International Journal of Phytopharmacology
Research Article
www.onlineijp.com
e- ISSN 0975 – 9328
Print ISSN 2229 – 7472

# EVALUATION OF CYCAS LEAVES FOR PHYSICOCHEMICAL AND PHYTOCHEMICAL STANDARDIZATION

**Anubhav Gupta*, Manisha Tandon, Pratyush Jain, O.P. Agrawal**

RKDF College of Pharmacy, Bhopal, Madhya Pradesh, India.

**ABSTRACT**

There is no continuation of life without plants. Plants are the essential foundation of medicine. Some important drugs that are still in use today are derived from traditional medicinal herbs. They have particular chemical properties by the desirable quality of which they can be used as conventional drugs. Thus the present work was designed to evaluate Cycas leaves for the assessment of phytochemical and physicochemical parameters. These findings will report the efficiency of current plant species in terms of purity and quality.

**Key words**: Phytochemical, Physicochemical, Plant Powder.

Corresponding Author: **Anubhav Gupta** Email:

## INTRODUCTION

Herbal medicine has its origins in ancient cultures. It involves the medicinal use of plants to treat disease and enhance general health and wellbeing. Herbal medicine, also known as herbalism or botanical medicine, is a medical system based on the use of plants or plant extracts that may be eaten or applied to the skin. Since ancient times, herbal medicine has been used by many different cultures throughout the world for many treatments like malaria, warts, bowel disorders, heart conditions and chronic pain, come from pharmacists and doctors learning about folk knowledge. Some people have traditional knowledge of cures foisted on them and reluctantly accept that their role in the community as a healer. Herbs are used around the world to treat conditions and diseases, and many studies prove their efficacy. One of the greatest benefit associated with herbal medicine is the non existence of side effects. Also, they tend to offer long lasting benefits in terms of overall wellness (Ibrahim Jemilat A, *et al*. 2012). There are a few risks associated with herbal medicine as well. In addition, a growing body of scientific research shows that herbal medicines can be highly effective for certain diseases and conditions. Moreover, as research in this area increases, the optimum doses for herbal medicines are known to ever greater accuracy. One of the most important advantages of these supplements is that they come of various natural sources. As these supplements come from various foods, the body has a better chance of balancing them out in the system. The body in turn absorbs all the essential nutrients and has no side effects like the chemical medicines. Every artificial element or supplement found in the regular chemicals do not make the body better and very often make the body go through a lot more pain that it already has. People are often worried about the side effects most medications have and have in turn done a lot of research before swallowing anything. Most medications come in all kinds of colors which can be harmful to the body (Kaneria Mital and Chanda Sumitra. 2016). The present work was designed to evaluate various medicinal plants of Cycadaceae family for the assessment of phytochemical and physicochemical parameters. These findings will report the efficiency of each plant species in terms of purity and quality.

Access this article online

Home Page: http://onlineijp.com/

Quick Response code

**Received:**25.06.2023 **Revised**:12.07.2023 **Accepted**:05.08.2023

### Experimental work

### Collection and Preparation of plant material

The plant leaves of *Cycas circinalis* were collected from available graphical sources. The plant drugs were identified, collected and stored for further use. The collected *Cycus Circinalis* plants were washed with tap water. The plant leaves were crushed into small pieces and air-dried thoroughly under shade (at room temperature) for 1 month to avoid direct loss of phytoconstituents from sunlight. The shade dried materials were powdered using the pulverizer and sieved up to 80 meshes. It was then homogenized to fine powder and stored in air-tight container for furthers analysis.

**Preparation of plant extracts for phytochemical screening**

The plant leaves powder of the *Cycus Circinalis* was extracted with ethyl acetate, methanol and water using as solvent respectively. A total of 50gm of individual plant powder of the *Cycus Circinalis* was taken and mixed with 250 ml distilled water (1:5) in a round bottom flask and gentle refluxed for 1½ hour separately. The residue was removed by filtration through Whatmann No. 1 filter paper and the aqueous extract was concentrated used on a Rotary evaporator to get solid yield extract.

**Preliminary phytochemical screening**

The preliminary phytochemical screening of the ethyl acetate, methanol and water extracts of plant powder of *Cycus Circinalis* were carried out using standard laboratory procedures to detect the presence of different secondary metabolites (Karthika C and Manivannan S. 2018, Mujeeb M, *et al*. 2010).

