

Pharmacognostical Profiles of *Triphala Masi* Prepared at Different Levels of Temperature

Research Article

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Abstract

Triphala is a traditional Ayurvedic herbal formulation consisting of dried pericarp of three medicinal plants *Terminalia chebula* Retz., *Terminalia bellerica* Roxb. and *Embllica officinalis* Gaertn. *Masi* (Black ash) prepared from this combination is of great use. No pharmacognostical profiles are available on *Triphala Masi* till date. So the same is attempted in current study. Aim: To evaluate pharmacognostical profiles of *Triphala Masi* prepared at three different levels of temperature. Materials and Methods: *Triphala Masi* was prepared at three different levels of temperature and samples were coded as TM 1, TM 2 and TM 3 and further subjected for pharmacognostical profiles. Results: Loosened walls of epicarp cells were observed in TM 1 sample prepared at 300°C; showed that these cells sustained up to this temp. At 350°C, epicarp cells in the sample TM 2 were seen disturbed. But when heat was increased up to 400°C, only black mass was observed in TM 3 sample. Conclusion: Based on pharmacognostical observations, 400°C temperature is required for preparation of *Triphala Masi*.

Keywords : Black ash, *Masi*, Pharmacognosy, Pyrolysis, Temperature, *Triphala*.

Introduction

Ayurvedic System of Medicine has its long history of therapeutic potential. *Ayurveda* is already well accepted and used since thousands of years. A huge number of formulations are being used to achieve the objectives of Ayurveda. *Masi* is one of such preparation. References about *Triphala Masi* were found in *Bhaisajya Ratnavali* (1) and *Rasendra Sara Sangraha* (2).

Triphala is a traditional Ayurvedic herbal formulation consisting of dried pericarp of three medicinal plants, *Haritaki* (*Terminalia chebula* Retz.), *Bhibitaki* (*Terminalia bellerica* Roxb.) and *Amalaki* (*Embllica officinalis* Gaertn.). *Triphala* means 'three' (*Tri*) 'fruits' (*Phala*) (3). This combination is used in Ayurvedic medicine to treat a variety of conditions like *Aanaha* (Distension of abdomen), *Prameha* (Urinary disorders), *Netraroga* (Eye disorders), *Kaphapittaroga* (Diseases due to *Kapha* and *Pitta Dosh*), *Kustha* (Diseases of skin), *Mandagni* (Impaired digestive fire), *Aruchi* (Tastelessness), *Vishamajvara* (Intermittent fever) etc (4). This combination also forms a part of many other Ayurvedic formulations. *Triphala* is also main ingredient of *Triphala Masi*, which is used to treat *Upadamsha* (Syphilis) (5).

Masi is obtained, when any natural product from vegetable or animal origin is heated slowly, at lower temperature. In *Masi*, both organic and inorganic constituents are present. No reports on temperature pattern for preparation of *Triphala Masi* are available and even pharmacognostical profiles on the same are not reported till date. Hence, for preparing *Masi* of desired character, it was planned to prepare *Triphala Masi* at three different levels of temperature i.e. 300°C, 350°C and 400°C. All these samples of *Triphala Masi* were further subjected to pharmacognosy to study the characters.

Materials and methods

Raw drug Collection

Triphala was collected from Pharmacy, Gujarat Ayurved University Jamnagar. *Triphala* was grinded by hammer mill and sieved through mesh number 10. Obtained coarse powder then stored in an air tight container.

Pharmaceutical preparation

Three batches of each sample of *Triphala Masi* (TM 1, TM 2 and TM 3) were prepared. Coarse powder of *Triphala* collected and placed in earthen plate, which was covered by another earthen plate of similar diameter. Then junction was sealed with clay and cotton cloth; thereafter dried well. After complete drying, earthen plates were heated in muffle furnace. For preparation of *Triphala Masi* at different levels of temperature, TM 1 sample was subjected to 300°C for 85 minutes while TM 2 to 350°C for 125 minutes and TM 3 to 400°C for 150 minutes. For each sample, pharmaceutical process was repeated thrice to develop SMP. After self cooling, the whole content from earthen

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plates was collected carefully, grinded in mortar and stored in air tight container.

Pharmacognostical evaluation:

Characters of *Triphala* and *Triphala Masi* prepared at different level of temperature were observed first with distilled water and then with phloroglucinol and concentrated HCl. Colour, taste, odour and powder of all samples were recorded (6). Microphotographs were taken by using Carl-Zeiss trinocular microscope attached with camera (7).

Result

Pharmaceutical study:

For each sample, pharmaceutical process was carried out thrice. Total percentage yield and average yield was placed at [Table 1].

