



Available online through

www.jbsoweb.com

ISSN 2321 - 6328

Research Article

PHARMACEUTICO-ANALYTICAL STUDY OF VISUCHIKAHARA ARKA

Anusha KR ^{1*}, Aishwarya laxmi Hegde ¹, Manaswini KR ¹, Gayathri Sajeev ¹, Sandeep Y ¹, Archana B Pagad ²

¹ PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan, Karnataka, India

² Assistant Professor, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan, Karnataka, India

*Corresponding Author Email: anushakr2014@gmail.com

Article Received on: 04/02/24 Accepted on: 16/03/24

DOI: 10.7897/2321-6328.12290

ABSTRACT

Background: Arka is a simple preparation mentioned by Ravana in his book, Arka Prakasha. Visuchikahara arka is a formulation indicated in Visuchika and its complications. Visuchika is type of Ama, mainly characterised by pricking type of pain in the abdomen, vomiting and diarrhoea. The principle of treating ama is Agni-deepana (increasing the digestive fire). All the ingredients of Visuchikahara arka are having Katu rasa, Ushna veerya and Katu Vipaka. They possess deepana, pachana, anulomana properties that help in pacifying Ama-dosha by doing Agni-deepana. Aim: To develop preliminary standards for Visuchikahara arka. Materials and methods: Pippali, Pippali mula, Chavya, Chitraka, Nagara, Ajaji, Haritaki and Maricha were made into busavath churna/ coarse powder. 100ml of the powder was soaked in 200ml of Nimbu swarasa in a glass beaker for 48 hours. Later, distilled using distillation apparatus to obtain Visuchikahara arka. The prepared arka was subjected to organoleptic and physico-chemical parameters. Observations and results: The results of organoleptic characters like colour, odour, taste and physico-chemical parameters like pH, specific gravity, viscosity, refractive index were carried out. Discussion and conclusion: Visuchikahara arka is mainly indicated in Visuchika. It can also be used in all types of Ama, as it mainly possess Katu rasa, Ushna veerya and Katu-Madhura Vipaka that may help in pacifying all the doshas. It may also help in increasing Agni and may help in improving digestion by its deepana and pachana actions.

Keywords: Arka, Visuchikahara arka, Pippali, Visuchika, Ama

INTRODUCTION

Panchavidha kashaya kalpana are the five basic preparations of Ayurveda¹. Arka Prakasha mentions Kalka (paste), Churna (powder), Rasa (juice), Taila (oil) and Arka (distillate) as Panchavidha kashaya kalpana. The medicinal potential of the preparation increases successively. Hence, arka becomes the most potent preparation². As arka is having more potency, less dose, more shelf life, easy absorption, quick action and patient compliance, Arka kalpana has gained more importance than other kalpana. Arka is a liquid preparation obtained by distillation of certain liquids or drugs soaked in water, extracted using the Arka yantra or modern distillation apparatus. This process of distillation is known as Arka kalpana⁴.

Ama is nothing but “the Apaachitha/ undigested/ inadequately digested Anna rasa which has got vitiated within amashaya due to hypo-functioning of agni/digestive fire.” The main cause for the formation of Ama is Agnimandya/impairment of Agni⁵. Ama is formed usually at the Jatharagni level⁶, which leads to the formation of diseases like Alasaka, Visuchika etc. The term Visuchika is derived from “Suchi” which means needle or pricking type of pain. Expulsion of ama dosha (undigested food) through both upper and lower passages of the gastro-intestinal tract is called Visuchika. Doshas here tend to move outwards from both upper and lower routes means both vomiting and diarrhoea occurs simultaneously. As there occurs aggravation of

vata and other doshas, different types of pain occur as the patients feels as if his body being pricked by needles (suchi). Hence, the disease is named Visuchika⁷.

Visuchikahara arka is a formulation consisting of Pippali, Pippali mula, Chavya, Chitraka, Nagara, Ajaji, Haritaki, Maricha and Nimbu swarasa. It is a simple preparation made as told in the text Arka Prakasha⁸. As the name indicates, it is indicated in Visuchika. It can be correlated to Gastro-enteritis caused by Cholera bacilli, based on the similarity of symptoms observed⁷.

