Research Article

www.ijrap.net

(ISSN Online:2229-3566, ISSN Print:2277-4343)

PHARMACEUTICAL STUDY OF ARDRAKA MATHULUNGA AVALEHA

Anusree N M^{1*}, M.S Krishnamurthy²

¹ PG Scholar, Department of PG studies in Rasashatra and Bhaishajya Kalpana, Alva's Ayurveda Medical College, Moodbidri, Karnataka, India

² Professor and HOD, Department of PG studies in Rasashatra and Bhaishajya Kalpana, Alva's Ayurveda Medical College, Moodbidri, Karnataka, India

Received on: 12/12/21 Accepted on: 15/01/22

*Corresponding author

E-mail: anusreemuraleedharan@gmail.com

DOI: 10.7897/2277-4343.13018

ABSTRACT

Aims: The main objective of this study is to prepare Ardraka Mathulunga Avaleha according to the method prescribed in the authoritative reference, Yogaratnakara, Purvardha, Arochaka chikitsa 38-42 and its organoleptic and physio-chemical analysis. **Methods:** Ardraka Mathulunga Avaleha is prepared as per the classical method of Avaleha Kalpana using guda as the sweetening agent. Ardraka Mathulunga Avaleha contains Ardraka, Mathulunga and Guda as the major ingredients. It also contains 15 other drugs, which are added as prakshhepa dravya. **Results:** The final product was of desired consistency and quality. **Discussion:** This research article deals with the pharmaceutical preparation of Ardraka Mathulunga Avaleha in four steps, its paka lakshana and organoleptic characteristics of the formulation. It also discusses the formulation's haematinic action and its ability to cure iron deficiency anaemia. **Conclusion:** From the pharmaceutical study, proper paka lakshanas of avaleha, the right consistency, time is taken for the preparation etc., are understood.

Keywords: Ardraka Mathulunga Avaleha, Yogaratnakara, Avaleha kalpana, Paka lakshana

INTRODUCTION

Avaleha is a Upakalpana of Kashaya Kalpana, i.e., secondary dosage form. The basic formulations, i.e., Panchavidha Kashaya Kalpana, are modified to secondary dosage forms (Upakalpana) to meet demands like better palatability, lesser dose, quick action, longer shelf life, easy dispensing, and handling. Avaleha is a semisolid preparation of herbal drugs prepared in decoction or extracts of herbs by adding sweetening agents like jaggery, sugar or sugar candy. Avaleha Kalpana has different synonyms according to its consistency. Avaleha, Leha, Lehya, Rasakriya, Ghana etc., are the synonyms. Lehya is one of four kinds of foods: Peya, Leha, Bhakshya and Charvya. The substances which are consumed by licking are categorized under Lehya. Broadly, preparations like Rasakriya, Gudapaka, Phanita, Ghana and Khandapaka are made slightly varying the Paka or moisture content and based on the different sweetening agents used for practice. Their properties are like that of Avaleha Kalpana. Ardraka Mathulunga Avaleha is an example of Gudapaka as the primary sweetening agent is jaggery.

Aims and objectives

- To prepare Ardraka Mathulunga Avaleha¹ in the classical method as per the reference of Yogaratnakara.
- To understand the paka lakshanas, time is taken for the organoleptic preparation features of the formulation.

MATERIALS AND METHODS

Raw drugs required to prepare Ardraka Mathulunga Avaleha were collected from Alva's pharmacy, Mijar, Karnataka and authenticated by the experts from Rasashatra and Bhaishajya Kalpana Department. Mathulunga was freshly collected from Soans Farm, Beluvai, Karnataka.

A pharmaceutical study was done in the laboratory of Rasashatra and Bhaishajya Kalpana, Alva's Ayurveda Medical College, Moodbidri, Karnataka, India

Materials required: Measuring jar, weighing machine, Khalwa Yantra, Wide-mouthed steel vessels, spoons, long spatula for stirring and gas stove as fire source are used for this practice.

Ingredients of Ardraka Mathulunga Avaleha is mentioned in Table 1.

Method of preparation

All the ingredients are weighed, removed impurities and washed separately. After that, they are adequately dried under sunlight. Prakshhepa Dravya is weighed, made into a fine powder using Khalwa Yantra and mixer grinder, sieved and weighed again. Guda is properly pounded in Khalwa Yanta. For preparing the Avaleha, first add Guda into the Swarasa of Ardraka and Mathulunga. Start heating it on fire and stir well continuously. Once Guda gets melted, filter it out to remove the impurities through a fine cloth. Keep the liquid medium again on fire for heating. Heating is continued till it attains Leha Paka Sidhi Lakshana, ie. Tantu Paka (one thread consistency). If these Paka Lakshanas are achieved, it has reached its required constituency. Remove it from fire. When it becomes lukewarm, add the necessary amount of Sookshma Choorna of Prakshhepa Dravya in small quantities. Stir continuously and vigorously to form a homogenous mixture. Look for other Siddhi Lakshanas like Apsumajjanam (If put in a vessel containing water, sinks without spreading or dissolving), Darvi Pralepatvam (Sticking of Avaleha to the spatula used for stirring), Kharatwam (attaining semisolid consistency from liquid consistency), Peedito Mudra

(Impartment of fingerprints if pressed between fingers), Gandha Varna Rasodbhava (Proper formation of smell and colour) etc.

