinical efficacy of Asava-Arishta in different diseases. Aim- Present study is aimed to compile such available research works. Objectives- Total 15 completed research works were found on clinical aspect of Asava-Arishta on five major diseases such as Benign prostate hypertrophy (Paurush granthi shotha), Mal absorption syndrome (Graham), Bronchial Asthma (Tamak Shvasa), Anaemia (Panda) and Skin disorders (Kushtha). Result- All the Asava-Arishta taken for the studies were found to be effective and clinically safe in related diseases. Conclusion- Classically prepared Asava Arishta are more efficacious than prepared with modified methods. Effect of Asava Arishta is more prone towards the diseases in which Mundagni is involved.

KEY WORDS: Arishta, Asava, Ayurveda, Fermentative medicinal formulation, Shirisharishta, Kanakabindvarishta, Sandhana kalpana, Self generated alcohol.

INTRODUCTION
Ayurveda the dynamic and progressive science has enlightened the path to serve the humanity suffering from diseases. It offers various herbal and herbo-mineral as well as single and compound dosage forms for prevention and treatment of threatening diseases. Selection of a dosage form depends upon maximum possible extraction of the active components required for diseased condition of the patient.[1] Asava and Arishta, the main products of Sandhana[2] Kalpana are well-known from Vedika Period[3] and quite popular among Ayurvedic physicians. They prove more beneficial in the treatment of many diseases as it is having medicinal as well as nutritious value. [4] Compare to other preparations it is having longer shelf life, quick absorption and maximum bioavailability. [5] The basic material required for this dosage form includes Drava dravya (liquid media), Madhura dravya (sweetening agents), Prakshepa dravya (condiments), and Sandhana dravya (fermenting agents).[6] The self generated alcohol plays an important role in making these preparations more superior from pharmaceutical as well as therapeutic point of view. [7] The properties of both the solvents like water and alcohol are achieved in the Asava-Arishta reparation. The solubility of proteins, colouring matters, gums, anthraquinon derivatives, most alkaloidal salts, glycosides, sugars and tannins are instilled by mixture of alcohol and water. It also dissolves enzymes, water soluble vitamins, many organic acids, most organic salts and small proportion of volatile oils.[8]

Self generated alcohol promotes rapid absorption of constituents, quick in action, prevents growth of moulds and bacteria and increase shelf life. Presence of sugar and Prakshepa increase palatability. [9] This kalpana is also utilizing multitude of sanskara.[10] In nutshell, it fulfils all the desired characteristics of desirable medicinal dosage form.

In these studies, most popular formulations of Asava-Arishta for particular diseases are found evaluated like Kutajarishta for Graham[11], Vasakarishta and Shirisharishta for Tamaka Shvasa[12], Dhatriarishta for Pandu[13], Khadiarisishta and Kanakabindvarishta for Kushtha[14], etc. Present study is an attempt to compile clinical efficacy of Asava-Arishta in these available research works.
MATERIAL AND METHODS

Works related to clinical efficacy of Asava-Arishtas carried out in the department of Rasa shastra and Bhaishajya kalpana including drug research under IPGT and RA, Gujarat Ayurved University, Jamnagar PhD and PG levels during 1959 – 2015 were compiled and screened to provide the guidelines for further research works in management of different diseases such as Benign prostate hypertrophy (Paurush granthi shotha), Mal absorption syndrome (Grahani), Bronchial Asthma (Tamaka Shvasa), Anaemia (Pandu) and Skin disorders (Kushtha).

Observations

On Benign prostate hypertrophy (Paurush granthi shotha)

Jha C B et al, MD (Ayu), 1974[18]

In this study, effect of Mahayavanala Arishta was evaluated in Paurush granthi shotha. Total 18 patients were treated, in which 72.22% got marked relief while 11.11% and 16.67% got moderate and mild improvement respectively. Mahayavanala Arishta was found to be comparatively more efficacious than Mahayavanala Kwatha on comparing results with previous study (Manikeri HK et al [16]).

On Mal absorption syndrome (Grahani)

Sharma N. K et al, MD (Ayu), 1981[19]

Total 20 patients were treated into two groups. In group A 30ml Vidangarishita[19] was prescribed once a day with equal quantity of water after meal for 4 weeks. In group B 1 gm of Vidangi[19] churna (powder of Embelia ribes Burm.f.) was prescribed thrice a day after meal for 4 weeks. In group C Metronidazole 400mg thrice a day was prescribed as control group for 10 days. Significant result was found in cardinal symptoms in Vidangarishita treated group.

