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PHYTOCHEMICAL ANALYSIS OF MASHABALADI KWATHA CHURNA

Dr Salah sulaiman [1] , Dr Waheeda Banu[2]

1 PG Scholar, Department of P.G studies in Kayachikitsa, Karnataka Ayurveda Medical College and Hospital, Mangalore, D.K District, Karnataka, India.

2 HOD and Professor, Department of P.G studies in Kayachikitsa, Karnataka Ayurveda Medical College and Hospital, Mangalore, D.K District, Karnataka, India.

ABSTRACT

Medicinal herbs are the local heritage with global importance. They have curative properties due to presence of various complex chemical substances of different composition, which are found as plant secondary metabolites in one or more parts of these plants.Mashabaladi Kwatha is a multi-herb decoction which contains seven important herbs in equal quantity and two drugs as Prakshepa dravya. The present study provides updated information on its phytochemical analysis, pharmacological properties and probable mode of action of Mashabaladi Kwatha. The decoction has Tridoshaghna action mainly Vata-Kaphashamaka along with Nadibalya (nervine), Dhatuvardhaka-Pushtikara (nourishes and strengthening the body tissue, fluids etc.), Shophahara(anti-inflammatory), Shoolahara(subsides pain), Raktapittahara (haemostatic), Amapachana (digestive), Rasayana(rejuvenating), Vrushya (aphrodisiac) etc. All these properties of Mashabaldi Kwath are considered to combat vitiation of Vata in Pakshaghata (hemiplegia), Manyasthamba (cervical spondylitis), Karnanada (tinnitus) and Ardita (facial paralysis).

Last decade have witnessed exceptional rise in demand of plant based Medicine and herbal product in International market. Due to excessive demand in the Global market, the rate of extraction of medicinal plants from natural sources is higher than the rate of their regeneration. That directly contributes to the present scarcity of medicinal plants. This study highlights the results of standardization (identity, purity & strength) tests, preliminary phytochemical screening and TLC findings. All the said tests are conducted in The Tamil Nadu Dr. M.G.R. Medical University, Chennai. These studies are important in way of establishing quality-control, efficacy & accept ability of herbal drugs.

Keywords- Mashabaladi kwatha,Tridoshagna,Nadibalya,Shophahara,Pakshaghata

,Manyastamba,Karnanada,Ardita.

INTRODUCTION

Ayurveda, a holistic science which accentuate on maintaining fitness in addition to treatment of diseases, relies mainly on healing potential of plants. The focus of Ayurveda is to restore balance by eradicating the root cause of disease using a blend of natural elements and prevent the recurrence of imbalance by creating a healthy life style. Drug is a substance or product that is intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient[1]. In Ayurveda, an ideal medicine is one which should be in less dosage form, possessing maximum therapeutic effects along with blending palatability[2]. Thus the greatest

emphasis is given to the complete knowledge of drugs including identification, procurement, processing, preparation and application under a specialized branch of learning called 'Bhaisajya Kalpana[3].

Plant based drugs have formed the basis of traditional medicine systems that have been used for centuries in many countries. Today plant-based drugs continue to play an essential role in health care. It has been estimated by the World Health Organization that 80% of the population of the world rely mainly on traditional medicines for their primary healthcare.[4]

Mashabaladi Kwatha is a unique preparation explained in Chakradutta which contains Masha (*Phaseolus mungo*), Bala (*Sida cordifolia*), Shookshimbhi (*Mucuna pruriens*), Kritrina (*Cymbopogon schoenanthus*), Rasna (*Pluchea lanceolata*), Ashwagandha (*Withania somnifera*) and Urubuka (*Ricinus communis*) in equal quantity. Ramatha (*Ferula foetida*) and Saindhav Lavan (*Sodiaum chloride*) were added to it as Prakshep dravya.[5-7]

It is indicated in Pakshaghata(hemiplegia), Manyastambha (cervical spondylitis), Karnanada(tinnitus), Karnaruja (earache), Ardita (facial paralysis) with Tridoshaghana action mainly Vata-Kaphashamaka along with Nadibalya (nervine), Dhatuvardhaka,Pushtikara (nourishes and strengthening the body tissue, fluids etc.), Shophahara(anti-inflammatory), Rasayana (rejuvenating), Vrushya (aphrodisiac) actions etc.

माषबलाशूकशिम्बीकत्तृणरास्नाऽश्वगन्धोरुवूकाणाम्

क्वाथोनस्यनिपीतोरामठलवणान्वितः कोष्णः ॥

अपहरतिप क्षघातं मन्यास्तम्भं सकर्णनादरुजम् दुर्जयमर्दितवातं सप्ताहाज्जयति चावश्यम् ॥

(Chakradutta 23-24, B. R. 26/71-72, Yogratnakara Vataroga Chi. 1-2)

The aim of the present study is to carry out preliminary phytochemical screening and physicochemical analysis of the plant materials which are used in the preparation of mashabaladi kwatha.

