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A PHYSICOCHEMICAL ANALYSIS OF *CHANDRASHOOR* (*LEPIDIUM SATIVUM* LINN.) SEEDS

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ABSTRACT

Standardization of herbal drug is essential in order to assess quality of drug for therapeutic value, also confirms drugs identity and purity. Under the heading of standardization the various parameters are applied i.e. pharmacognostic study, physicochemical study, preliminary phytochemical screening, chromatographic study. *Chandrashoor* (*Lepidium Sativum* Linn.) is a herbal drug of family *Cruciferae*. The herb is commonly known as garden cress. Their seeds have a wealth of protein, fibers, omega-3 acid, iron and other vital nutrients. It is used in many medical conditions like diarrhoea, hiccup, skin diseases etc. and also as food supplement. The objective of the present study was to do physicochemical analysis of *Chandrashoor* (*Lepidium sativum* Linn.) seeds. The physicochemical analysis help in detecting the purity and quality of the drug. The air dried powdered plant material was subjected to analytical procedures for determination of physicochemical standardization like Total ash value, Water soluble ash, Acid insoluble ash etc.

KEYWORD: Standardization, pharmacognostic study, physicochemical study, *Lepidium sativum* Linn., *Garden cress.*

INTRODUCTION

Ayurveda is an ancient medical science whose main aim is to maintain the health of healthy person and cure diseases.[1] Dravyguna shashtra is a branch of chikitsa shastra. There is increasing awareness and general acceptability of the use of herbal drugs in today's medical practice. Increase in use of herbal product has also given rise to various forms of abuse and

adulteration of the products. Therefore the standardization of herbal drug is essential to assess the quality and purity of drug.

Standardization of herbal medicines is the process of prescribing a set of standards or inherent characteristic, constant parameters, definitive qualitative and quantitative values that carry an assurance of quality, safety, efficacy and reproducibility.[2] *Chandrashoor* (*Lepidium sativum* Linn.) consist of dried seeds of a small erect, annual herb, about 15-45 cm in height.[3] It is commonly known as garden cress. It is Cultivate throughout India.

It is one of the ingredients of *chaturbija*.[4] As it`s seeds contain chemical constituents like iron, iodine, phosphate, potash, volatile aromatic oil, protein, fibres, omega 3 acids etc. It has many medicinal uses as well as it used as a food supplement. In Ayurvedic chikitsa it used in gout, diarrhoea, hiccup, skin diseases etc.[5] It also used in special food preparations given after delivery in traditional Indian foods. Many Ayurvedic preparations are available in market like *chaturbija* churna[6], *kasturyadi gutika* etc.[7] and also used as tonic.

Taxonomical Classification: *Chandrashoor* belongs to the -

Kingdom = Plantae

Division = Angiospermae

Class = Dicotyledonae

Subclass = Polypetalae

Order = arietales

Family = Cruciferae

Genus = Lepidium

Species = L. sativum

External Morphology

1} Leaves - Entire or pinnately dissected, various lobed often with linear segments, up to 5-6 cm long.

2} Flowers - white or pale pink; pedicels are 3-5mm long.

3} Fruits - pods are obovate or broadly elliptical, roundate, emarginated slightly but thickly winged above.

4} Seeds – Small, oval-shaped, pointed and triangular at one end, smooth, about 2-3 mm long,1-1.5 mm wide; reddish brown ,a furrow present on both surfaces, a slight wing like

extension present on both the edges of seeds. When soaked in water seed coat swells and gets covered with a transparent, colourless mucilage.[8]

AIM AND OBJECTIVE

To do physicochemical analysis of *Chandrashoor* (*Lepidium sativum* Linn.) seeds.

MATERIALS AND METHODS

The market sample of *Lepidium sativum* Linn. Seeds were purchased from govt. approved herbal vendor, Nagpur, Maharashtra, India. Authentication - from govt approved institute. Then the air dried seeds were powdered by using grinder for further analysis.

Macroscopical Evaluation

The plant material of garden cress was subjected to macroscopically evaluation. The seeds of *Lepidium sativum* Linn. were observed carefully and preliminary observations were recorded.