The final product's weight is measured and stored in a clean, dry, labelled container.

Table 1: Ingredients of Ardraka Mathulunga Avaleha

Drug	Botanical Name	Family	Part Used	Quantity
Ardraka ²	<i>Zingiber officinale</i> Roxb.	Zingiberaceae	Rhizome	1.6 litre
Guda ³	<i>Saccharum officinarum</i> Linn.	Poaceae		800 gm
Mathulunga ⁴	<i>Citrus medica</i> Linn.	Rutaceae	Fruit rind	400 ml
Twak ⁵	<i>Cinnamomum zeylanicum</i> Blume.	Lauraceae	Bark	25 gm
Ela ⁶	<i>Elettaria cardamomum</i> Maton.	Zingiberaceae	Seeds	25 gm
Patra ⁷	<i>Cinnamomum tamala</i> (Buchham) Nees & C.H. Eberm.	Lauraceae	Leaf	25 gm
Pipali ⁸	<i>Piper longum</i> Linn.	Piperaceae	Fruits	25 gm
Maricha ⁹	<i>Piper nigrum</i> Linn.	Piperaceae	Fruits	25 gm
Sunti ¹⁰	<i>Zingiber officinale</i> Roxb.	Zingiberaceae	Rhizome	25 gm
Amalaki ¹¹	<i>Embllica officinalis</i> Linn.	Euphorbiaceae	Fruits	25 gm
Haritaki ¹²	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruits	25 gm
Vibheethaki ¹³	<i>Terminalia bellerica</i> Roxb.	Combretaceae	Fruits	25 gm
Ayasa ¹⁴	<i>Alhagi camelorum</i> Fisch.	Fabaceae	Whole plant	25 gm
Chitraka ¹⁵	<i>Plumbago zeylanica</i> Linn.	Plumbaginaceae	Root bark	25 gm
Pipalimula ¹⁶	<i>Piper longum</i> Linn.	Piperaceae	Root	25 gm
Dhanyaka ¹⁷	<i>Coriandrum sativum</i> Linn.	Umbelliferae	Seeds	25 gm
Sveta Jiraka ¹⁸	<i>Cuminum cyminum</i> Linn.	Umbelliferae	Seeds	25 gm
Krishna Jiraka ¹⁹	<i>Carum carvi</i> Linn.	Umbelliferae	Seeds	25 gm

Precautions to be taken

1. Jaggery syrup should be prepared by observing the thread-like consistency
2. Care should be taken while attaining Paka Lakshana for immediately removing from fire source as it may lead to overcooking and hard consistency if heating is continued.

OBSERVATIONS AND RESULTS

The observation during the pharmaceutical study is mentioned in Table 2.

Table 2: Observations of pharmaceutical study

Quantity taken	3082 gm
Finished product obtained	1271 gm
Loss	1811 gm
Time duration	
Prakshepa Choorana Nirmana	6 hours
Swarasa Nirmana	90 minutes
Avaleha Nirmana	150 minutes
Total Time duration	10 hours approximately (completed in 2 days)

Organoleptic characteristics of Ardraka Mathulunga Avaleha is mentioned in Table 3.

Table 3: Organoleptic characteristics of Ardraka Mathulunga Avaleha

Colour	Dark brown
Taste	Katu - Madhura pradhana
Odour	Pleasant citrus smell
Consistency	Smooth Semi-solid

DISCUSSION

Ardraka Mathulunga Avaleha is a unique combination of three major ingredients Ardraka, Mathulunga and Guda. These major ingredients render a high possibility for this medicine in the curative prospect, especially in Iron deficiency anemia.

Mode of action

One of the main ingredients, Ardraka (*Zingiber officinalis*), is attributed with Deepana property, which catalyses Agni. The potency of the drug in achieving therapeutic efficacy in treating gastric disorders and inflammation is scientifically proved by many studies.

A recent study proved that ginger assisted in iron absorption and was beneficial as a supplement for iron absorption.²⁰ Substances like ascorbic acid (Vit C), amino acids, reducing sugar present in ginger also aids in iron absorption and trigger the erythropoietic system to produce red cells.

While going through the drug review, it is found that Mathulunga (*Citrus medica*), which is a rich source of Vit C, also helps in increasing the bioavailability of iron, as Vit-C (Ascorbic acid) is the most potent enhancer of non-haem iron absorption even in the presence of inhibitors such as phytates, tannates and calcium. It can reduce ferric iron to ferrous iron by 75 to 98 percent²¹.

A literary review of the Guda reveals its ability of haematinic activity as it is an excellent source of iron. Jaggery contains 11mg of iron per 100 grams. Some recent studies suggest that the body more easily absorbs iron found in jaggery than other types of plant-based iron²². Jaggery is remarkable in building haemoglobin in the body due to a large part of iron. It is beneficial in treating anaemia as it helps maintain the right balance of haemoglobin and RBC.