MATERIALS AND METHODS

Collection of raw materials

Raw materials required for Visuchikahara arka were procured from Department of Rasashastra and Bhaishajya kalpana and genuinity of the raw drugs were authenticated by Department of Rasashastra and Bhaishajya kalpana, SDMCAH, Hassan, Karnataka.

Pharmaceutical study

Visuchikahara arka was prepared in the practical laboratory, Department of Rasashastra and Bhaishajya kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India.

Table 1: Ingredients of Visuchikahara arka and its quantity⁹

Sl. No.	Drug name	Botanical name	Family	Part used	Quantity taken
01	Pippali	<i>Piper longum</i> Linn.	Piperaceae	Fruit	5g
02	Pippali mula	<i>Piper longum</i> Linn.	Piperaceae	Root	5g
03	Chavya	<i>Piper retrofractum</i> Vahl.	Piperaceae	Root	5g
04	Chitraka	<i>Plumbago zeylanica</i> Linn.	Plumbaginaceae	Root	5g
05	Nagara/Shunti	<i>Zingiber officinale</i> Roxb.	Zingiberaceae	Rhizome	5g
06	Ajaji/ Shwetha Jeeraka	<i>Cuminum cyminum</i> Linn.	Umbelliferae	Seeds	5g
07	Haritaki	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruit	5g
08	Maricha	<i>Piper nigrum</i> Linn.	Piperaceae	Fruit	5g
09	Nimbu	<i>Citrus limon</i> Linn.	Rutaceae	Fruit	200ml

Table 2: Ingredients of Visuchikahara arka and their properties⁹

Sl. No.	Ingredients	Rasa	Guna	Veerya	Vipaka	Karma	Doshagnatha	Rogagnatha
01	Pippali	Madhura Katu Tikta	Laghu Snigdha	Anushna	Madhura	Deepana Rechana Rasayana	Vata-Kaphahara	Agnimandya Aruchi Ama dosha
02	Pippali mula	Katu	Laghu Ruksha	Ushna	Katu	Deepana Pachana Vatanulomana	Kapha- Vatahara	Anaha Chardi
03	Chavya	Katu	Laghu Ruksha Teekshna	Ushna	Katu	Deepana Pachana	Kapha-vatahara	Anaha
04	Chitraka	Katu	Laghu Ruksha Teekshna	Ushna	Katu	Deepana Pachana	Kapha-vatahara	Udara shula Agnimandya
05	Shunti	Katu	Laghu Snigdha	Ushna	Madhura	Deepana Pachana Anulomana	Vata- Kaphahara	Agnimandya Adhmana
06	Ajaji/ Shwetha Jeeraka	Katu	Laghu Ruksha Teekshna	Ushna	Katu	Deepana Pachana	Kapha-vatahara	Agnimandya
07	Haritaki	Madhura Amla Katu Tikta Kashaya	Laghu Ruksha	Ushna	Madhura	Deepana Anulomana Rasayana	Tridosahara	Aruchi
08	Maricha	Katu Tikta	Laghu Ruksha Teekshna	Ushna	Katu	Deepana	Kapha-vatahara Pittakara	Shoola
09	Nimbu rasa	Amla	Laghu	Ushna	Amla	Deepana Pachana	Vata- Kaphahara Pittakara	Agnimandya Aruchi Chardi Visuchika

Note:- Madhura- Sweet, Amla- Sour, Tikta- Bitter, Katu- Pungent, Kashaya- Astringent. Laghu- Light, Ruksha- Dry, Teekshna- Sharp, Snigdha- Unctuous. Anushna- Neither hot nor cold, Ushna- Hot, Sheetha- Cold. Deepana- Appetizer, Pachana- Digestive, Anulomana- Mild laxative, Rasayana- Rejuvenative, Vatanulomana- Carminative, Agnimandya- Indigestion, Aruchi- Loss of appetite, Ama dosha- Metabolic impairment, Anaha- Abdominal distention, Chardi- Vomiting, Udara shula- Abdominal pain, Adhmana- Abdominal bloating, Shoola- Pain, Visuchika- Gastro-enteritis., Vata-Kaphahara- Pacifies vata and kapha, Kapha-Vatahara- Pacifies kapha and vata, Tridosahara- Pacifies all the dosha, Pittakara- Increases pitta.

