



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2018; 7(5): 214-218

© 2018 TPI

www.thepharmajournal.com

Received: 01-03-2018

Accepted: 02-04-2018

Shraddha SR

Post Graduate Scholar,
Department of PG Studies in
Kaumarabhritya, Sri
Dharmasthala Manjunatheshwara
College of Ayurveda and Hospital,
Udupi, Karnataka, India

Chethan Kumar VK

Associate Professor,
Department of PG Studies in
Kaumarabhritya, Sri
Dharmasthala Manjunatheshwara
College of Ayurveda and Hospital,
Udupi, Karnataka, India

Sharashchandra R

Assistant Professor,
Department of PG Studies in
Kaumarabhritya, Sri
Dharmasthala Manjunatheshwara
College of Ayurveda and Hospital,
Udupi, Karnataka, India

Correspondence

Chethan Kumar VK

Associate Professor,
Department of PG Studies in
Kaumarabhritya, Sri
Dharmasthala
Manjunatheshwara College of
Ayurveda and Hospital, Udupi,
Karnataka, India

Preparation of Hingwadi choorna: An Ayurvedic formulation for bronchial asthma

Shraddha SR, Chethan Kumar VK and Sharashchandra R

Abstract

Choorna kalpana (process of size reduction) is familiar pharmaceutical preparation in Ayurveda. Bhavita choorna has an effective size reduction process and homogenously active substance in its final product. Hingwadi choorna mentioned in Ayurvedic classics contains the ingredients like *Ferula asafoetida* Linn. (*Hingu*), *Unaqua sodium chloride* (*Souvarchalalavana*), *Ziziphus jujuba* Mill. (*Kola*), *Rubia cordifolia* Linn. (*Samanga*), *Piper longum* Linn. (*Pippali*), *Sidacordifolia* Linn. (*Bala*), *Citrus medica* Linn. (*Matulunga*). In this article, Hingwadi choorna was prepared by using modern pharmaceuticals stuffs. During the method of preparation of Hingwadi choorna according to the Ayurvedic Formulary of India was followed.

Keywords: Hingwadi choorna, Bhavana, pharmaceuticals, particle, size reduction, preparation

Introduction

Tamakaswasa (bronchial asthma) is one of the panchaswasaroga having a clinical features like Peenasa, Ghurghuraka, Swasakrichrata, Kasa, Kanthodhwasam, Ativateevrvegamswasam, Vishushkasyata^[1] and many more. For its treatment, Charakasamhita, an Ayurvedic treatise mentions Hingwadichoorna^[2] formula. The basic idea behind the administration of formulation has to reach a target tissue as per betterment of mankind. To achieve this, many processes were invented in a sense of manufacturing process, these are termed as Kalpanas and Upakalpanas (pharmaceutical preparation). Choornakalpana (process of size reduction) is one of upakalpana of kalka kalpana^[3]. Bhavana is a wet trituration process and also a size reduction technology, frequently used in Ayurvedic pharmaceuticals. It has multi-dimensional pharmaceutical and therapeutic implications by increasing potency, homogeneity in its active compound level^[4]. Final product named Hingwadichoorna is a active amalgamation for the treatment of Tamakaswasa (bronchial asthma) in children. This article highlights the different steps and stages of preparation of Hingwadichoorna.

Materials and Method

Ingredients of the formulation

1. *Ferula asafoetida* Linn. (*Hingu*)
2. *Unaqua sodium chloride* (*Souvarchalalavana*)
3. *Zizyphusjujuba* Mill. (*Kola*)
4. *Rubia cordifolia* Linn. (*Samanga*)
5. *Piper longum* Linn. (*Pippali*)
6. *Sidacordifolia* Linn. (*Bala*)
7. *Citrus medica* Linn. (*Matulunga*)