Pathak R. M et al, MD (Ayu), 1981[20]

In this study, Total 18 patients of Grahani were treated in 3 equal Groups. In group A 30 ml Takrarishita[21] was prescribed thrice a day with equal quantity of water for 4 weeks. In Group B Ingredients of Takrarishita in powder form were given with Takra (buttermilk) with same dose and duration. In group C Panchamrita parpati[22] was prescribed 500mg thrice a day with equal quantity of water for 4 weeks. Maximum result was found in group B (66.67% Marked and 33.33% moderate) followed by group A (50% Marked and 50% moderate) and group C (33.33% Marked and 50% moderate and 16.67% mild).

Satyanarayana B et al, MD (Ayu), 2000[23]

In this study, efficacy of Kutajarishita[24] and Kutajavaleha[25] was evaluated in the management of Grahani. 12 patients were treated with Kutajarishita while 08 patients were treated with Kutajavaleha. 20ml Kutajarishita was prescribed thrice a day with equal amount of water after meal for the duration of 21 days. In Kutajarishita group, statistically highly significant (P<0.001) result was found in cardinal symptoms.

Abhyavarana Shakti (Eating capacity) and Jarana Shakti[26] (Digestive capacity) were found highly significantly increased and significant increase was also observed in body weight. In total effect of Kutajarishita, 25% of the patients got complete remission while 50% and 25% of the patients got marked and moderate improvement respectively. In compare to Kutajavaleha, Kutajarishita found better in relieving signs and symptoms of Grahani.

Lakhani R et al, MD (Ayu), 2002[27]

This study was conducted to compare the clinical efficacy of Jirakadyarka[28] and Jirakadyarishta[29] in grahami. Total 16 patients were randomly divided in two equal groups. Jirakadyarishta was prescribed 20 ml thrice a day with equal amount of water after meal for the duration of 21 days. In Jirakadyarishta group, statistically highly significant (P<0.001) results was found in cardinal symptoms. 50% moderate improvement and 50% mild improvement were found in group treated with Jirakadyarishta. Comparatively, Jirakadyarka was found better than Jirakadyarishta in relieving signs and symptoms of Grahani.

On Bronchial Asthma (Tamaka Shvasa)

Kulkarni S et al, MD (Ayu), 2001[30]

In this study, efficacy of Vasakasava[31] and Vasakarishita[32] were evaluated in 24 patients of Tamaka Shvasa. Vasakasava and Vasakarishita were advised in the dose 20 ml thrice a day with water, for duration of 21 days. Both formulations were showing statistically significant result in the symptoms like Shvasakastata, wheezing, crepitation and Rhonchi and Significant decrease in the haematocrit values like ESR, Neutrophils and Eosinophil count. Overall effect of therapy showed that marked improvement was more (57.14%) in Vasakarishita treated group followed by 28.57 % and 14.28% as moderate and mild improvement respectively; while in Vasakasava treated group 30.0% patients were markedly improved, 50.0% were moderately improved and 20.0% were having mild improvement.

Jarsania A et al, MD (Ayu), 2003[33]

This study was aimed to evaluate the efficacy of Bharangiguda Avaleha[34] and Bharangyadi Arishta in the treatment of Tamaka Shvasa. Among 30 patients, 14 were treated with Bharangyadi Arishta and rest 16 were treated with Bharangiguda Avaleha. Bharangyadi Arishta was prescribed 20ml twice a day with equal quantity of water for duration of 30 days. Both the formulations had shown statistically highly significant results on cardinal symptoms. Overall 7.14% marked improvement, 57.15% moderate improvement and 35.71% mild improvement was observed in Arishta group. Comparatively Bharangiguda Avaleha had more significant effect in treating the disease Tamaka Shvasa than Bharangyadi Arishta.
Murlidhar R et al, MD (Ayu), 2004[35]
In present Study, Total 19 patients were treated in 3 different Groups of Shirisharishta[36] Shirisharishta-1 prepared as per classical general guide lines. Shirisharishta-2 prepared with the process modification as said by Acharya Gopurarakshita and Shirisharishta-3 prepared with the process modification discretely practiced in Kerala. Six patients in group A were administered with Shirisharishta-1, 20 ml twice a day for 30 days, six patients in group B were administered with Shirisharishta-2, 15 ml twice a day for 30 days and Seven patients in Group C were administered with Shirisharishta-3, 20 ml twice a day for 30 days. Overall 78.35%, 78.46% and 66.74% reduction was found in the cardinal and associated symptoms in group A, group B and group C respectively. Shirisharishta-1, prepared according to classics (Bh. Rat 72/72-75) had been proclaimed to be most successful in treating Tumatka Shvasa as it exhibited consistent results in most of the parameters.

