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PHYSICOCHEMICAL & PHYTOCHEMICAL ANALYSIS OF VISHWADI GUGGULU.

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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 imbalanceby creating a healthy life style.

Vishwadi guggulu is a classical Ayurvedic medicinal preparation, which is mentioned in *Bharatha bhaishajya rathnakara*.[1] 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. *Vishwadi guggulu* was subjected to pharmaceutical evaluation (evaluationof 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 physicochemical & phytochemical analysis of the plant materials which are used in the preparation of *Vishwadi guggulu*

AIMS AND OBJECTIVES

To study about Physico and Phytochemical analysis of *Vishwadi guggulu.*

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.

PHYSICOCHEMICAL ANALYSIS OF VISHWADI GUGGULU

The preliminary physicochemical screening test was carried out for *VISHWADI GUGGULU* as per the standard procedures mentioned hereunder.

STUDY OF INGREDIENTS OF INDIGENOUS DRUG:

DRUGS	**BOTANICAL NAME**
SHUNTI	Zingiber officinale
PIPPALI	Piper longum
PIPPALI MULA	Piper longum
VIDANGA	Embelia ribes
DEVADARU	Cedrus deodara
SAINDHAVA	Sodium chloride
RASNA	Pluchea lanceolata
VAHNI CHEETA	Plumbago zeylanica
AJVAIN	Trachyspermum ammi
MARICHA	Piper nigrum
SHUDHA GUGGULU	Commiphora mukul

1. Loss on Drying:

An accurately weighed 1g of ***VISHWADI GUGGULU*** formulation was taken in a tarred glass bottle. The crude drug was heated at 105^0C 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 ***VISHWADI GUGGULU*** formulation was added in crucible at a temperature 600^0C in a muffle furnace till carbon free ash was obtained. It was calculated withreference 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 filteredusing 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 acidinsoluble 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 450^0C 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 ***VISHWADI GUGGULU*** 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 100^0C and weighted. The percentage of water soluble extractive was calculatedwith reference to the air dried drugs.

6. Determination of alcohol soluble extractive:

1 gm of air dried drug coarsely powdered ***VISHWADI GUGGULU*** 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 100^0C and weighted. The percentage of alcohol soluble extractive was calculated with reference to air dried drug.

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

S.No	Parameters	Percentage
1	Loss on drying	8.3991%
2	Total ash value	14.3257%
3	Acid insoluble ash	0.9297%
4	Water soluble ash	10.6078%
5	Water soluble extraction	19.752%
6	Alcohol soluble extraction	5.9176%

Certified that the above stated are the physicochemical properties of the given sample.

PRELIMINARY PHYTOCHEMICAL SCREENING OF *VISHWADI GUGGULU*

The preliminary phytochemical screening test was carried out for each extracts of ***VISHWADI GUGGULU*** 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 (PotassiumBismuth Iodide). Formation of a red precipitate indicates the presence of alkaloids.

c) **Wagner's Test**: Filtrates were treated with Wagner's reagent (Iodine in PotassiumIodide). 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 usedto 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. Orangered 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 tenminutes 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 ***VISHWADI GUGGULU*** 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 ***VISHWADI GUGGULU.***

S.No.	Phytochemicals	Test Name	H_2O 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

+ve/-ve present or absent if component tested

Certified that the above stated are the phytochemical properties for the given sample.

DISCUSSION:

The observed values of the physio chemical properties Loss on drying (8.3991%), Total ash value(14.3257%),Acid insoluble ash(0.9297%) Water soluble ash(10.6078%), Water soluble extraction(19.752%) Alcohol soluble extraction(5.9176%).

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

CONCLUSION:

A systematic study of a crude drug is essential in the present era for quality-control and analysis of phytopharmaceuticals derived from them[4] From this study, we have been able to gather important information regarding Vishwadi guggulu 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 Vishwadi guggulu.

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