Table 1- Results of Pharmaceutical process of three samples of *Triphala Masi* (TM 1, TM 2 and TM 3)

Batch	Initial weight	Final weight	Average yield
TM 1.1	100	89	89.06
TM 1.2	100	90.2	
TM 1.3	100	88	
TM 2.1	200	118	59
TM 2.2	200	117	
TM 2.3	200	119	
TM 3.1	200	95	48.66
TM 3.2	200	98	
TM 3.3	200	99	

Organoleptic characters:

Colour of *Triphala* was yellowish brown with characteristic odour and astringent taste. *Triphala Masi* (TM 1) was black in colour with some brown particles with characteristic odour and mild astringent in taste. TM 2 was of shiny black colour rarely brown particle with faint burnt odour and Charcoal like taste. TM 3 was black in colour with burnt smell and charcoal like taste [Table 2].

Table 2: Organoleptic characters

Sr no	Character	<i>Triphala Powder</i>	TM 1	TM 2	TM 3
1	Colour	Yellowish Brown	Black with brown particles	Shiny black rarely brown particle	Black
2	Odour	Characteristic	Characteristic	Faint burnt	Burnt
3	Touch	Fine	Fine	Fine	Fine
4	Taste	Astringent	Mild astringent	Charcoal like	Charcoal like

Microscopic characters of *Triphala powder*

Diagnostic microscopic characters observed under the microscope were sclereids (1.1-a), stone cell (1.2-b), tanin content (1.3-c), oil globules and epicarp cells of *Haritaki* (1.7-g), simple trichome (1.4-d), pitted sclereids with narrow lumen (1.5-e), rosette crystal (1.6-f), spiral vessels, prismatic crystal, group of stone cells of *Bibhitaki*, silica crystal, sclereids, endosperm cells (1.8-h) and compound starch grain (1.9-i) of *Amlaki* in powder of *Triphala* [Figure 1].

Microscopic characters of TM 1

Diagnostic microscopic characteristics under the microscope observed were loosened epicarp cells of *Haritaki* (2-a), loosened epicarp cells of *Bibhitaki* (2-b), silica crystal of *Amalaki* (2-c) [Figure 2].

Microscopic characters of TM 2

Diagnostic microscopic characters under the microscope observed were disturbed epicarp cells of *Haritaki* (3-a), collapsed epicarp cells of *Bibhitaki* (3-b), shrunk epicarp cells of *Amalaki* (3-c) [Figure 3].

Microscopic characters of TM 3

Without any cellular contents only black mass of finished product was observed (4-a) [Figure 4].

Discussion

Masi (Black ash) is obtained, when any natural product from vegetable or animal sources is heated slowly, at lower temperature. Characteristic of *Masi* is black in colour. TM 1, TM 2 and TM 3 were included in study because, they were black in colour. Black colour of *Masi* indicates high percentage of carbon and oxides. Non-specific odour and charcoal like taste may be attributed to oxides, inorganic elements and carbon (8).

For preparation of TM 1 sample in muffle furnace, 85 minutes were required and temperature given was 300°C. For TM 2 sample, time required was 125 minutes and temperature given in muffle furnace was 350°C. 150 minutes time was sufficient for TM 3

