



## ORIGINAL RESEARCH PAPER

Ayurveda

## PHARMACEUTICO-ANALYTICAL STUDY OF A NOVEL RAKTAPRASADAN AASAV

**KEY WORDS:** Alcohol, Aasav, Dravya, Raktaprasadan

<b>Yashasvi Khobragade</b>	PG Scholar, Dept. of Rachana Sharir.
<b>Dr. Sachin Khedikar*</b>	Professor, Dept. of Rachana Sharir. *Corresponding Author
<b>Dr. Priti Desai</b>	Professor & HOD, Dept. of Rachana Sharir.
<b>Dr. Bharat Rathi</b>	Professor, Department of Rashashastra & Bhaishajya Kalpana.
<b>Dr. Dheeraj Singh Rajput</b>	Assistant professor, Department of Rashashastra & Bhaishajya Kalpana.

**ABSTRACT**

Ayurveda is an intricate medical system that originated in India thousands of years ago. "Ayurveda is not merely a system of medicine. Asava-Arishta are classical liquid dosage forms wherein infusion or decoction of natural ingredients are fermented with self-generated alcohol based on Sandhana Kalpana as described in Ayurveda." "Pharmaceutico-Analytical study of Aasav prepared out of Raktaprasadhan Dravya" Thorough critical review of available literature from Ayurved and modern science related to Raktaprasadan Dravya and Arishta. Ayurvedic pharmacology gives fundamental importance to the various pharmacological activities of the drugs. It unravels multiple attributes of a single drug through different dosage forms and definite processing techniques. Aasav of Raktaprasadan Dravya is prepared with authentic method given in text; satisfy the standard parameters of Aasav - Arishta Kalpana.

**INTRODUCTION -**

Ayurveda finds its origin in the Vedic era with the consideration that even before the conception of universe it was developed for its sustenance is a remarkable relic<sup>[1]</sup>. It is a traditional system of medicine based on experience and observation. Widely regarded as the oldest form of healthcare in the world. Ayurveda is an intricate medical system that originated in India thousands of years ago. "Ayurveda is not merely a system of medicine, but a way of leading healthy life". Its objective is to accomplish physical, mental, social and spiritual well-being by adopting preventive and primitive approaches as well as treating disease with a holistic approach<sup>[2]</sup>.

Bhaishajya Kalpana is a science which deals in detail about the preparation of different medicinal formulations. Kalpana is the process or the method employed in the preparation of pharmaceutical products. There are many Kalpana mentioned like Swaras(a juice), Kalka(paste), Kwatha(decoction), Hima(cold infusion), Phanta(hot infusion), Sneha(oil), Mashi(clax), Lavana(salt), Malahara(ointment) and many other.<sup>[3]</sup> In order to establish the change in the qualities or properties of the drug either by inducing a new property or improving the existing one and finally making the drug safe and more effective.

Asava-Arishta are classical liquid dosage forms wherein infusion or decoction of natural ingredients are fermented with self-generated alcohol based on Sandhana Kalpana (alcoholic Preparation) as described in Ayurveda.<sup>[4]</sup> Fermentation is a process of preparing formulations wherein the therapeutic attributes of a group of ingredients are extracted out of either swaras(a juice), freshly extracted juice of plants or kwatha (decoction), decoction prepared in water with the help of biochemical or microbial fermentation and

anaerobic respiration into the liquid.<sup>[5]</sup> Asava- Arishta are preferred and prescribed in treatment of a wide range of ailments for its easy to administer form, effectiveness and long term utility.<sup>[6]</sup>

The combination of these five Raktaprasadana Dravyas can be a good remedy to work on Raktadhara Kala as most of these drugs are Tridosha-shamak in nature.<sup>[7]</sup> The Musta (*Cyprus rotundus*) is having Lekhaniya (scraping) property due to its Laghu(light) and Ruksha(dry) qualities. So the Srotorodh (Sanga) which is one of the factor for vitiation of Srotas(channel) can be over hood by intervention of drugs like Musta(*Cyprus rotundus*).<sup>[8]</sup> So Raktadhara Kala can be targeted as a treatment site for the management of diseases related to it.<sup>[9]</sup> Atherosclerosis is one of major factor for development of fatal vascular diseases. So to evaluate the role of Raktaprasadana Dravyas on Raktadhara Kala in cases of atherosclerosis this study is chosen.

Ayurvedic pharmacology gives fundamental importance to the various pharmacological activities of the drugs.<sup>[10]</sup> It unravels multiple attributes of a single drug through different dosage forms and definite processing techniques. A better dosage form will lower the dose and provide optimum benefit.<sup>[11]</sup> Ayurvedic pharmaceutics gives an important role in processing of drugs.<sup>[12]</sup> A pharmacological evaluation of these different dosage forms and a rational understanding of their probable mode of action are necessary.

