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PROXIMATE ANALYSIS OF *Caesalpinia decapetala* LEAVES

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ABSTRACT

Phytochemically, several classes of compounds were isolated from plant *Caesalpinia decapetala*, mainly fats and waxes (lipids), phenols, alkaloids, resins, N-Oxides, flavonoids, diterpenes, steroids and the combinations. From a pharmacological point of view, these species have antiulcer, anticancer, antidiabetic, anti-inflammatory, antimicrobial, and anti-rheumatic activities among others. Due to the diversity of chemical constituents and medicinal importance described in the literatures, this work was performed for phytochemical and pharmacological characteristics of *Caesalpinia decapetala*. The plant leaves shows presence of 1.91% foreign organic matter, 20.54 % water extractable matter 18.30 % ethanol extractable matter, 17.75% total ash, 9.75% acid insoluble ash, 7.5% water soluble ash and 19.236% loss on drying.

Keywords: Proximate Analysis, *Caesalpinia decapetala*, Ash content.

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INTRODUCTION

Plant material (crude drugs) is usually kept in quarantine store for a long time. Original pharmacological properties of plants should not get changed during Storage. It was done by maintaining proper verification suitable temperature light condition and humidity controls Crude drugs should not be analyzed directly because there may be changes in original characteristics. To avoid this following test were done for crude drugs as per the USP and Indian Herbal pharmacopeia (IHP). T he tests are foreign organic matter, Ethanol soluble extractive Water soluble extractives, and Total ash contents Acid insoluble moisture content. Herbal plant-derived therapeutic natural products have served as the main source of drugs throughout human civilization. Medicinal substances from plants have been one of the richest sources of organic compounds, contributing significantly to the supply of new chemical entities that have been applied in medicines, cosmetics, foods, and agrochemicals.

Caesalpinia decapetala family Fabaceae is an important medicinal plant for its traditional uses against different types of diseases. It is widely distributed in the tropical and subtropical regions of Asia. The plant shows array of phytochemical includes shikimic acid derivative, amino acid derivatives, tannins, glycosides, flavonoids, alkaloids, isoprenoids coumarins, and triterpenoids. It is high lightened that wood and leaves of the plant possesses antioxidant, anti-inflammatory, analgesic, antibacterial, antitumor, antidiabetic, antifungal, antipyretic, antimicrobial, antiviral, trachoma and anti-diarrheal properties. Therefore, the present investigation was performed.

MATERIALS AND METHODS

SAMPLING

Plant material of *Caesalpinia decapetala* were collected from different places of Junnar Taluka plant material are washed with water so that it is tree from dust and soil particles it is dried by spreading over filter paper. 500 gm. of dried plant material is kept over white clean muslin cloth in the form and thin layer. By using magnifying lens (6x) and visual inspection foreign matter can be detected.

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METHODS

A) Foreign Organic Matter

Plant Material Should is tree from moulds, insect's fungus dust and other animal contamination like animal excreta plant should not be contaminated with stone sand, soil particles and other organic plant materials exempt the plant under inspection. All above materials contribute foreign organic matter. It can be observed by macroscopic examination. All foreign organic matter were separated from the plant and weighed in a. It is calculated by following formula.

Calculations

$$\% \text{ Foreign Organic Matter} = \frac{(M_1 - M}{M_2} x\ 100$$

Where, M: Weight of empty dish in grams
M1: Weight of dish with foreign matter in grams
M2: Weight of sample (whole plant material) in grams.

Observation:-

It was observed that the percentage foreign organic matter in Caesalpinia decapetala plant material was 1.92%

B) Extractable Matter

Phytoconstituents are extracted from the plant material by using solvents. According to India Herbal Pharmacopeia ethanol and water solvents were used for extractions.

Procedure

Weigh accurately five grams of plant material in a conical flask. Add to it 100 cm^3 of distilled water and shake frequently for six hours. Then it is kept for eighteen hours by closing the mouth of conical flask to avoid loss of solvent by into vitalization. The content is then evaporated to dryness a water bath. After evaporation, the extract along with breaker is kept

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in oven at 105^0C for drying for six hours. It is cooled in desiccator. Weight of beaker along with extract was taken Amount of extractable matter was found out by following formula

$$\% \text{ Extractable Matter} = \frac{(M_1 - M}{M_2} x\ 100$$

Where, M: Weight of empty beaker in grams.
M1: Weight of barker and residue
M2: Weight of plant material

Same procedure was repeated by using ethanol solvent instead of water solvent.