Figure 1: Microscopic characters of *Triphala*

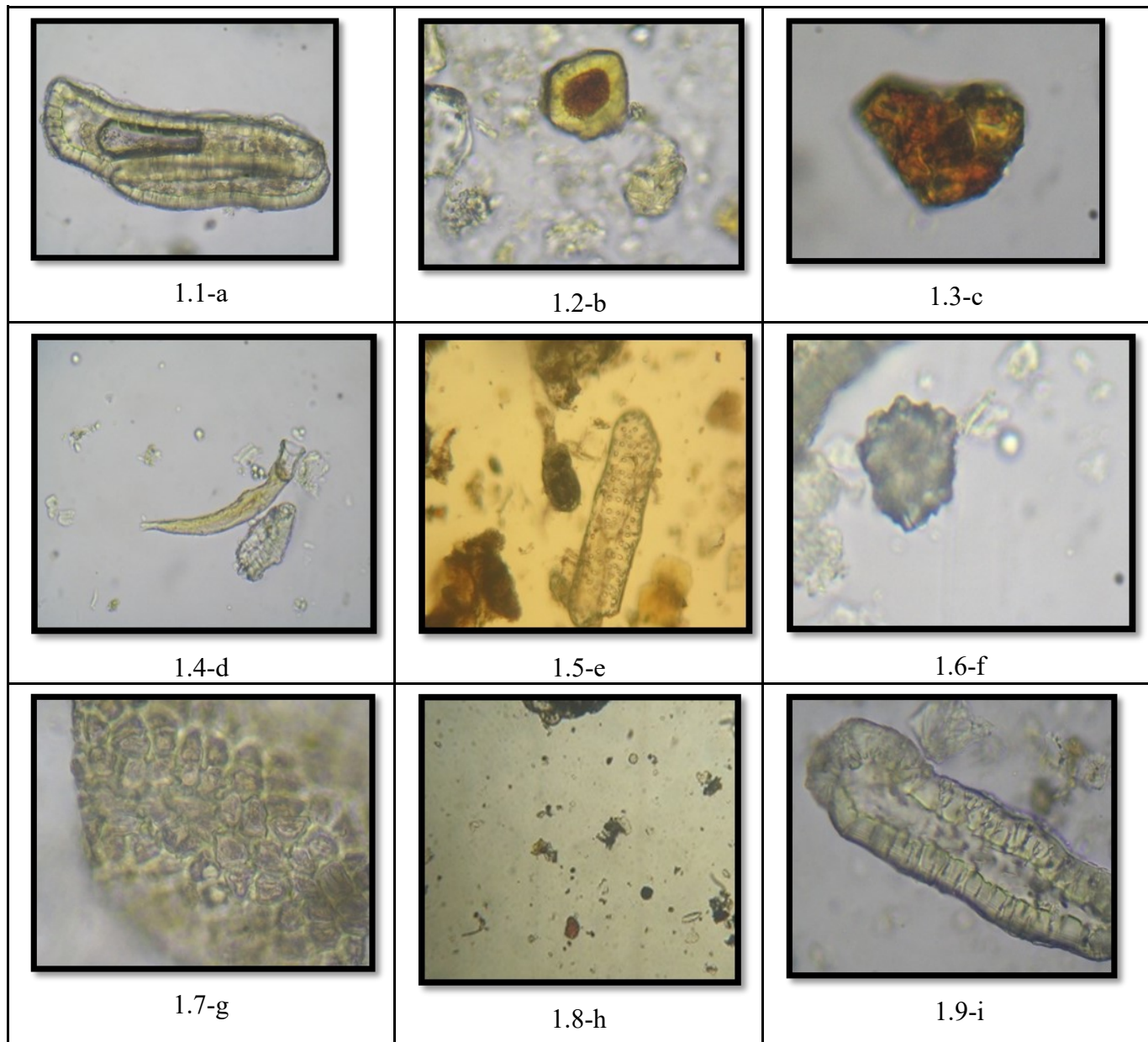


FIGURE 2: MICROSCOPIC CHARACTER OF TM 1

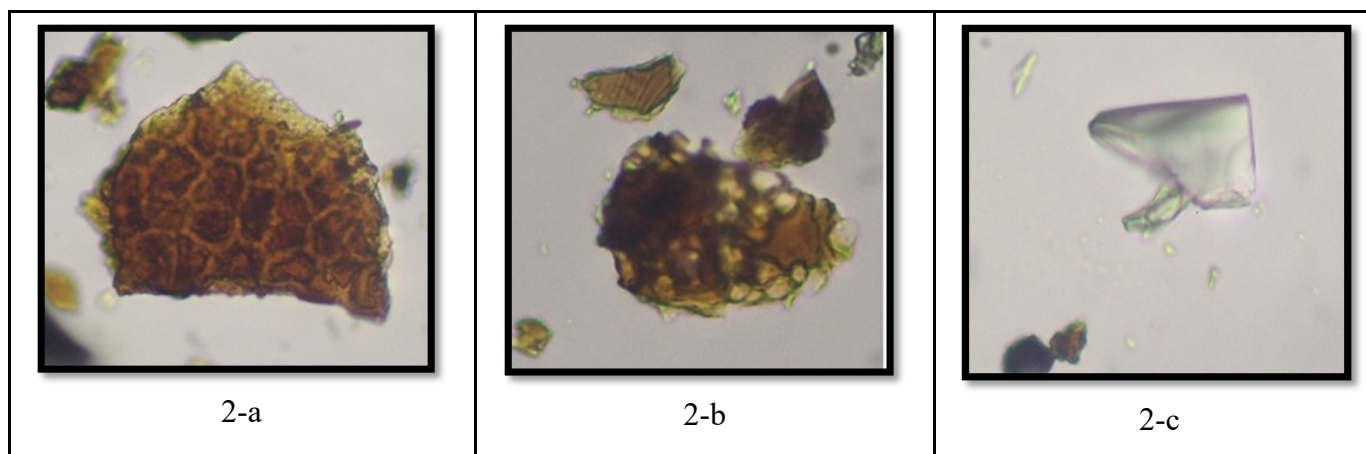
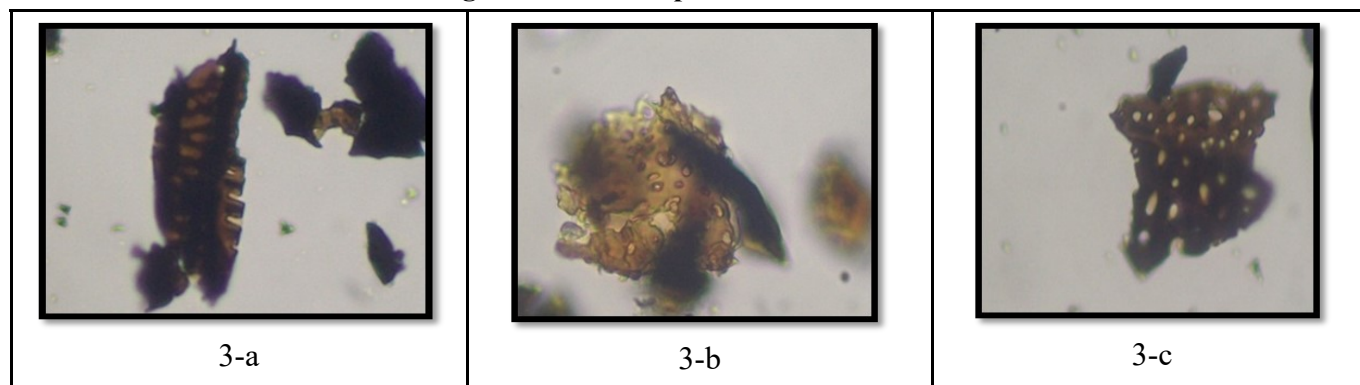
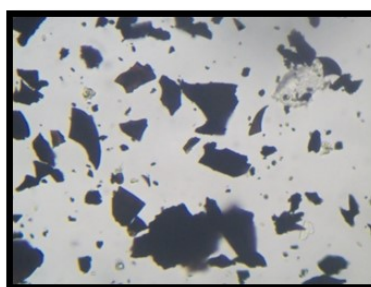