Preparation of Visuchikahara arka⁸

As per the method of preparation of arka, all the dry ingredients were made into course powder. In a glass beaker, 100 ml of the powder was soaked in 200 ml Nimbu swarasa for 48 hrs. Later distilled using distillation apparatus. The ingredients of Visuchikahara arka were taken in the quantity 5 g each. In total 40g ingredients i.e., 100ml were used for the study. It was soaked

in 200 ml Nimbu swarasa in a glass beaker with its mouth covered using a clean cloth for 48hrs in sun and moon. After 48 hours, it was distilled using a distillation apparatus. Initially temperature was maintained at 5 gradient and when it started boiling, the temperature was reduced and maintained at 2 gradient. Initial few drops of Visuchikahara arka was discarded. Then 60% of distillate was collected to avoid charring of the drugs.



Fig 1. Pippali



Fig 2. Pippali mula



Fig 3. Chavya



Fig 4. Chitraka

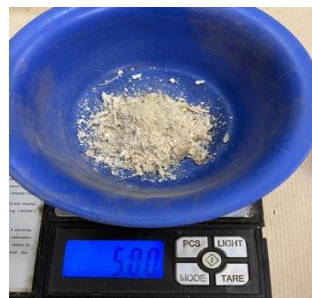


Fig 5. Nagara/ Shunti



Fig 6. Shwetha jeeraka/ Ajaji



Fig 7. Haritaki



Fig 8. Maricha

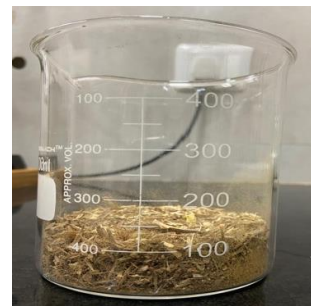


Fig 9. Dry ingredients

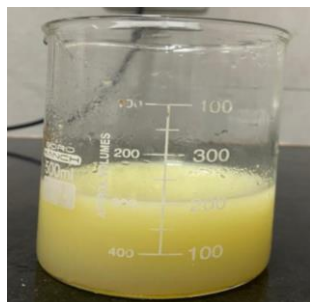


Fig 10. Nimbu swarasa



Fig 11. Pouring Nimbu swarasa into Dry ingredients



Fig 12. Dry ingredients soaked in Nimbu swarasa



Fig 13. Distillation process



Fig 14. Arka obtaine

Analytical study

Analytical study was carried out in the Quality Control Lab of Teaching Pharmacy, SDMCAH, Hassan, Karnataka, India.

The organoleptic characters like colour, odour, taste and physico-chemical parameters¹⁰ like pH, specific gravity, viscosity, refractive index were carried out.

Determination of pH

The pH of an aqueous liquid can be defined as, the negative logarithm of the hydrogen ion concentration expressed in grams per litre. The pH value of a solution can be measured using two electrodes. The pH meter was calibrated to 4, 7 and 9 using buffer solution. 10ml of the test liquid was taken in a glass beaker. The electrode of the pH meter was dipped into the solution and the reading was noted.

Determination of specific gravity

The specific gravity of a substance is the weight of a given volume of that substance at the specified temperature as compared with the weight of an equal volume of water at the same temperature, all weights being taken in air. A suitable pycnometer may be used for the analysis. A pycnometer or specific gravity bottle was cleaned by shaking with acetone and then with ether. Later it was dried and weight was noted. Carefully filled the specific gravity bottle with the test liquid at room temperature, inserted the stopper and removed the surplus liquid. Weight was noted. The procedure was repeated for distilled water. Specific gravity was calculated by using the weight of empty pycnometer (W1), pycnometer with distilled water (W2) and pycnometer with sample/test liquid (W3). Divide the weight of the sample by weight of the water.