Gandhi P et al, MD (Ayu), 2005[37]
The study was planned to compare the efficacy of three dosage forms of vasa in Tumatka Shvasa. In group A Vasa Avaleha[38] (9 pts), in group B Vasa Ghrita[39] (6pts) and in group C Vasa Arishtha[40] (6pts) were prescribed.

Vasa Avaleha showed marked improvement (77.77%) followed by Vasa Arishtha (33.33%). Comparatively, Vasa Avaleha showed better Shvashara effect than Vasa Arishtha, While Vasa Arishtha showed better results than Vasa Ghrita.

Jaiswal M et al, MD (Ayu), 2007[41]
Total 48 patients were treated in three different Groups. Group A (n=15) was treated with Shirisharishta prepare with Twaka (Bark) whereas Group B (n=15) and Group C (n=18) were treated with Shirisharishta prepared from Kastha (sap wood) and Sara (Heartwood) respectively. In each group similar dose pattern 20ml twice a day with equal quantity of water was adopted for 28 days. All the groups had shown highly significant to significant results on frequency, intensity and duration of Shvasa. Effect on the Kasa, Kaptha stivana and Pinasa were also highly significant (P<0.001) for all the three groups. A most important result was found on the intake of allopathic medicine as emergency drug. It was highly significant in Group C, significant in group A and insignificant in Group B. Overall Group C (Sara) had shown more percentage of marked improvement i.e.20.00% and 53.33% of moderate improvement while Group A (Twaka) had shown 50.00% moderate improvement and Group B (Kastha) had shown very less percentage of moderate improvement i.e. 28.57%. Clinically Shirisharishta prepared by Sara was found better.

Jaiswal M et al, PhD (Ayu), 2009[42]
Total 64 patients were treated with Navina (Freshly prepared-group A) and Purana (1 year old- group B)  Shirisharishta. Overall 20.31% moderate and 59.38% mild improvement was observed. 20ml Shirisharishta was prescribed twice a day with equal quantity of water after meal for 4 weeks. Both the groups had shown highly significant results on almost all cardinal symptoms. But comparatively navina was found slight better.

Anaemia (Pandu)
Madavi S et al, MD (Ayu), 2009[43]
The study was planned to evaluate efficacy of Dhaturyarishta[44] prepared with Swaraas and kwatha but pharmaceutically kwatha batch was failed[44], so classically prepared dhaturyarishta was taken to evaluate its effect on pandu. 20ml dhaturyarishta was prescribed to 15 enrolled patients twice a day with equal quantity of water after meal for 4 weeks. Statistically highly significant results were found on Serum Iron (5.83%), while significant results were found in T.R.B.C (2.37%), T.I.B.C. (2.65%) and Transferrin percentage (3.45%). Overall 66.67% moderate improvement, 25% marked improvement and 8.33% mild improvement was found.

Skin Disorders (Kushta)
Dhruve K et al, MD (Ayu), 2007[46]
In this study, total 25 patients of Kushta were treated by randomly divided into two groups. Group A was treated with Khadirarishta[47] prepared by sugar, while group B was treated with Khadirarishta prepared by jaggery. In both groups, 40ml dose was prescribed once a day with equal water after meal for 28 days. 50% of patients got markedly improvement in group B, followed by 40% and 10% moderate and mild improvement respectively. These data for the patients of group A were 26.66%, 53.33% patients and 10.00% respectively. Khadirarishta prepared by jaggery had been considered as more efficacious than Khadirarishta prepared by sugar.

Dhruve K et al, PhD (Ayu), 2010[48]
Study was conducted to evaluate the efficacy of Kanakbindvarishta[49] in the management of Vicharchika (Eczema). In group-A 34 patients were treated with Kanakbindvarishta prepared by classical method and in group-B 33 patients were treated with Kanakbindvarishta prepared by adding yeast. In both groups, 20 ml dose was prescribed twice a day after meal for 28 days. In group A and group B, complete remission was found in 9.09% and 3.03% of patients respectively. 39.09% and 9.09%of patients got marked improvement, while moderate improvement was seen in 36.36% and 39.39% of patients respectively. 9.09% of patients got mild improvement in group A while 3.03% patients found unchanged in Group B. They concluded that Kanakbindvarishta prepared by classical method group is more efficative than Kanakbindvarishta by yeast added method.