Table 1: Macroscopic characters of *Lepidium sativum* Linn. seeds.

Sr. No	Macroscopic characters	Observation
1	External colour	Reddish brown
2	Size	2-3 mm
3	Shape	Oval
4	Surface	Smooth
5	Odour	Mucilaginous
6	Taste	Bitter

Physicochemical study[8]

The physical standards help in the assessment of crud drugs. These are rarely constant but help in the evaluation of drug. Quality of drug can be assessed with this analysis and thus biochemical variation, adulteration, substitution, effect of storage/treatment occurring in it can be tested.

a) Foreign matter

The sample shall be free from visible sign of contamination i.e. moulds, insects, stones, other animals contamination, fungus and any other noxious foreign matter. For this take a 100 gm sample and spread in a thin layer suitable tray. Then examine in day light with unaided eye.

b) Loss on Drying

It helps to determine the amount of volatile matter (i.e. water drying off from the drug) for substances appearing to contain water as the only volatile constituent.

For this 2 gm of drug was accurately weighted. Then sample was placed in Hot Air Oven at 105^0 C temperature for two hours. It was removed and placed in desiccator for cooling for half hour and weighed.

c) Total ash value

The residue remaining after incineration is the ash content of the drug, which simply represents inorganic salts, naturally occurring in drug or adhering to it or deliberately added to it, as a form of adulteration.

The total ash value was obtained by taking accurately weighed 2 gm of the dried plant material in a silica dish and was ignited with a flame of Bunsen burner for about one hour. The ignition was completed by keeping it a muffle furnace at 550^0C till grey ash formed. It was then cooled in dessicator and weighed.

d) Acid insoluble ash

Acid insoluble ash, which is apart total ash insoluble in dilute hydrochloric acid, is also recommended for certain drugs. Adhering dirt and sand may be determined by acid insoluble ash content.

To the crucible containing total ash, 25 ml of dilute hydrochloric acid (HCl) were added. The insoluble matter was on an ash less filter paper (Whatman 41) and washed with water. The filter paper and the residue were put in a dish and ignited in a muffle furnace at 550^0 C for one hour. The process of cooling in a dessicator was done and weighed repeated till the difference between two successive weights was found to be less than 1mg.

e) Water soluble ash

The ash was boil for 5 minutes with 25 ml of water; collected insoluble matter on an ash less filter paper, washed with hot water and ignite for 15 minutes at a temperature not exceeding 450^0C. The weight of the insoluble matter was subtracted from the weight of the ash. The difference in weight represents the water soluble ash. The percentage of water soluble ash was calculated.

f) Determination of pH

The pH value of an aqueous solution is defined as the common logarithm of the hydrogen ion concentration expressed in grams. The pH value conventionally represents the acidity or alkalinity of an aqueous solution.

About 1.25 grams of sample was weighed and transferred to a clean conical flask. 25 ml of distilled water was added to it and shaken continuously with the help of clean and dry glass rod for 45 minutes. It was then filtered with the help of filter paper so as to remove the insoluble portion. The pH value was found out from pH meter by calibrating it previously with standard buffer solution of pH 4 and. The7.5 pH electrode was dipped in the above standard solution and reading was noted.

RESULTS AND DISCUSSION

Chandrasoor (*Lepidium sativum* Linn.) is a small erect, annual herb. A Seeds of this plant have great medicinal as well as nutritional value and is used as content in many formulations in Ayurveda.

The physicochemical analyses are helpful for the detecting purity and quality of drug. It is a physicochemical analysis of market sample of Chandrasoor seeds are as follows –

Table 2: Physicochemical analysis of market sample of Chandrasoor seeds.

Sr. No	Parameters	Results
a.	Foreign matter	1.1%
b.	Loss on drying	5%
c.	Total ash value	6.5%
d.	Acid insoluble ash	0.6%
e.	Water soluble ash	0.82%
f.	pH value	6.2

CONCLUSION

The observation obtained from this study are within the range of API standard values. i.e. the market sample taken for this study is pure and having a good quality.

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