Most of the Prakshepa dravya (Trikatu, Jirakadvaya, Chitraka, Yavasa) are Deepana Pachana Dravya which helps in the conversion of Ahara Rasa to Rasa Dhatu and eventually the formation of Raktha Dhatu. So, they also enhance the ability to absorb iron and function as a catalyst. Other ingredients like Triphala contain polyphenols and a rich amount of Vit C. It has free radical scavenging activity, antioxidant activity and haematinic activity. It is an excellent carminative and digestive stimulant. Trikatu is an excellent bio-availability enhancer, and Trijatha improves digestion. The cumulative effects of all these enhance the absorption of dietary iron.

Figure 1: Major ingredients

Figure 2: Ardraka swarasa

Figure 3: Mathulunga swarasa

Figure 4: Crushing jaggery

Figure 5: Sieving Prakshepa into fine choorna

Figure 6: Prakshepa choorna

Figure 7: Adding Ardraka swarasa into vessel

Figure 8: Adding Mathulunga swarasa into vessel

Figure 9: Adding jaggery and heating

Figure 10: Filtering out impurities in guda if any

Figure 11: Continuous stirring

Figure 12: Assessing Tantupaka

Figure 13: Adding Prakshepa choorna

Figure 14: Continuous stirring

Figure 15: Assessing Apsumajjanam

Figure 16: Assessing Darvi pralepatvam

Figure 17: Prepared Avaleha

Figure 18: Stored in airtight container after cooling

Figures of the preparation of Ardraka Mathulunga Avaleha

A brief description of the pharmaceutical preparation of Ardra Mathulunga Avaleha (in 4 significant steps) and Paka Siddhi Lakshana are explained in the discussion on the pharmaceutical study. Criteria for classical evaluations like Tandumatvam, Darvi Pralepatvam, Apsumajjanam, Kharatwam, Peedito Mudra, Gandha-varna Rasodbhava were done at an appropriate time.

CONCLUSION

The formulation Ardra Mathulunga Avaleha mentioned in Yogaratnakara, Arochaka chikitsa Adhyaya is a gudapaka formulation. The present study focuses on pharmaceutical preparation and assessing its Paka siddhi lakshanas and organoleptic characteristics. By this study, the proper consistency of Ardra Mathulunga Avaleha could be evaluated. During the pharmaceutical preparation, all the Paka siddhi lakshanas were seen. After pharmaceutical preparation and preliminary analytical study, there is scope for experimental or clinical evaluation for its potential efficacy in various disease conditions like Aruchi, Sopha, Kamala, Swasa, Kasa, Admana, Udara, Gulma, Sula and in enhancing Agni mentioned as an indication in its classical reference.

REFERENCES

1. Anonymous, Yogaratnakara, translated by Vaidya Lakshminipathi Sastri, Kashi Sanskrit Series, Varanasi, 2nd edition, Purvardham, Arochaka Chikitsa, shloka no: 38-41; 2011. p. 445
2. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p. 87
3. Bapalal G Vaidya, Nighantu Adarsha, Chaukhambha Bharati Academy, Varanasi, 1st edition, Vol. 2, Chapter 123; 1968 p.726.
4. Citron Fruit: Citrus Medica Uses, Dose, Research, Side effects, [Cited on 2020 December 5], Available from: <https://www.easyayurveda.com/2015/06/19/citron-fruit-medica-beejapoor/>
5. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.464
6. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.527
7. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p. 918
8. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.452
9. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.448
10. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.87
11. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.220
12. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.209
13. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.216
14. Kirtikar and Basu, Indian medicinal plants, Bishen Singh Mahendra Pal Singh, 2nd edition, Vol. 1; 2004. p.743
15. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.314
16. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.678
17. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p. 264
18. Sastry J.L.N, Dravya guna Vijnana, Chaukhambha Orientalia, Varanasi, Reprint edition, Vol.2; 2016. p.272
19. Lucas D.S, Dravyaguna Vijnana, Chaukhambha Visvabharti Oriental Publishers, Varanasi, Reprint edition, Vol.2; 2016. p. 217
20. Ginger supplementary therapy for iron absorption in iron deficiency anemia, R Kulkarni et al. [Cited on 2020 December 5], Available from: https://www.researchgate.net/publication/289746745_Ginger_supplementary_therapy_for_iron_absorption_in_iron_deficiency_anemia
21. The role of Vitamin C in Iron Absorption, L Hallberg et al., [Cited on 2020 December 5], Available from: <https://pubmed.ncbi.nlm.nih.gov/2507689/>
22. Jaggery: Is It Good For You? WebMD, [Cited on 2020 December 5], Available from: <https://www.webmd.com/diet/jaggery-is-it-good-for-you#1>

Cite this article as:

Anusree N M and M.S Krishnamurthy. Pharmaceutical study of ardra mathulunga Avaleha. Int. J. Res. Ayurveda Pharm. 2022;13(1):32-35 <http://dx.doi.org/10.7897/2277-4343.13018>

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

Disclaimer: IJRAP 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 content published in our Journal. IJRAP 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 IJRAP editor or editorial board members.