Determination of viscosity

Viscosity is a property of a liquid, which is closely related to the resistance to flow. Viscosity of a liquid is a measure of its frictional resistance. The apparatus commonly used for the determination of relative viscosity of a liquid is known as Ostwald Viscometer or viscometer. The test liquid was filled in a U tube Viscometer in accordance with the expected viscosity of the liquid so that the fluid level stands within 0.2 mm of the filling mark of the viscometer when the capillary is vertical and the specified temperature is attained by the test liquid. The test liquid was sucked to the specified height of the viscometer and the time taken for the test liquid to pass the two marks was noted. Viscosity was measured using the formula given below;

$$\eta_1 = \rho_1 t_1, \eta_2 / \rho_2 t_2$$

η_1 - Viscosity of sample

η_2 - Viscosity of water

t_1 and t_2 - Time taken for the sample and water respectively to pass the meniscus

ρ_1 and ρ_2 - Density of sample and water

Density of water and sample was calculated with the help of pycnometer and then viscosity was determined.

Determination of refractive index

The refractive index of a substance is defined as "the ratio of the velocity of light in vacuum or air to that in the substance." The refractive index of a liquid can be determined with the help of an instrument called Abbe's refractometer. The prism of Abbe's refractometer was opened and was cleaned with a soft cotton. A drop of the sample to be tested was placed on the lower part of the prism and refractometer was closed. Observed through the eyepiece by turning the dispersion-correction compensator knob until the coloured indistinct boundary seen between the light and dark field became a sharp line. The knurled knob was adjusted until the sharp line exactly intersected the midpoint of the cross wires. Refractive index was read from the magnifier in the pointer and reading was recorded. The refractive index of the sample was tested at 28° Celsius temperature.

OBSERVATIONS AND RESULTS

Pharmaceutical observations

Table 3: Observation of Pharmaceutical study

Sl No	Observation	Visuchikahara arka
01	Quantity of raw drug (volume)	100mL
02	Quantity of Nimbu swarasa	200mL
03	Proportion	1:2
04	Date of preparation	12-11-2022
05	Starting time	10:25 a.m.
06	Time of first drop of arka	10:35 a.m.
07	Stopping time	12:47 p.m.
08	Time taken	2hrs 22mins
09	Quantity of arka obtained	110mL (55%)

mL = millilitre, hrs = hours, mins = minutes

Table 4: Results of organoleptic characters

Sl No	Organoleptic characters	Visuchikahara arka
01	Colour	Colourless
02	Odour	Characteristic odour
03	Taste	Characteristic taste

Table 5: Results of Physico-chemical characters

SI No	Physico-chemical characters	Visuchikahara arka	Nimbu rasa
01	pH	3.45	2.25
02	Specific gravity	1.0007	0.37
03	Viscosity	0.0106	0.0097
04	Refractive index	1.345	1.347

DISCUSSION

Visuchikahara arka is a unique arka prepared using Pippali, Pippali mula, Chavya, Chitraka, Nagara, Ajaji, Haritaki, Maricha and Nimbu swarasa. The uniqueness of this arka is the liquid used in this preparation is Nimbu swarasa. It is indicated in Visuchika and its complications. The ratio of dry ingredients and liquid media is 1:2, because Pippali, Maricha, Nagara and Jeeraka come under hard drug category of Arka Prakasha. The distillation process was carried out at low temperature to avoid charring of the content. Initial few drops were discarded during the preparation, considering that it may contain only steam and not the essential principles of the drugs.

The substances with low refractive index will have low viscosity and density. The refractive index of arka 1.345 suggests low viscosity and density of the arka. The viscosity of Visuchikahara arka is 0.0130, which is similar to that of nimbu rasa as it is the distillate of nimbu rasa. Specific gravity suggests the presence of solutes in a solvent. Here solvent is nimbu rasa and volatile oil extracted forms the solute. Specific gravity of Visuchikahara arka is near to that of nimbu rasa suggestive of the sample has specific gravity that is similar to nimbu rasa.