**1. MATERIAL & METHOD -**

Ingredient of Asava prepared by Raktaprasadan dravya. Were collected from local market Nagpur, Wardha and Dattatraya Ayurved Rasashala, Salod (H), Wardha. Detailed of Sample are mentioned below –

**Table No. 1- Ingredient of Asava Prepared by Raktaprasadan Dravya<sup>(13-18)</sup>**

Sr. no	Ingredient	Useful part	Quantity	Collection place
1	Gorakhmundi ( <i>Spharentus indicus</i> )	Whole plant	250 gm	Local market, Nagpur
2	Chopchini ( <i>Smilax chaina</i> )	Root	250 gm	Local market, Nagpur
3	Sariva ( <i>Haemidesmus indicus</i> )	Rhizome	250 gm	Local market, Nagpur
4	Manjishta ( <i>Rubia cordifolia</i> )	Stem	250 gm	Local market, Nagpur
5	Mushta ( <i>Cyprus rotundus</i> )	Root	250gm	Local market, Nagpur

6	<i>Twak (Cinnamomum zeylanicum)</i>	Stem bark	50 gm	Local market, Wardha
7	<i>Ela (Elettaria cardamomum)</i>	Seeds	50 gm	Local market, Wardha
8	<i>Tejpatra ( Cinnamomum tamala)</i>	Leaf	50 gm	Local market, Wardha
9	<i>Dhataki (Woodfordia fruticosa)</i>	Flowers	500 gm	Dattatray Rasashala, Wardha
10	<i>Gud (jaggery)</i>	-----	6 kg	Local market, Wardha
11	Dry yeast	Granules	10 gm	Local market, Wardha

**Formulation preparations-**<sup>(19-30)</sup>

- Firstly china clay vessel was washed with hot water and kept for drying. Properly cleaned and dried vessel was fumigated for 10 min. with fumes of ignited drug of *Gugula( Comniphera Mukula )*, *Jatamansi (Nordostachis jatamansi)* , *Haridra (Curcuma longum)* , *Vacha (Acorus calamus)*, *chandana (Santalum alba)*<sup>19</sup> )
- Ingredients numbering from 5-12 were made in to fine powder
- The raktaprasadan dravya are pound in coarse powder and soke over night in water .
- Then smashed the above drug, extract the medicine.
- Mild heating should be given.
- Four kg of Jaggery was added to it and stir well to dissolve completely and again the liquid was filtered.
- Above the liquid was poured into dry, clean and fumigated china clay jar, leaving on third part empty.
- Dhatki pushpa* and *prakshep Dravya* were added in the vessel and the solution was stirred carefully.<sup>20</sup>
- Then the container was sealed with the strip of cloth smeared with soaked mud. Then the vessel was air tightly sealed by mud smeared cloth.
- The vessel was placed in clean and dry place, so that the vessel was not directly exposed to sunlight, air to prevent temperature variations
- Container was reopened, for observation of stages of fermentation.
- After the completion of fermentation, the liquid was carefully filtered to another jar and kept closed and sealed.

**Physio-chemical evaluation-**

**Preliminary evaluation-** Determination of organoleptic characteristics viz. odour, taste, colour and clarity of Asav prepared by Raktaprasadan Dravya was carried out.

**Determination of alcohol content-** Measured 100ml Asava prepared by Raktaprasadan Dravya sample in a graduated flask at 20°C and transferred to a separator. Then washed the graduated flask with about 25ml of water and the washing was added to the contents of the separator and sufficient powdered sodium chloride was also added to saturate the liquid. Then 100ml of light petroleum (40°C - 60°C) was mixed to the content and vigorously shaken for 2-3 min. The mixture was allowed to stand for 15-30 min and run the lower layer into a distillation flask. Washed the light petroleum in the separator by shaking vigorously with about 25ml of sodium chloride solution and allowed to stand and run the washed liquor into the first brine solution.<sup>31</sup> The mixed solutions was made just alkaline with N/1 sodium hydroxide using solid phenolphthalein as indicator and a little pumice powder and 100ml of water was added. After that distil off 90ml and into a distillate 100ml water was added at the same temperature.

**Determination of reducing sugars-** 20ml of Asava prepared by Raktaprasadan Dravya was taken and neutralize with NaOH. The neutralize solution was evaporated to half volume on water bath at 50 °C to at 60-80°C. It was then cooled, 5 ml of concentrated nitric acid was added and warmed on water bath. 2 ml of 30% hydrogen peroxide solution was added to the above mixture and warmed till clear solution was obtained. It was then cooled and filtered through Whatmann-42 filter paper, diluted with deionised water and made up to 100 ml in volumetric flask.<sup>32</sup>

**Determination of specific gravity** – A specific gravity is the ratio of specific weight of the material to the specific weight of

the distilled water. A specific gravity bottle of 10ml capacity was cleaned, dried and weighed. It is filled up to the mark with water at the required temperature and weighed. The specific gravity bottle was next filled upto the mark with the sample. The specific gravity was determined by dividing weight of the sample expressed in grams by the weight of the water, expressed in grams.

