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PHYTOCHEMICAL ANALYSIS OF PALASATWAGADI KASHAYA CHURNA

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ABSTRACT

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. *Anna'* (Food) is considered as *'Prana*' (The Vital Life Force) in Ayurveda. A good and healthy appetite is an important factor which affects our nutrition, immunity & overall health. Palasatwagadi churna is a combination of three drugs in equal proportion ie, *Palasa twak, Punarnava, Shunti* having the properties of *vatakapha shamaka, shoola hara, shothahara, stambahara*. 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: *Palasatwagadi churna, Palasa twak, Punarnava, Shunti*.

INTRODUCTION

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.

Palasatwagadi Kashaya churna is a classical Ayurvedic medicinal preparation, which is mentioned in *Sahasrayoga*.[1] it is *vatakapha shamaka, shoola hara, shothahara, stambahara*. Even though many modern research works are available in respect to its individual ingredients, but a comprehensive profile in respect to the crude drug is lacking. *Palasatwagadi Kashaya churna* was subjected to pharmaceutical evaluation (evaluation of different physicochemical and phytochemical parameters) in order to prepare a profile of the formulation.

Physicochemical analysis and phytochemical screening of medicinal plants is highly essential to discover and develop genuine therapeutic effects with improved efficacy. Both the study plays a major role in standardization and identification of all the drugs. In this era of commercialization mostly each and every thing is being adulterated. So, we cannot expect that the raw materials which are used in the formulation are not adulterated[2] Authentication and standardization are pre requisite steps, especially for herbal drugs and their formulations in traditional systems of medicine.[3]

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 *Palashatwagadi Kashaya churna*.

AIMS AND OBJECTIVES

To study about Physico and Phytochemical analysis of *Palasatwagadi Kashaya 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.

	Botanical Name	Family	Part used
Palasa	Butea monosperma	Pappilonaceae	Bark
punarnava	Boerhaavia diffusa	Nyctaginaceae	Root
shunthi	Zingeber officinale	Zingiberaceae	Rhizome

PHYSICOCHEMICAL ANALYSIS OF *PALASATWAKADI KASHAYA CHURNA*

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

1. Loss on Drying

An accurately weighed 1g of *PALASATWAKADI KASHAYA CHURNA* formulation was taken in a tarred glass bottle. The crude drug was heated at 105°C 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 *PALASATWAKADI KASHAYA CHURNA* formulation was added in crucible at a temperature 600°C 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 450^0 C 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 *PALASATWAKADI KASHAYA 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 100^o C 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 *PALASATWAKADI KASHAYA 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 100°C and weighted. The percentage of alcohol soluble extractive was calculated with reference to air dried drug.

The observed values of physic- chemical properties are given below:

S.No	Parameters	Percentage
1	Loss on drying	9.720%
2	Total ash value	10.98%
3	Acid insoluble ash	2.427%
4	Water soluble ash	2.42%
5	Water soluble extraction	8.436%
6	Alcohol soluble extraction	3.05%

PRELIMINARY PHYTOCHEMICAL SCREENING OF *PALASATWAKADI KASHAYA CHURNA*

The preliminary phytochemical screening test was carried out for each extracts of PALASATWAKADI KASHAYA 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 a 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.

8. Test for Quinones
Formation of emerald green color indicates the presence of diterpenes.

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 PALASATWAKADI KASHAYA 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 PALASATWAKADI KASHAYA CHURNA.

S.no	Phytochemicals	Test name	H_2O Extracts
1	Alkaloids	Mayer's Test Dragendroff's Test Wagner Test	+ve +ve -ve
2	Carbohydrates	Molisch's Test Benidict 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

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.[4]

The observed values of the physio chemical properties Loss on drying (9.720%), Total ash value(10.98%),Acid insoluble ash(2.427%) Water soluble ash(2.42%), Water soluble extraction(8.436%) Alcohol soluble extraction(3.05%).

In Palasatwagadi churna the phytochemicals properties like Alkaloids, Carbohydrates, Phenols, Tannins, Flavinoids, Diterpines were present and absence of Saponin, Quinones, Gums and mucilage.

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[5] From this study, we have been able to gather important information regarding Palasatwagadi churna which has ascertained its purity as a drug, and simultaneously establishes its basic chemical profile. The authors hope that the information provided by this present study can be useful for further studies on Palasatwagadi churna.

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