1. *Ferula asafoetida* Linn belongs to family Apiaceace, well known by name Devil dung. Preliminary studies for photochemical screening suggests the presence of assafoetidin, polysulphides, ferocolicin, coladomin, coladin, foliferidiniu. HPTLC documentation scan reveals the ferulic acid, ethanol extract of FSF oleogum resin.64%, which contain ferulic acid esters (60%), free ferulic acid (1.3%), coumarin derivatives (e.g. umbelliferone), volatile oils (3%–17%) including sulphur-containing compounds were isolated from plant. E-1-propyl sec-butyl disulfide, as the major component^[5]. *Hingu* is one of the important herb of Ayurveda having a properties of swasahara, anulomana, carminative, antispasmodic, digestive, aphrodisiac, emmenagogue, antioxidant, antiviral, anti-inflammatory, nephroprotective, neuroprotective and anticancer properties are proven pharmacologically and biologically in

animal and humans ^[6]. The resins have an effect on Asthma as smooth muscle relaxant causing bronchodilation ^[7].

Ayurvedic properties

Rasa: Katu, Tikta

Guna: Laghu, Tikshana

Virya: Ushna

Vipaka: Katu

Doshakarma: Kapha- Vatahara

RogaKarma: Hrudyā, shulāhara, chakshushya, bhedaniya, balya, arthavajanana

2. *Unaqua sodium chloride* (Black salt) ^[8] primarily consists of sodium chloride, sodium sulphate, sodium bisulfate, sodium sulfide, iron sulfide and hydrogen sulfide. It is having the properties of antacid, anti-flatulent, antioxidant, antihelminthic, demulcent, carminative and fat burner. Scientific studies reveal that black salt are useful in treating Asthma. Nutrient values present in black salt are sodium chloride (NaCl) 97.46%, Magnesium chloride (MgCl₂) 0.25%, sodium sulfate (Na₂SO₄) 0.88%, Calcium sulfate (CaSO₄) 0.38%, Iron (Fe⁺⁺⁺) 3.00%, Moisture 0.03%.

Ayurvedic properties

Rasa: Lavana, Madhura

Guna: Vishada, Laghu, Snigdha and Sukshma

Virya: Ushna

Vipaka: Madhura

Dosha Karma: Vatahara

Roga Karma: Hrudyā, gulmahara, vibandhahara, anahahara, udarashulāhara and udarakrimihara.

3. *Ziziphus jujuba* Mill. ^[9] belongs to family Rhamnaceae. Kola commonly named as Indian plum placed in Amradiphala varga. A neutral polysaccharide zizyphus – arabinan composed of L-arabinose, and D-galactose, 2-O-trans-p-coumaroylaliphitic acid, asimilobine, betulinic acid, zizyphussaponins I-III, Jujuboside B, triglycerides, vitamin C, carotenes, mallic acid, TLC detected with a compound xylose triterpenoids (betulinic acid, betulin, lupeol), steroidal saponins (oleanolic acid), flavonoids, xylose and others (not identified), are known for antioxidant, haem agglutination, membrane stabilizing property, anti-asthmatic, anti-allergic, immunomodulator, anti-inflammatory and anti-pyretic ^[10].

Ayurvedic properties

Rasa: Madhura, Amla

Guna: Guru, Snigdha

Virya: Sheeta

Vipaka: Madhura

Doshakarma: Vata- Pittahara

RogaKarma: Jwarahara, kasahara, hikkahara, shulāhara

4. *Rubia cordifolia* Linn. ^[11] belongs to family Rubiaceae known by Indian madder. Chemical constituents are rubiadin (1, 3-dihydroxy 2-methylantraquinone), mollugin, alizarin, purpurin, rubioncolin B, alizarin, rubiadin, rubimallin, purpurin, xanthopunin. Having a properties of Antioxidant, immunomodulator, gastro protective, antistress, ethanolic stem extracts have an anti-inflammatory activity ^[12].