Commonly, arka are prepared using water as drava dravya, but in this formulation it is said to use any amla dravya. Nimbu swarasa being easily available and is indicated in Agnimandya, Aruchi, Chardi and Visuchika. Hence, was selected as Drava dravya. Visuchika is a roga caused by extreme vitiation of tridoshas, where Vata dosha may produce Shoola (abdominal colic), Bhrama (vertigo), Anaha (abdominal distention), Kampa (tremors) and Sthambha (rigidity). Pitta dosha may produce Jwara (fever), Atisara (diarrhoea), Anthar- daha (burning sensation within body), Thrit (thirst) and Murccha (fainting). Kapha dosha may produce Chardi (vomiting) and Gurutha (heaviness in the body), Vak-sangha (inability to speak) and Shtheevana (excessive salivation). Visuchikahara arka possess Katu rasa, Ushna veerya and Katu- Madhura Vipaka. Katu rasa helps in pacifying Kapha. Ushna veerya pacifies Kapha and Vata. Katu Vipaka pacifies Kapha and Madhura vipaka pacifies Pitta. Thus, Visuchikahara arka will help pacify all dosha by increasing the digestive fire leading to ama-pachana.

CONCLUSION

Visuchikahara arka preparation was carried out as mentioned in the book of Arka Prakasha. Ama, nothing but undigested food leading to the formation of many diseases. Visuchika is one such disease caused due to ama. Visuchikahara arka is a formulation designed using very easily available drugs by a simple procedure called Distillation/ Arka. Physico-chemical parameters such as

organoleptic characters, pH, specific gravity, viscosity, refractive index were assessed. . Though this formulation is simple in preparation and all the ingredients are easily available, it is not into clinical practice. Further clinical studies on its efficacy and more research will help bringing this formulation into practice.

REFERENCES

1. Shastri P.P, editor, Reprint edition 2018, Dipika of Adhamalla and Gudhartha Dipika of Kashiram on Sharangadhara samhitha of Sharangadhara, Madhyama khanda; Chapter 1,Verse 1. Varanasi: Chaukhambha Orientalia, 2018; pp. 137
2. Tripathi I. Hindi Commentary on Arka Prakasha of Lankapati Ravana. 2nd edition. Prathama shathaka; Chapter 1, Verse no. 46. Varanasi: Chaukhambha Orientalia,2006; pp. 9
3. Sharma M, Rakshitha D, Hussain. Panchapallava kvatha and its modification into arka and its preliminary analytical study. IJBPAS, 2022; 11(9): 4206-4212.
4. Anonymous, The Ayurvedic Formulary of India. Part 2. 1st edition. Delhi: The controller of publication civil lines; 2000: pp. 41
5. Sreekumar T. English commentary on Ashtanga hridaya of Vagbhata. 4th edition. Sutrasthana; Doshopakramaniyam adhyaya: Chapter 13, Verse no. 25. Kerala: Publication Department Harisree Hospital; 2013: pp. 296
6. Joshi A, Sawan A, Thakur BK. Concept of Ama in Ayurvedic medicine. J Ayurveda Integr Med Sci 2023; 09:120-124.
7. Sreekumar T. English commentary on Ashtanga hridaya of Vagbhata. 4th edition. Sutrasthana; Matrashitiyam adhyaya: Chapter 8, Verse no. 4-5. Kerala: Publication Department Harisree Hospital; 2013: pp. 208-209
8. Tripathi I. Hindi Commentary on Arka Prakasha of Lankapati Ravana. 2nd edition. Prathama shathaka; Chapter 5, Verse no. 18. Varanasi: Chaukhambha Orientalia,2006; pp. 77
9. Anonymous, The Ayurvedic Pharmacopoeia of India. Part 1. Reprint edition. Delhi; The controller of publication civil lines. 1989.
10. Lavekar GS, Padhi E, Pant P. Laboratory Guide for the Analysis of Ayurveda and Siddha Formulations. Central Council for Research in Ayurveda and Siddha, Department of AYUSH, Ministry of Health and Family and Family Welfare. Government of India. New Delhi, 2010

Cite this article as:

Anusha KR, Aishwarya laxmi Hegde, Manaswini KR, Gayathri Sajeev, Sandeep Y and Archana B Pagad. Pharmaceutico-analytical study of Visuchikahara arka. J Biol Sci Opin 2024;12(2):19-23.
<http://dx.doi.org/10.7897/2321-6328.12290>

Source of support: Nil; Conflict of interest: None Declared

Disclaimer: JBSO is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publishing quality research, while every effort has been taken to verify the accuracy of the contents published in our Journal. JBSO cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of JBSO editor or editorial board members.