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EVALUATION OF PHYSICOCHEMICAL PARAMETERS OF *MORINGA OLEIFERA* LEAVES**S. GOSWAMI AND R.SINGHAI**

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Received : 13.8.15; Accepted : 15.10.15**ABSTRACT**

The present study was carried out physicochemical details about *Moringa oleifera*. The plant has been used as a medicine in ancient. The leaves, roots, bark and fruit all possess medicinal property. It is traditionally used to treat diabetic, inflammatory, fever, lowers cholesterol and given to lactating women. The present investigation reveals standardization which includes extractive value (alcohol soluble extractive, water soluble extractive, ether soluble extractive) and moisture content. The generated information of the present study will provide data which are helpful in the correct identification and authentication of this medicinal plant.

Figure : 00

References : 14

Table : 01

 KEY WORDS : Diabetic, Inflammatory, Medicinal plant, *Moringa oleifera*, Physicochemical.

Introduction

Medicinal plants are of great importance to the health of individuals and communities. The plant is a biosynthetic laboratory, not only for chemical compounds, but also a multitude of compounds like glycosides, alkaloids etc. These exert physiological and therapeutic effects. Medicinal plants find great application in pharmaceutical, cosmetic, agricultural and food industry. Use of medicinal plants for curing disease has been documented in all civilizations. Value of these plants lies in some chemical substances that produce a definite physiological action on the human body. The World health organization (WHO) estimates that 4 billion people (80%) of the world's population presently use herbal medicine for one form of primary health care or another.

They show minimum or no side effects and are considered to be safe. Medicinal herb is considered to be a chemical factory as it contains a multitude of chemical compounds like alkaloids, glycosides, saponins, resins, oleoresins, sesquiterpene, locations and oils. Generally herbal formulations involve the use of fresh or dried plant parts. Correct knowledge of such crude drugs is very important aspect in preparation, safety and efficacy of the herbal product and the reliable tool

for this knowledge is given in Pharmacognosy. It gives complete information of the crude drug.

In Sanskrit the common name of *Moringa oleifera* is shobhanjana, in Hindi it is commonly known as suhujna or sainjna and in English it is known as moringa, drumstick tree, ben oil tree or benzoil tree and horseradish tree. *Moringa oleifera* Lam (syn. *Moringa pterygosperma*), the most widely cultivated species of a monogeneric family Moringaceae. *Moringa oleifera* is one of the 14 species of family Moringaceae, native to India, Africa, Arabia, Southeast Asia, South America, the Pacific and Caribbean Islands.

The purpose of standardized extraction procedures for crude drugs (medicinal plant parts) is to attain the therapeutically desired portions and to eliminate unwanted material by treatment with a selective solvent. The extract thus obtained, after standardization, may be used as a medicinal agent as such in the form of tinctures or fluid extracts or further processed to be incorporated in any dosage form such as tablets and capsules.

Materials and Methods**Collection of Plants**

The leaf of plant *Moringa oleifera* was

collected from local area of Sagar (M.P.) in the month of June, 2012. The plant specimen was confirmed and given herbarium number Bot/Her/1013 by Dr. Pradeep Tiwari, Department of Botany, H.S. Gour University, Sagar (M.P.).

Extraction of plant material

Dried powdered leaf of plant *Moringa oleifera* has been successively extracted with petroleum ether, chloroform, ethyl acetate and hydroalcoholic (Ethanol 70%) using soxhlet's apparatus for 48 hrs, filtered and dried using vacuum evaporator at 40°C¹⁴.

Evaluation of crude drugs

Ash values

The total ash, acid insoluble ash and water-soluble ash values were determined from air-dried samples.

Procedure

Total ash value

- i) About 2g of powdered drug was weighed accurately into a tarred silica crucible.
- ii) Incinerated at 450°C.
- iii) The crucible was cooled and weighed.
- iv) Percentage of total ash was calculated with reference to air-dried substance.

Acid insoluble ash

- i) Ash obtained from the total ash was boiled with 25ml of dil HCl for a few minutes.
- ii) Filtered through an ashless filter paper.
- iii) The filter paper was transferred into a tarred silica crucible.
- iv) The insoluble matter thus obtained was washed with hot water and ignited .
- v) The crucible was cooled and weighed.
- vi) Percentage of acid insoluble ash was calculated with reference to air-dried substance.