AIMS AND OBJECTIVES

To study about Physico and Phytochemical analysis of *Mashabaladi kwatha churna.*

MATERIALS AND METHODS

Source of Data

1. Classical text book of *Ayurveda*

2. Text books of Modern science

3. Published articles from periodical journals another magazines.

Table 1: Ingredients of Mashabaladi Kwatha[8]

No	Name	BOTANICAL NAME	FAMILY	PARTS USED
1	Masha	*Phaseolus mungo*	Fabaceae	Seeds
2	Bala	*Sida cordifolia*	Malvaceae	Whole plant
3	Shookashimbi	*Mucuna pruriens*	Fabaceae	Seeds

4	Kritrina	*Cymbopogon schoenanthus*	Poaceae	Whole plant
5	Rasna	*Pluchea lanceolata*	Asteraceae	Leaves
6	Ashwagandha	*Withania somnifera*	Solanaceae	Rhizome
7	Urubaka	*Ricinus communis*	Euphorbiaceae	Root
8	Ramatha	*Ferula foetida*	Apiaceae	Resin
9	Saindhav	*Sodium chloride*	-	Crystalline form

PHYSICOCHEMICAL ANALYSIS OF *MASHABALADI KWATHA CHURNA*

The preliminary physicochemical screening test was carried out for ***MASHABALADI KWATHA CHURNA*** as per the standard procedures mentioned hereunder.

1. Loss on Drying:

An accurately weighed 1g of ***MASHABALADI KWATHA CHURNA*** formulation was taken in a tarred glass bottle. The crude drug was heated at 1050C for 6 hours in an oven till a constant weight. The Percentage moisture content of the sample was calculated with reference to the shade dried material.

2. Determination of total ash:

Weighed accurately 2g of ***MASHABALADI KWATHA CHURNA*** formulation was added in crucible at a temperature 6000C in a muffle furnace till carbon free ash was obtained. It was calculated with reference to the air dried drug.

3. Determination of acid insoluble ash:

Ash above obtained, was boiled for 5min with 25ml of 1M Hydrochloric acid and filtered using an ash less filter paper. Insoluble matter retained on filter paper was washed with hot water and filter paper was burnt to a constant weight in a muffle furnace. The percentage of acid insoluble as was calculated with reference to the air dried drug.

4. Determination of water soluble ash:

Total ash 1g was boiled for 5min with 25ml water and insoluble matter collected on an ash less filter paper was washed with hot water and ignited for 15 min at a temperature not exceeding 4500C in a muffle furnace. The amount of soluble ash is determined by drying the filtrate.

5. Determination of water soluble Extractive:

5gm of air dried drug, coarsely powered ***MASHABALADI KWATHA CHURNA*** was macerated with 100ml of distilled water in a closed flask for twenty-four hours, shaking frequently. The Solution was filtered and 25 ml of filtrated was evaporated in a tarred flat bottom shallow dish, further dried at 1000C and weighted. The percentage of water soluble extractive was calculated with reference to the air dried drugs.

6. Determination of alcohol soluble extractive:

1 gm of air dried drug coarsely powdered ***MASHABALADI KWATHA CHURNA*** was macerated with 20 ml alcohol in closed flask for 24 hrs. With frequent shaking, it was filtered rapidly taking precaution against

loss of alcohol 10ml of filtrate was then evaporated in a tarred flat bottom shallow dish, dried at 1000C and weighted. The percentage of alcohol soluble extractive was calculated with reference to air dried drug.

The observed values of the physico chemical properties are given below:-

S.No	Parameters	Percentage
1	Loss on drying	4.087%
2	Total ash value	5.192%
3	Acid insoluble ash	0.828%
4	Water soluble ash	1.44%
5	Water soluble extraction	5.576%
6	Alcohol soluble extraction	0.19%

PRELIMINARY PHYTOCHEMICAL SCREENING OF *MASHABALADI KWATHA CHURNA*

The preliminary phytochemical screening test was carried out for each extracts of ***MASHABALADI KWATHA CHURNA*** as per the standard procedure mentioned hereunder.

1. Detection of alkaloids:

Extracts were dissolved individually in dilute Hydrochloric acid and filtered.

a) Mayer's Test: Filtrates were treated with Mayer's reagent (Potassium Mercuric Iodide). Formation of a yellow colour precipitate indicates the presence of alkaloids.

b) Dragendroff's Test: Filtrates were treated with Dragendroff's reagent (Potassium Bismuth Iodide). Formation of a red precipitate indicates the presence of alkaloids.

c) Wagner's Test: Filtrates were treated with Wagner's reagent (Iodine in Potassium Iodide). Formation of brown/reddish precipitate indicates the presence of alkaloids.

