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Pharmaceutico-Analytical Standardization of Kamadhenu Choorna

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ABSTRACT

Standardization of Ayurvedic formulations is essential to ensure quality, safety, and therapeutic efficacy. Kamadhenu Choorna is a classical formulation prepared using purified Gandhaka and Amalaki processed with specific pharmaceutical procedures such as Bhavana with Amalaki Swarasa and Shalmali Kwatha. The present study aimed to standardize Kamadhenu Choorna through pharmaceutical preparation and analytical evaluation. The pharmaceutical study included preparation of Amalaki Churna, Gandhaka Shodhana, preparation of Amalaki Swarasa, and Shalmali Niryasa Kwatha followed by Bhavana process. Analytical evaluation was carried out using organoleptic, physicochemical, qualitative, quantitative chemical tests and Thin Layer Chromatography (TLC). The organoleptic characters showed light ash colour, characteristic odour, Amla-Kashaya taste and Churna consistency. Physicochemical parameters revealed Loss on drying 5.5%, Total ash 7.25%, Acid insoluble ash 2.75%, Water soluble extractive 23.25%, Alcohol soluble extractive 14.25%, Water soluble ash 3.5% and Total sulphated ash 4.5%. Qualitative analysis showed the presence of carbohydrates, proteins, anthraquinone glycosides and alkaloids. TLC profiling exhibited six spots with Rf values ranging from 0.16 to 0.66. These results establish preliminary pharmaceutico-analytical standards for Kamadhenu Choorna.

KEYWORDS: *Churna, Kashaya, Bhavana.*

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INTRODUCTION

Ayurveda emphasizes the preparation of medicines according to well-defined pharmaceutical principles described under Bhaishajya Kalpana. Proper pharmaceutical processing (Samskara) enhances the therapeutic efficacy of drugs through processes such as Samyoga, Kala, and Bhavana.

In ancient times Ayurvedic medicines were prepared directly by physicians. However, with the increasing demand for Ayurvedic drugs, large-scale manufacturing has become common. This has created the necessity for standardization and quality control of Ayurvedic formulations.

Standardization of any drug involves:
Standardization of raw materials
Standardization of pharmaceutical procedures
Standardization of the finished product

Among these, evaluation of the finished product through analytical parameters is crucial because it ensures uniformity, safety, and efficacy of the formulation.

Kamadhenu Choorna is a compound formulation which is explained under Gandhamalaki yoga in Bhaishajya Ratnavali in Vajikarana Rogadikara. kamdhenu Churna was prepared mainly using Shuddha Gandhaka and Amalaki, processed with Bhavana using Amalaki Swarasa and Shalmali Niryasa Kwatha. The present work was undertaken to document the pharmaceutical preparation and establish analytical parameters for this formulation.

Materials and Methods

Source of data

Literary source

All classical, modern literature and contemporary texts including the journals and website about the crude drugs, procedures and equipments was reviewed and documented for the study.

Drug source

Raw materials such as Gandhaka and dry Amalaki were procured from Jogappa Shanbhag Pharmacy, Udupi.

Pharmaceutical Study

The pharmaceutical preparation was carried out in the Department of Rasa Shastra & Bhaishajya Kalpana including Drug Research, A.L.N. Rao M.A.M.C Pharmacy, Koppa.

The preparation involved the following steps:

1. Preparation of Amalaki Churna

Dried Amalaki fruits were cleaned, dried, and powdered using a Khalwa Yantra. The powder was filtered through a fine cloth to obtain a uniform churna.

Observation-Drugs were completely dried.

Fine powder obtained without fibrous residue.

Result
Initial quantity: 550 g
Final powder obtained: 500 g
Loss during grinding and filtration: 50 g

2. Gandhaka Shodhana

Gandhaka purification was performed according to the reference from Rasatarangini.