**pH-** Calibrated pH meter was used to check the pH of formulation.

**Viscosity** - Viscosity of Asav prepared by Raktaprasadan Dravya was determined with the help of Brookfield viscometer.

**RESULT & DISCUSSION-**

**TABLE 2- Comparative and organoleptic Characters of Asav Prepared by Raktaprasadan Dravya**

SN	Characteristic	Aasav prepared by Raktaprasadan Dravya
1	<i>Rupa (color)</i>	Dark brown
2	<i>Rasa (taste)</i>	Madhura (++)
3	<i>Gandha (odour)</i>	Mild Alcoholic
4	<i>Sparsha (Consistency)</i>	Thin

**TABLE 3. Comparative physio-chemical Values of Asava Prepared by Raktaprasadan Dravya**

SN	Parameters	Aasav prepared by Raktaprasadan Dravya	API Standard Parameters
1	<i>Alcohol Estimation</i>	7.15	5 to 10 per cent v/v
2	<i>Reducing Sugar</i>	19.25	Not less than 14.0 per cent w/v
3	<i>pH</i>	4.10	Average 4- 5
4	<i>Microbial Assay</i>	No microbial Growth found	No Microbial growth
5	<i>Viscosity at 24°C</i>	11.2 cst	Up to 15
6	<i>Specific Gravity</i>	0.908 g/100	0.9 to 1.9 %

In this study, organoleptic and physicochemical parameters were studied. The values of all the parameters are found in normal range compared to standard guidelines of API. However the value of physicochemical parameters is depend upon the ingredient, their quantity as well as methods of preparations of the formulation.

Moreover the utensil used for the preparations may vary the values of parameters. In ancient times, Asav-Arishta were prepared and stored in earthen pots.<sup>33</sup> Now a day's earthen pot are replace by big plastic containers. Fermentation occurs more in plastic container as compared to earthen pots, hence percentage of alcohol may be high in the Asav-Arishta prepared in plastic containers.<sup>34</sup>

Shingadiya et al, concluded that classically prepared Asava-Arishta are more efficacious than prepared with modified methods. Effect of Asava Arishta is more prone towards the disease in which Mandagni(*low digestion power*) is involved.<sup>35</sup> Tekeshwar kumar et al, concluded that Asav and Arishta are commonly used in day to day practice. Such formulations in current scenario are of immense importance, the self-fermented product 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.<sup>36</sup>

**CONCLUSION -**

- Alcohol content in self prepared *Aasav* of *Raktaprasandan Dravya* is within permissible limits.
- Methanol is absent in self prepared *Aasav* of *Raktaprasadan Dravya*
- *Aasav* of *Raktaprasadan Dravya* is prepared with authentic method given in text; satisfy the standard parameters of *Aasav - Arishta Kalpana*. According to the values of parameters samples have nutritional value and thus may have better therapeutic absorptions and efficacy.
- In this study, organoleptic and physicochemical parameters were studied. The values of all the parameters are found in normal range compared to standard guidelines of API. However the value of physicochemical parameters is depend upon the ingredient, their quantity as well as methods of preparations of the formulation.