Water soluble ash

- i) Ash obtained from the total ash was boiled with 25 ml of distilled water for five minutes.
- ii) And filtered through an ashless filter paper.
- iii) The filter paper was transferred into a tarred silica crucible.
- iv) Incinerated at 450°C.
- v) The crucible was cooled and weighed.
- vi) The difference in weight was the water

soluble ash and the, percentage of water-soluble ash was then calculated.

Determination of total ash value formula:

Total ash value of the sample %

X= weight of empty dish

Y= weight of the drug taken

Z= weight of the dish + ash (after complete incineration) [19].

Determination of extractive values

Extracting values are useful for determining of crude drugs & it gives an idea about the nature of the chemical constituents present.

Determination of alcohol soluble extractive value

- i) About 5g of air dried coarse powdered drug was weighed
- ii) And macerated with 100ml of 90% alcohol in a closed flask for 24 hours, shaking frequently during the first 6 hrs & these were allowed standing for 18 hrs.
- iii) Thereafter it was filtered rapidly taking precautions against loss of the solvent.
- iv) 25 ml of the filtrate was evaporated to dryness in a tarred flat bottomed shallow dish, dried at 105°C & weighed.
- v) The percentage of the alcohol soluble extractive value was calculated with reference to the air-dried drug.

Determination of water soluble extractive value

- i) About 5gm of air-dried powdered drug was taken & macerated with 100 ml of distilled water in a closed flask for 24 hrs shaking frequently during the first 6 hrs.
- ii) And then allowed to stand for 18 hrs.
- iii) Thereafter, it was filtered rapidly taking precautions against loss of the solvent.
- iv) 25 ml of the filtrate was evaporated to dryness in a tarred flat bottomed shallow dish, dried at 105 & weighed.
- v) The percentage of the water soluble extractive value was calculated with reference to the air-dried drug.

Determination of Ether Soluble Extractive :

- i) 5g of the accurately weighed leaf powder was extracted with solvent ether or petroleum ether, (40-60°C) in a soxhlet

TABLE- 1: Estimation of physicochemical parameter of *Moringa oleifera***Determination of ash value****Different Ash value of plant material**

S.No.	Total ash (% w/w)	Acid Insoluble Ash (% w/w)	Water soluble Ash (% w/w)
1	4.37%	2.6%	1.4%

Determination of extractive value**Different Extractive of plant material**

S.No.	Alcohol soluble extractive value (% w/w)	Water soluble extractive value (% w/w)	Ether soluble extractive value (% w/w)
1	13.20%	08.63%	03.48%

Moisture content estimation**Moisture content of plant material**

S. No.	Results
1.	2.87%

- extractor for 6 hours.
- ii) The extract was filtered quantitatively into a tarred evaporating dish and the solvent was evaporated on a water bath.
 - iii) The residue was dried at 105[±]°C to a constant weight.
 - iv) The percentage of ether soluble extractive value was calculated.

Determination of Moisture Content (loss on drying) :

- i) About 10 g of leaf (without preliminary drying and cut in parts of about 3 mm in thickness), after accurately weighing (weight to within 0.01g) was placed in a tarred evaporation dish.
- ii) It was then dried at 105[±]°C for 5 hours and weighed (drying was continued and the leaf was weighed at 1 hour interval).

- iii) Constant weight was reached .

Result and Discussion

The result of Physicochemical parameters of leaves of *Moringaoleiferais* are given in Table 1. The result indicates the improper handling of drug and the adultrants present in it. Moisture content of the drug could be at minimum level to avoid microbial growth during storage. Ash values are used to determine quality and purity of drug. Presence of earthy material like silicates are indicated in acid insoluble ash and inorganic elements are indicated in water soluble ash. Extractive values determined are useful for the determination of adulterated drug. Physicochemical parameters can serve as a valuable source of information related to the quality of the plant material for future application or study. The Physicochemical examination of the plant is done to study adultration and improper handling of the plant material.

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