Ingredients;
Gandhaka – 550 g, Go Ghrita – 1 kg, Go Dugdha – 3 L

Procedure Gandhaka was melted with ghee and poured into milk through a cloth. The process was repeated three times. The purified sulphur was washed with water and dried.

Observation- Yellow coloured purified Gandhaka obtained.

Result - Initial weight: 550 g

Purified Gandhaka obtained: 500 g

Loss: 50 g

3. Preparation of Amalaki Swarasa

Fresh Amalaki fruits were crushed to obtain swarasa. Bhavana was given to the mixture of Shuddha Gandhaka and Amalaki Churna with Amalaki Swarasa for 7 days.

Observation - Colour: Ash coloured

Taste: Madhura

4. Preparation of Shalmali Niryasa Kwatha

Shalmali Niryasa was soaked overnight in water and boiled until the volume reduced to one-fourth.

Observation- Dark reddish colour

Kashaya-Madhura taste

Result- Final Kwatha obtained: 250 ml

Bhavana was again given using Shalmali Kwatha for seven days.

Final Yield of Kamadhenu Choorna

Amalaki Churna – 500 g
Shuddha Gandhaka – 500 g
Final Choorna obtained – 800 g
Total loss – 200 g

Analytical Study

Organoleptic Evaluation Results

Parameter	Observation in Kamadhenu Churna
Colour	Light ash colour
Odour	Odour Characteristic
Taste	Amla Kashaya
Consistency	Fine Churna

Physico-Chemical Analysis Results

Sl. no	Parameters	Khamadhenu churna result
1	Loss on drying	5.5 %
2	Total ash	7.25 %
3	Acid insoluble ash	2.75 %
4	Water soluble extractive	23.25%
5	Alcohol soluble extractive	14.25 %
6	Water soluble ash	3.5 %
7	Total sulphated ash	4.5 %

Qualitative Chemical Analysis Results

Test	Appearance	Result
Fehling's test	Brick red colour	+ + +
Protein test	-	+
Anthraquinone glycoside test	Red colour	+ + +
Flavonoid test	No pink colour	-
Alkaloid test	Brick red colour	+ + +

Quantitative Analysis

Total sulphur percentage estimation was performed using precipitation with barium chloride after oxidation.

Result ;Total Sulphur Percentage: 0.687 %

Thin Layer Chromatography (TLC)

TLC was carried out to obtain the chromatographic fingerprint.
Solvent System - Acetone : Methanol : Acetic Acid (5 : 3 : 2)
Spraying Reagent- Anisaldehyde Sulphuric Acid
Rf Values Observed
0.16
0.24
0.30
0.40
0.53
0.66

These spots indicate the presence of multiple phytoconstituents in the formulation.

Discussion

The pharmaceutical preparation confirmed that the classical procedures such as Gandhaka Shodhana and Bhavana play an important role in modifying the physicochemical properties of the formulation. Bhavana with Amalaki Swarasa and Shalmali Kwatha likely enhances the therapeutic potential and bioavailability of the formulation.

The organoleptic parameters established the basic identity of Kamadhenu Choorna. Physicochemical analysis showed acceptable values for ash, extractive values and moisture content indicating purity and stability of the formulation.

Qualitative phytochemical tests revealed the presence of carbohydrates, proteins, anthraquinone glycosides and alkaloids, which may contribute to the therapeutic activity of the formulation.

TLC fingerprinting provided a characteristic chromatographic profile which can serve as a reference standard for future quality control studies.

Conclusion

The present study successfully documented the pharmaceutical preparation and analytical evaluation of Kamadhenu Choorna. The obtained organoleptic, physicochemical, phytochemical and chromatographic parameters provide preliminary standards for identification and quality control of this formulation. These pharmaceutico-analytical findings will be useful for ensuring uniformity, safety and efficacy of Kamadhenu Choorna in future research and clinical practice These findings may serve as preliminary standards for the identification, quality assurance and future research of Kamadhenu Choorna.

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