Observations

It was observed that parentage water and ethanol extractable matter were 20.54 % and 18.30% respectively.

C) Ash Content

Ignition of plant material completely from following three types of ash

Total ash

Acid – insoluble ash and

Water – soluble ash

1) Total Ash

Total amount of material remained after ignition of plant gives total ash. It includes both physiological ash (derived from plant tissue itself) and non-physiological ash. It is residue of extraneous matter e.g. sand and soil adhering to the plant surface.

Procedure

Take accurately 2 gm of plant material in a per weighed silica dish. It is ignited for one hour by using blue flame of Bunsen burner. Further ignition is completed by keeping it in muffle

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furnace at $550^0C + 20^0C$ grey color ash is formed. It is kept in desiccator for cooling. Then Weight of ash and silica dish was taken. Ignition, cooling and weighing is repeated until difference in weights was less than 1mg calculation two successive.

It is done by the same above formula.

Observations

It was observed that the percentage total ash content of cisalpine decapetala leaves powder was 17.75%

2) Acid Insoluble Ash

It is residue obtained after boiling the total ash with dilute hydrochloride acid and igniting the remaining insoluble matter. This measures the amount of silica present as sand and siliceous earth. Acid Insoluble Ash was obtained by following method.

Chemicals

Dilute HCl $5NH_3$ and $AgN0_3$ solution.

Apparatus

Silica dish, desiccators, air oven, muffle furnace.

Procedure

Weigh accurately 2 gm dried leaves powder of plant material in silica dish. It was ignited for one hour by Business burner. For complete ignition it was kept in muffle furnace at $550^0C+ 20^0C$ till grey color of ash was obtained. The ash was moistened with concentrated HCl and evaporated to dryness. It was kept in an electric air oven at 135^0 C + 2^0C for 3 hrs. After cooling 25cc dilute HCl was added and heated on a water bath for 10, minutes. It was then allowed to cool and filtered through what man filter paper No.41.The residue was washed with hot water till washings were free from chloride. It was tested with $AgNO_3$ solution. The filter paper and the residue were put in a dish and ignited in a muffle furnace at $550^0C + 20^0C$

for one hour. The process of heating cooling and weighing was repeated till difference in two successes weights was less than 1 mg

Calculation

Acid Insoluble ash was calculated by same above formula.

Observation

Acid insolate ash content of plant material was 9.75% to be

3) Water Soluble Ash

Water soluble ash was found out by following method

Chemical: Distilled water

Apparatus: Silica dish desiccator air oven muffle furnace.

Procedure

25 cm^3 of distilled water was added in silica dish containing total ash and boiled for ten minutes. It is filtered through ash less filter paper. The residue was washed with hot water and ignited at 450^0C by keeping in muffle furnace for fifteen minutes. The weight of total ash and the water – soluble ash was calculated.

Observation

Water soluble ash content of plant material was found to be 7.5%

D) Loss on Drying

The percentage of loss on drying was obtained by following method

Apparatus

ASTM sieve (18/BS sieve), wide mouth stoppered bottle, air oven, desiccator.

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Procedure

Weigh 5gm of plant powder material in stoppered bottle. The bottle along with sample was ignited in electric oven at 100^0C + 2^0C for 2 hrs. The bottle was then cooled in desiccator and weighed. The process of heating, cooling and weighing was repeated till difference in two successive weights is less than 1mg

Observation

Loss on drying of the plant material was found to be 19.236%

CONCLUSIONS

The results for the proximate analysis of *Caesalpinia decapetala* leaves powder were practically found to be 1.91% foreign organic matter, 20.54 % water extractable matter, 18.30 % ethanol extractable matter, 17.75% total ash, 9.75% acid insoluble ash, 7.5% water soluble ash and 19.236% loss on drying respectively.

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