Shingadiya R et al, MD (Ayu), 2015[50]
This study was conducted to evaluate the efficacy of Savarnakara Yoga[51] in Lepa and ointment forms and
Kanakabindevarishta in the management of Shvitra (Vitiligo). Among 52 patients, 24 were treated with Savarnakara Lepa for local application (group A) and 28 patients were treated with Savarnakara ointment for local application (group B). In both group internally Kanakabindevarishta - 20ml with equal quantity of water was given twice a day for the duration of 2 months and 1 month follow up. In Group A and group B 20.83% and 17.86% moderate improvement, 75% and 60.71% mild improvement and 4.17% and 14.29% patients was found unchanged respectively. In Group B 7.14% of patient showed marked improvement and none of patient showed complete remission in both groups.

Tables
Table 1: Comparative clinical efficacy of Asava-Arishta with other dosage forms

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Asava-Arishta</th>
<th>Other Dosage forms</th>
<th>Comparative Better efficacy</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mahayavnal Arishta</td>
<td>Mahayavnal Kwatha</td>
<td>Mahayavnal Arishta</td>
<td>Paurush Granthi Shotha</td>
</tr>
<tr>
<td>2</td>
<td>Vidangarishta</td>
<td>Vidanga Churna</td>
<td>Vidangarishta</td>
<td>Grahani</td>
</tr>
<tr>
<td>3</td>
<td>Takrarishta</td>
<td>Panchamrit parpati</td>
<td>Takrarishta</td>
<td>Grahani</td>
</tr>
<tr>
<td>4</td>
<td>Kutajarishta</td>
<td>Kutajavaleha</td>
<td>Kutajarishta</td>
<td>Grahani</td>
</tr>
<tr>
<td>5</td>
<td>Jirakadhvarishta</td>
<td>Jirakadhvaryaka</td>
<td>Jirakadhvaryaka</td>
<td>Grahani</td>
</tr>
<tr>
<td>6</td>
<td>Bharangyadi Arishta</td>
<td>Bharangyadi Avaleha</td>
<td>Bharangyadi Avaleha</td>
<td>Tamaka Shvasa</td>
</tr>
<tr>
<td>7</td>
<td>Vasa Arishta</td>
<td>Vasa Avaleha</td>
<td>Vasa Avaleha</td>
<td>Tamaka Shvasa</td>
</tr>
<tr>
<td>8</td>
<td>Vasa Arishta</td>
<td>Vasa Ghrita</td>
<td>Vasa Arishta</td>
<td>Tamaka Shvasa</td>
</tr>
</tbody>
</table>

Table 2: Comparative clinical efficacy of Asava-Arishta prepared with different methods

<table>
<thead>
<tr>
<th>No</th>
<th>Name of Asava-Arishta</th>
<th>Classical Method</th>
<th>Modified Methods</th>
<th>Comparative better efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Shirisharishta</td>
<td>By using Sara</td>
<td>By using Kwatha and Twaka</td>
<td>Classically Prepared</td>
</tr>
<tr>
<td>3</td>
<td>Dhatriarisha</td>
<td>By using Swarasa</td>
<td>By using Kwatha</td>
<td>Classically Prepared</td>
</tr>
<tr>
<td>4</td>
<td>Khadirarishta</td>
<td>By using Jaggery</td>
<td>By using Sugar</td>
<td>Classically Prepared</td>
</tr>
<tr>
<td>5</td>
<td>Kanakabindevarishta</td>
<td>By using Dhutaki Pushpa</td>
<td>By using Yeast</td>
<td>Classically Prepared</td>
</tr>
</tbody>
</table>

DISCUSSION
On review of Ayurvedic literature, it is found that Asava and Arishta are said to be used in two different ways; one as a medicine and the other as an anupana (vehicle) of different medicines or food. [32] Acharya Sushruta has described 27 Asava-Arishta used as an anupana. [33] where it helps the medicine in getting desired action and thus enhances the property of drug. [34] As a medicine, it works on vitiating Agni by its properties like Laghu, Vyavayi, Ushna, Tikshna, Sukshma, Amla, Aashu, Rikshe, Vikasi and Vishada. [35] Fundamental principal of Ayurveda says that vitiated Agni is the root cause of all the diseases. [36] Arishta Kalpana is such Kalpana that can either eliminate the excess dosha or palliate dosha besides improving the Agni. Thus, Asava-Arishta has a great potential to treat many diseases.