Figure 3: Microscopic character of TM 2

Figure 4: Microscopic character of TM 3


sample and heat was maintained up to 400⁰C. Minimum six hours were required for self cooling in all batches.

Results showed that microscopic characters of *Triphala* powder matched with characteristics of *Amlaki*, *Bibhitiaki* and *Haritaki* given in Ayurvedic Pharmacopeia of India. The microscopic characters like simple trichome, oil globules, and spiral vessels were burnt and not observed in TM 1 but only some loosened walls of epicarp cells were observed. It showed that the cells sustained up to this temp. At 350⁰C, these epicarp cells were seen disturbed. But when heat was increased up to 400⁰C, only black mass was observed. These observations showed that temperature plays an important role in preparation of *Masi*.

In *Masi* preparation, a process called pyrolysis occurs. Pyrolysis is the chemical and physical decomposition of organic material at high temperature in absence of oxygen, leaving irreversible change. The conditions created during pyrolysis leave mostly carbon as the residue (9).

Conclusion

Triphala Masi is an Ayurvedic preparation which is used in *Upadamsha* (Syphilis). Based on pharmacognostical observations of TM 1, TM 2 and TM 3; TM 3 is acceptable because only black mass was observed. So on the basis of pharmacognostical study of three samples of *Triphala Masi* prepared at different levels of temperature, it can be concluded that 400⁰C temperature is required for preparation of *Triphala Masi*.

References

1. Dasa G, Hindi Commentary by Shree Ambikadatta Shastri. Bhaisajya Ratnavali Updamsha Adhikara 8/3. 2ed. Varanasi; Chaukhambha Prakashan; 2009. 874p
2. Bhatta GK, English translation by Dr. Ashok D. Satpute. Rasendra Sara Sangraha Updamsha Adhikara 4/2. 1ed. Varanasi; Chaukhambha Krishnadas Academy; 1994. 599p
3. Sushruta A, Hindi Commentary by Kaviraj Ambikadutta Shastri. Sushruta Samhita Chikitsa Sthana 9/17, 12th Edition. Varanasi; Chaukhambha Sanskrit Sansthan; 2001. 358p
4. Anonymous. The Ayurvedic Formulary of India Part II 4:10. 2ed. New Delhi; Controller of publication, Civil Line; 2000. 42p
5. Dasa G, Hindi Commentary by Shree Ambikadatta Shastri. Bhaisajya Ratnavali Updamsha Adhikara 8/3. 2ed. Varanasi; Chaukhambha Prakashan; 2009. 874p
6. Khandelwal KR, Kokate CK, Gokhale SB. Practical Pharmacognosy. Pune; Nirali Prakashan; 1996. 149p
7. Wallis TE. Text book of Pharmacognosy. 5ed. New Delhi; CBS Publishers & Distributors; 2002. 210-215p
8. Yogesh SB, Sheetal J, Khandelwal KR, Exploring of Antimicrobial Activity of *Triphala Mashi*- an Ayurvedic Formulation. Evid. Based Complement Alternat. Med. March, 2008; 5(1); 107-113. <https://en.wikipedia.org/wiki/Pyrolysis> last assessed on 28/9/15 at 5:30pm.