Ayurvedic properties

Rasa: Kashaya, Tikta, Madhura

Guna: Guru, Ruksha

Virya: Ushna

Vipaka: Katu

Dosha karma: Kapha-Pitta hara

Roga Karma: Jwarahara, mutrajanana, lekhanīya, swedajanana, sothahara, varnya, vedanastapana, kushtaghna

5. *Piper longum* Linn. ^[13] belongs to family Piperaceae. The alkaloids piperine, piperlongumine, piperlonguminine, the presence of L-tyrosine, L-cysteine hydrochloride, DL-serine and L-aspaetic acid as free aminoacids has been reported in the fruit. Piperine shows antihypertensive, antioxidant, antitumor, anti-asthmatics, analgesic, anti-inflammatory, anti-diarrheal, antispasmodic, antidepressants, immunomodulatory, anticonvulsant, antibacterial, antifungal, hepato-protective activities ^[14].

Ayurvedic properties

Rasa: Katu

Guna: Tikshana, Laghu, Snigdha

Virya: Anushna

Vipaka: Madhura

Doshakarma: Kapha-Vatashamaka

RogaKarma: Rasayana, swasakasahara, shoolaprashamana, deepana

6. *Sida cordifolia* Linn ^[15] belongs to family Malvaceae known by country mallow. Chemical constituents are ephedrine, sitoindoside X, vasicine, vasicinone, choline, vasicinol, betaine. Presence of ephedrine has highlighted the utility by action of central nervous stimulant used to treat breathing problems. It is also have an anti-inflammatory, analgesic, antibacterial, antifungal ^[16] action.

Ayurvedic properties

Rasa: Madhura

Guna: Snigdha, Guru

Virya: Sheeta

Vipaka: Madhura

Doshakarma: Vata-Pittahara

Roga Karma: balya, grahi, rasayana, hrudyā, ojavardhaka, jwaraghna, prajasthapana,

7. *Citrus medica* Linn ^[17] known by citron fruit and its decoction have alkaloids, flavonoids, phenols, carbohydrates and mucilage; peels have alkaloids, flavonoids, steroids, phenols and carbohydrates; Abscisic, Abscisin II, limonin, limonene, lomocitrol. It has analgesic, hypoglycaemic, anticancer, antioxidant, anti-helminthic, antimicrobial and antiulcer properties.

Ayurvedic properties

Rasa: Amla, Madhura

Guna: Laghu, Snigdha

Virya: Ushna

Vipaka: Amla

Dosha Karma: Vata-kaphahara

Roga karma: swasahara, deepana, hrudyā

Collection and authentication of raw drugs

The above mentioned drugs were collected from Sri Dharmasthala Manjunatheshwara Pharmacy, Kuthpady, Udupi, Karnataka, India. The drug analysis and standardization was done at SDM centre for Research in Ayurveda and Allied Sciences, Kuthpady, Udupi, Karnataka, India.

Apparatus used for Preparation of Hingwadi choorna ^[18]

Impact Pulveriser-It is used for size reduction of the drugs.

Muslin cloth- used for the filtration of Matulungaswarasa.

End runner – utilised for Bhavana procedure.

Tray dryer- is used to dry the bhavitha choorna.

Method of preparation

Hingwadi choorna were prepared by using different parts of medicinally important herbal drugs such as Sauvarchala lavana (Crystal) (Fig 1), Kola fruit (Fig 2), Samanga (Root) (Fig 3), Pippali (Fig 4), Bala (Root) (Fig 5), choorna of above drugs were taken separately in equal quantity and shodhita Hingu (Latex) (Fig 6) taken half of the total quantity of above drugs and were made into fine powder and mixed homogeneously in a pulveriser. The homogeneous choorna is filtered by sieve number 85. Mixture was subjected for Bhavana with juice of Matulunga fruit (Fig 7) for 7 times ^[19]. After samyak siddhi lakshana of Bhavana, chakrikas (pellets) were prepared and dried in tray dryer. After complete drying pellets were made into powdered form and packed in a sachet. This method of preparation of choorna is followed according to The Ayurvedic Formulary of India.