2. Detection of carbohydrates:

Extracts were dissolved individually in 5 ml distilled water and filtered. The filtrates were used to test for the presence of carbohydrates.

a) Molisch's Test: To 2 ml of plant sample extract, two drops of alcoholic solution of α- naphthol are added. The mixture is shaken well and few drops of concentrated sulphuric acid is added slowly along the sides of test tube. A violet ring indicates the presence of carbohydrates.

b) Benedict's Test: Filtrates were treated with Benedict's reagent and heated gently. Orange red precipitate indicates the presence of reducing sugars.

3. Detection of saponins

Foam Test: 0.5 gm of extract was shaken with 2 ml of water. If foam produced persists for ten minutes it indicates the presence of saponins.

4. Detection of phenols Ferric Chloride Test:

Extracts were treated with 3-4 drops of ferric chloride solution. Formation of bluish black color indicates the presence of phenols.

5. Detection of tannins Gelatin Test:

The extract is dissolved in 5 ml of distilled water and 2 ml of 1% solution of Gelatin containing 10% NaCl is added to it. White precipitate indicates the presence of phenolic compounds.

6. Detection of Flavonoids

a) Alkaline Reagent Test: Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow color, which becomes colorless on addition of dilute acid, indicates the presence of flavonoids.

b) Lead acetate Test: Extracts were treated with few drops of lead acetate solution. Formation of yellow color precipitate indicates the presence of flavonoids.

7. Detection of diterpenes Copper Acetate Test:

Extracts were dissolved in water and treated with 3-4 drops of copper acetate solution. Formation of emerald green color indicates the presence of diterpenes.

8. Test for Quinones:

Extract was treated with sodium hydroxide blue or red precipitate indicates the presence of Quinones.

9. Gum and Mucilage:

To 1ml of extract add 2.5ml of absolute alcohol and stirring constantly. Then the precipitate was dried in air and examine for its swelling properties. Swelling was observed that will indicate presence of gum and mucilage.

The Preliminary phytochemical studies of aqueous extract of ***MASHABALADI KWATHA CHURNA*** were done using standard procedures. The results were presented in tables. The present study reveals that the bioactive compounds were present in all the extracts of ***MASHABALADI KWATHA CHURNA*.**

S.No.	Phytochemicals	Test Name	H2O Extract
1	Alkaloids	Mayer's Test Dragendroff's Test Wagner Test	-ve +ve -ve
2	Carbohydrates	Molisch's Test Benedict Test	-ve +ve
3	Saponin	Foam Test	+ve
4	Phenols	Ferric Chloride Test	+ve

5	Tannins	Gelatin Test	+ve
6	Flavonoids	Alkaline Reagent Test Lead acetate	-ve +ve
7	Diterpenes	Copper Acetate Test	+ve
8	Quinones	Test for Quinones	-ve
9	Gum & Mucilage	Test for Gum & Mucilage	+ve

DISCUSSION

Mashabaladi Kwatha is a multi-herb decoction which contains seven important herbs in equal quantity and two were added as Prakshep dravya. Organoleptical, Physio-chemical properties, Identification test and probable mode of action of Kwatha were evaluated as a primitive step to analyze the Mashabaladi Kwatha.Owing to the medicinal properties attributed to a herbal drug, it is necessary to maintain its quality and purity for its proper use. In the recent past, it has become possible to suggest a practicable quality assurance profile for a herbal drug or its bioactive constituents, given the advent of new analytical tools and sophisticated instrumental technology. The crude drugs are subjected to a suitable method of extraction and purification for the isolation of phytopharmaceuticals. Extractive values also help in estimation of specific constituents soluble in particular solvents. Microscopic evaluation helps in proper identification of source materials. Macroscopic characters, ash values and extractive values serve as diagnostic parameters and help in evaluation of purity of drugs.[9]

The observed values of the physio chemical properties Loss on drying (4.087%),Total ash value (5.192%),Acid insoluble ash (0.828%) Water soluble ash(1.44%), Water soluble extraction(5.576%) Alcohol soluble extraction(0.19%).

In mashabaladi kwatha churna the phytochemicals properties like Alkaloids, Carbohydrates, Phenols, Tannins, Diterpines ,Gums and mucilage were present and absence of Quinon and Flavinoidses.

CONCLUSION

The ancient science of Ayurveda is a heritage of Indian culture and boon to the world. The fundamental concepts of Ayurveda are very complicated and complete understanding of this science is rather difficult. Thus, extensive research work is necessary to establish its strong scientific footing along with understanding its basic concepts. A systematic study of a crude drug is essential in the present era for quality-control and analysis of phytopharmaceuticals derived from them[10.] From this study, we have been able to gather important information regarding mashabaladi kwatha churna which has ascertained its purity as a drug, and simultaneously establishes its basic chemical profile. In present study, various standardized parameters such as phytochemical and probable mode of action of Mashabaldi Kwatha churna were carried out, which could be helpful in standardization of Kwatha churna and provide useful information and authentication of the drugs. The phytochemical investigation can further be isolated and undergo further pharmacological evaluation of the active principles present in the churna.

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