**REFERENCES -**

- 1) Shastri A, Sushrut Samhita, Sutra Sthan 01/06, Chaukhamba Sanskrit Sansthana, Varanasi, Vol 01,, Reprinted 2005, p 2-3
- 2) Tripathi J, Charak Samhita of Agnivesh, Sutra Sthana, Rashtriya Sanskrita Sansthana, Vol. 3. New Delhi;:2002 p 4,5
- 3) Vinyasa T E et al, Critical Review On Ratio Of Ingredients in Malahara Kalpana, Journal of Ayurveda and Holistic Medicine, Published by Atreya Ayurveda Publications, ISSN-2321-1563, Vol1, Issue 8, 2013, p 7
- 4) Handa S.S,Kapoor V.K.,Text book of pharmacognosy ,second Edition – 2003, Vallabh Prakashan, 335-36.
- 5) Rao Prabhakar, A Text book of Bhaishajya kalpana, First Edition -2008,Chaukhamba Publication New Delhi,275-76
- 6) Sastry Pandit Parasuram, Sharangdhar Samhita with commentary of Adhmaala's Dipika, Madhyama Khanda, Fifth Edition -2002, Chaukhamba Orientalia Varanasi, 232-37
- 7) Yadav ji Trikamji Acarya, Carak Samhita with Commentary of Cakrapanidatta, Edition 2002, Rashtriya Sanskrit Sansthana New Delhi, 134-38
- 8) Yadav ji Trikamji Acarya, carak Samhita with Commentary of Dalhana, Edition -2002, Chaukhamba Orientalia Varanasi, 210-13.
- 9) Chaudhary AK,Lochan Kanjiv, Bhaishajya Ratnavali of Govinda Dasji.Vol-, First Edition -2006, Chaukhamba Sanskrit Sansthana Varanasi, 365-370
- 10) Sri Bhisagacharya S, Kashyap Samhita by Vraddha Jivaka With The Vidyotini Hindi commentary and Hindi translation of Sanskrit introduction. Second Edition -2001, Khila Sthan 3/38, Chaukhamba Sanskrit Sansthana Varanasi, 158
- 11) Joshi D, Critical Study of the Asavarishta Preparation of Brihatpravee, vol-9, no- 3.1989,Ancient Science of Life, 125-33.
- 12) Sekar S, Traditional Alcoholic beverage from Ayurveda and their role on human health: Indian Journal Of traditionally Fermented Biomedicines Arishtas and Asavas from Ayurveda, Indian journal of Traditional knowledge, 7(4) 2008,584-586. Singh N, Chaudhary A, A comparative review study of sneha kalpana (paka) vis- a -vis liposome,AYU,32(1) 2011, 103-108
- 13) 19.DesRao R B, Varadarajan T, Tests to Detect Adulteration in asavas and arishtas,Journal of Research in Ayurveda and Siddha,3-2006,209-215.
- 14) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004, reprint-2017, proficient publishing house pune,501
- 15) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004,reprint-2017, proficient publishing house pune,680
- 16) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004,reprint-2017, proficient publishing house pune,123
- 17) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004,reprint-2017, proficient publishing house pune,123-24
- 18) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004,reprint-2017, proficient publishing house pune,230
- 19) Sastry J L N, illustrated Dravyaguna Vigyan, Vol-II, First Edition -2014, proficient chaukhamba Orientalia Varanasi, 405.
- 20) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004, reprint-2017, proficient publishing house pune,570
- 21) Sastry J L N, illustrated Dravyaguna Vigyan, Vol-II, First Edition -2014, proficient chaukhamba Orientalia Varanasi, 465.
- 22) Yelane M B, Chaudhari B G, Database Medicinal plant used in Ayurveda, volume-5, reprint -2002, publisher, central council for research in Ayurveda & Siddha, New Delhi, 480
- 23) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004, reprint-2017, proficient publishing house pune,615.
- 24) Sastry J L N, illustrated Dravyaguna Vigyan, Vol-II, First Edition -2014, proficient chaukhamba Orientalia Varanasi, 528.
- 25) Yelane M B, Chaudhari B G, Database Medicinal plant used in Ayurveda, volume-5, reprint -2002, publisher, central council for research in Ayurveda & Siddha, New Delhi, 163
- 26) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004, reprint-2017, proficient publishing house pune,680.
- 27) Yelane M B, Chaudhari B G, Database Medicinal plant used in Ayurveda, volume-5, reprint -2002, publisher, central council for research in Ayurveda & Siddha, New Delhi, 534
- 28) Sastry J L N, illustrated Dravyaguna Vigyan, Vol-II, First Edition -2014, proficient chaukhamba Orientalia Varanasi, 528.
- 29) Deshpande A. P, Ranade Subhash, Dravyaguna Vigyan, Part 1-2, first edition - 2004, reprint-2017, proficient publishing house pune,563.
- 30) Sastry J L N, illustrated Dravyaguna Vigyan, Vol-II, First Edition -2014, proficient chaukhamba Orientalia Varanasi, 454.
- 31) Yelane M.B, Chaudhari B G, database medicinal plant used in Ayurveda, volume -3, reprint -2002, publisher, central council for research in Ayurveda & Siddha, New Delhi, 208.
- 32) Samuel cate Prescott and cecil Gordon dunn, Industrial Microbiology, third edition revised by cecil Gordon Dunn. McGraw -Hill, New York, 1959,945.
- 33) Sahu A P,Saxena A K,Environ Health Perspect 102 (suppl 6):(1994),211-214
- 34) Jon M. Laurent I, Austin G. Meye, Systematic Humanization of yeast genes reveals conserved function and genetic modularity, sciene 22 may 2015: vol.348,issue 6237,921-925.
- 35) Shingadiya Rahul K, Clinical Efficacy of Fermentative Medicinal Formulations(Aasa-Arishta)-A Review,2015,2(7),131-138.
- 36) Tekeshwar Kumar, Standardization of Different Marketed Brands of Ashokarishta:An Ayurvedic Formulation,2013;2(6):993-998.