In classics, total 226 Asava Arishta are found. (Charaka Samhita 36, Sushruta Samhita 21, Ashtang Samgraha 23, Ashtanga Hridya 13, Chakradatta 05, Gada Nigraha 60, Sharangdhar Samhita 13, Bhaishya Ratnavali 43 and Yoga Ratnakara 12) In four most ancient classics (Charaka Samhita, Sushruta Samhita, Ashtang Samgraha and Ashtanga Hridaya) maximum indications of Asava Arishta are found for several diseases such as Panduroga (39), Grahani (35), Kushtha (37), Shotha (29), Arsha (32) and Prameha (29); which shows that effect of Asava Arishta is more prone towards these diseases. [37]

Among the comparative clinical studies, Asava Arishta had found more effective than other dosage forms such as Kwatha, Churana, Parpati and Ghrita, while dosage forms like Avaleha and Arka had found more efficacious than Asava-Arishta. Mahayavnal Arishta has shown more relief than Kwatha in BPH. Kutajarishta found better in Grahani than Kutajavaleha. Vasa Arishta showed better results than Vasa ghrita. But Jirakadhyarka was found better than Jirakadhyarkishta in Grahani, may be due to the presence of active principle in volatile contents of Jiraka which was extracted in Arka Kalpana. [38] Bharangyadi Avaleha and Vasa Avaleha found better than their Arishta forms in shvasa, as Avaleha form is more effective in Shvasa due to its more localized effect through lehya properties. (Table 1)
Alcoholic preparations and their actions are innumerable depending upon the ingredients, their combinations and the method of preparation. In these research works, various modified methods were found adopted with the aim to get better efficacy and better convenience. They all found effective in relieving signs and symptoms of diseases. However, it is observed that classically prepared Asava-Arishta had shown better effect than Asava-Arishta prepared with modified methods. Murlidhar et al and Jaiswal et al had found that Shirisharishtha prepared with classical method was clinically better than modified methods. As Shirish Sura is described in nine Asava yoni (Sources) by Charaka[59], it found better than Kashtha and Twaka. Madavi et al found that modified method was not successful in preparation of Dhatriarishtha, which itself prove the importance of classical method. Similarly Dhruve K et al had found better result in classically prepared Kanakabindvarishtha than yeast added method. As it is found established that Dhataki flower is an essential component of Asava-Arishta, not only for initiation of fermentation, but for enhancing clinical efficacy as well. [60] (Table 2)

Maximum works have been carried out on Tamaka shvasa and Grahani. It is mentioned in classics that the drug administered for the treatment of Shvasa, should be able to overcome Vata and Kapha for immediate and symptomatic relief but should also pacify the Pitta for a permanent or quasi permanent relief[61]. Moreover quick action, acceptance of patient with respect to palatability and long shelf life is also important in selection of dosage form. Asava-Arishta is the Kalpana fulfilling the above requirements by eliminating or palliating the excess Dosha besides improving the Agni. Similarly it is very useful in the disease such as Grahani, Kushtha and Pandu in which vitiation of Doshas and Agni are the root causes.

As Asava Arishta comes under Madhya Varga[62] (Alcoholic Preparations), it may cause some adverse effect like burning sensation, heaviness etc if prepared or prescribed in improper manner. [63] It should also prescribe in such dose that would not cause intoxicated movement of eye balls and perversion of mental activities. [64] In any of these studies no any adverse effects of Asava Arishta were reported. Hence all studies support the potential and safety of the dosage form-Asava Arishta in management of various diseases. In these researches certain limitations were also observed, but their results may prove milestone for further well designed long term studies covering larger population.

CONCLUSION
In nutshell, all Asava Arishta were found to be effective in various diseases eg. Benign prostate hypertrophy (Paurush granthi shotha), Mal absorption syndrome (Grahani), Bronchial Asthma (Tamaka Shvasa), Anaemia (Pandu) and Skin disorders (Kushtha) and also found clinically safe as no events of adverse drug reaction were reported during treatment period. It is concluded that classically prepared Asava Arishta are more efficacious than prepared with modified methods. Effect of Asava Arishta is more prone towards the diseases in which Mandagni is involved.

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