Fig 4: Fruits of Pippali



Fig 5: Roots of Bala



Fig 1: Sauvarchala lavana



Fig 6: Shodhita Hingu



Fig 2: Fruits of Kola



Fig 7: Fruit and juice of Matulunga



Fig 3: Roots of Samanga



Fig 8: Pellets



Fig 9: Final product Hingwadi choorna

Precautions to be taken

1. All ingredients should be powdered separately.
2. Powders having sugars and salts as ingredients should not be formulated during rainy season as they catch moisture and may get spoiled due to their hygroscopic nature.
3. Powders should be immediately packed air tight after powdering, as it may catch moisture.
4. The fineness of powders should be preferably 85 mesh per square inch or still finer.
5. The powders which are not packed airtight lose their potency in 2 months while well packed and preserved powders may be kept active for 1 year.

Duration of preparation- 8 days

Test of choorna

Choorna is a size reduction process by using any herbal or mineral drugs. Colour according to the nature of the drugs used and smell of the predominant drug.

Organoleptic parameters of finished product

- Color: Brown
- Odour: Specific odour
- Taste: Tikta amla
- Touch : Smooth

Table showing results of standardization ^[20] parameters of Hingwadi choorna

| Parameter | Results n = 3%/w/w |
|----------------------------------|--------------------|
| Loss on drying | 10.98 |
| Total Ash | 15.32 |
| Acid Insoluble Ash | 1.49 |
| Water soluble Ash | 12.8 |
| Alcohol soluble extractive value | 16.64 |
| Water soluble extractive value | 43.90 |

Discussion

Bronchial asthma is a major public health problem affecting a large number of individuals of all ages. Globally, 100 to 150 million people suffer from asthma ^[21]. The signs and symptoms of Tamakaswasa explained in Ayurvedic classics resemble Bronchial Asthma. Choorna Kalpana (particle size reduction) is most predominately used form of Ayurvedic preparation among 5 basic preparations and rate of drug absorption is fast. Bhavana is one among such samskara which is defined in different literature of Rasashastra. Bhavana with organic juices improves the bioavailability of the drug there by enhance their rate of absorption. Hingwadi choorna is one of the best formulations for the treatment of bronchial asthma. The raw drugs were authenticated by the experts and final product was standardized and its value was compared as per Ayurvedic Formulary of India.

Conclusion

Different pharmaceutical techniques are scientifically designed by ancient Ayurvedic scholars. Choorna kalpana is most predominately used form in Ayurvedic preparation. Samskara is a process in which the quality of raw drug is converted according to the requirement of the formulation. Bhavita Hingwadi choorna is a convenient form to prescribe in required amount particularly in children. Ayurveda is principle among the traditional health practice in the world hence traditional inspired practical approach should be made in preparing prime quality preparations.

References

1. Tripathi Brahmanand, Charaka Samhitha of Agnivesha. Reprint ed Varanasi: Chaukhamba Surbharati Prakashan. 2011; II:1450, 632p.
2. Singh Kushawaha Harish Chandra, Charaka Samhita of Agnivesha. Reprint ed Varanasi: Chaukhambha orientalia; 2012; II:1172, 454-55.
3. Angadi Ravindra, Bhashajya kalpanavijnana, Varanasi; Chaukhambha Surbharati Prakashana, 2011, 511p, 61-63.
4. Rohit Sharma, Prajapati PK. Liquid media's in Bhavana Samskara: A pharmaceutico-therapeutic prospect. The Journal of Phytopharmacology. 2015; 4(1):49-57.
5. Gupta AK, Tandon Neeraj, Sharma Madhu. (Co-ordination Ed). Quality standardization of Indian medicinal plants New Delhi: Medical Plants Unit Indian Council of medicinal research. 2008; V:357, 232-37p.
6. Arshiya Sultana, Asma K, Khaleequr Rahman, Shafeequr Rahman. Oleo-gum-resin of *Ferula asafoetida*: A traditional culinary spice with versatile pharmacological activities. International Science Congress Association; Research Journal of Recent Sciences. 2015; 4(IVC-2015):16-22.
7. Mohammad Reza Khazdair, Mohammad Hossein Boskabady. The relaxant effect of *Ferula assafoetida* smooth muscles and the possible mechanisms. Journal of Herb Med Pharmacology. 2015; 4(2):40-44.
8. Debojyoti Basu, Divyesh Sharma, Vipul Darji, Honey Barot, Jyoti Patel, Dinkal Modi *et al.* Discard Biochemical Malfunction By Black Salt Through Naturopathy. European Journal of Pharmaceutical and Medical Research. 2015; 2(6):96-101.
9. Gupta AK, Tandon Neeraj, Sharma Madhu. (Co-ordination Ed). Quality standardization of Indian medicinal plants New Delhi: Medical Plants Unit Indian Council of medicinal research; 2008; VII:358, 321-25.
10. Suresh Naika R, SushantBhagat, Priyank D. Shah, Abhishek A. Tare,DeepaIngawale, Raju R. Wadekar. Evaluation of anti-allergic and anti-anaphylactic activity of ethanolic extract of *Zizyphusjuba* fruits in rodents. Revista Brasileira de Farmacognosia Brazilian Journal of Pharmacognosy. 2013; 23(2013):811-818.
11. Gupta AK, Tandon Neeraj, Sharma Madhu. (Co-ordination Ed). Quality standardization of Indian medicinal plants New Delhi: Indian Council of medicinal research. 2005; VIII:412p, 312-15.
12. Devi Priya M, Siril EA. Traditional and Modern Use of Indian Madder (*Rubia cordifolia* L.): An Overview. International Journal of Pharmaceutical Sciences Review and Research. Article No. 27, 2014; 25(1):154-

- 164.
13. Gupta AK. (Co-ordinator). Quality standardization of Indian medicinal plants New Delhi: Indian Council of medicinal research; 2003; I:262, 170-73.
 14. Zoheir A Damanhour, Aftab Ahmad. A Review on Therapeutic Potential of *Piper nigrum* L. (Black Pepper): The King of Spices. Medicinal & Aromatic Plants. 2014; 3(3):6.
 15. Tandon Neeraj (Co-ordination, Ed). Quality standardization of Indian medicinal plants New Delhi: Medical Plants Unit Indian Council of medicinal research. 2011; IX:415, 324-31.
 16. Ankit Jain, Shreya Choubey, Singour PK, Rajak H, Pawar RS. *Sidacordifolia* (Linn) – An overview. Journal of Applied Pharmaceutical Science. 2011; 01(02):2011: 23-31.
 17. Kalpesh Panara Krutika Joshi, Nishteswar K. A Review on Phytochemical and Pharmacological Properties of *Citrus medica* Linn. International Journal of Pharmaceutical & Biological Archives. 2012; 3(6):1292-1297.
 18. Joshi Devendra, Joshi Geeta. Introduction to Ayurvedic Pharmaceutics Ed 1st. Varanasi; Chaukhambha Orientalia, 2014, 268p, 126p, 137p, 139p, 142p, 163p, 190.
 19. Madhulikapriya, Govindasharma K. Critical Review on Importance of Bhavana in Rasoushadhi. International Ayurvedic Medical Journal. 2014; 2(4):451-455.
 20. Chethan Kumar VK. Quality Characterization and HPTLC Fingerprinting of Hingwadi Choorana: A Polyherbal Formulation. International Ayurvedic Medical Journal 2017 October; 5(10): 3785-3792.
 21. Gajanan S. Gaude. Factors Affecting Non-adherence in Bronchial Asthma and Impact of Health Education. Indian J Allergy Asthma Immunol. 2011; 25(1):1-8