**Determination of Physicochemical Parameters**

Various physicochemical parameters were assessed on the basis of standard procedures (Chanda S, *et al*. 2010, Nawagish M, *et al*. 2007, Dave R, *et al*. 2010, Kasturi OR, Ramesh B. 2018) as given below

**Determination of total ash**

Two grams of the whole plant powder of the *Cycus Circinalis*, was placed in a previously ignited (350°C for 1 hour) and tarred crucible accurately weighed. Dried material was spread in an even layer in the crucible and the material ignited by gradually increasing the heat to 550°C for 5 hours in a muffle furnace until it is white, indicating the absence of carbon. Cooled in a desiccator and weighed. Total ash content was calculated in mg per g of air-dried material.

**Determination of acid-insoluble ash**

Twenty- five (25) ml of hydrochloric acid (~70g/l) TS was added to the crucible containing the total ash, covered with a watch-glass and boiled gently for 5 minutes. The watch-glass was rinsed with 5 ml of hot water and this liquid added to the crucible. The insoluble matter was collected on an ash less filter-paper (Whatmann 41) and washed with hot water until the filtrate was neutral. The filter-paper containing the insoluble matter was transferred to the original crucible, ignited by gradually increasing the heat to 550°C for 3 hours in a muffle furnace to constant weight. Allowed the residue to cool in a suitable desiccator for 30 minutes, and then weighed without delay. Acid-insoluble ash content was calculated as mg per g of air dried material.

**Determination of water-soluble ash**

Twenty- five (25) ml of water was added to the crucible containing the total ash, covered with a watch glass and boiled gently for 5 minutes. Insoluble matter was collected on an ash less filter-paper. Washed with hot water and ignited in a crucible for 15 minutes at a temperature not exceeding 450°C in a muffle furnace. Allowed the residue to cool in a suitable desiccator for 30 minutes, and then weighed without delay. The weight of the residue was subtracted in mg from the weight of total ash. Water-soluble ash content was calculated as mg per g of air-dried material.

**Determination of sulfated ash**

Ignited a suitable crucible (silica) at 550°C to 650°C for 30 minutes, cooled the crucible in a desiccator (silica gel) and weighed it accurately. One gram of the plant powder of the *Cycus Circinalis*, was placed in a previously ignited crucible, ignited gently at first, until the substance was thoroughly white. Cooled the sample and weighed accurately. This was repeated until the sample reaches a constant weight and calculated the percentage of residue (Chanda S et al., 2010).

**Results and Discussion**

**Physicochemical Investigations**

Physicochemical parameters were determined as per guidelines of WHO, air dried coarse powdered sample of *Cycus Circinalis* were subjected for determination of physicochemical parameters. The Average physicochemical parameters of the *Cycus Circinalis* course powder are tabulated in table 1.

**Table 1: Physicochemical Parameters of Cycus Circinalis leaves**

| S.N. | Parameters | Values |
|---|---|---|
| 1 | Total ash value | 6.25±1.10 |
| 2 | Acid insoluble ash | 2.20±0.05 |
| 3 | Water soluble ash | 1.65±0.20 |
| 4 | Sulphated ash | 1.25±0.30 |

**Table 2: Preliminary Phytochemical screening of plant Cycus Circinalis**

| S.N. | Phytoconstituents | Ethyl acetate Extract | Methanol Extract | Water Extract |
|---|---|---|---|---|
| 1. | Alkaloids | Positive | Negative | Negative |
| 2. | Tannins | Negative | Positive | Positive |
| 3. | Flavonoids | Positive | Positive | Positive |
| 4. | Steroids | Negative | Negative | Negative |
| 5. | Phenolic Compounds | Negative | Negative | Positive |
| 6. | Coumarins | Negative | Negative | Negative |
| 7. | Proteins | Negative | Positive | Negative |
| 8. | Quinones | Negative | Negative | Negative |
| 9. | Anthraquinones | Negative | Negative | Negative |
| 10. | Saponins | Positive | Positive | Negative |
| 11. | Reducing sugars | Negative | Negative | Positive |
| 12. | Fixed oils and fats | Negative | Negative | Negative |

## CONCLUSION

The plants studied here can be seen as a potential source of useful therapeutics. Further studies are going on these plant extracts in order to isolate, identify, characterize and elucidate the structure of bioactive compounds along with their pharmacological activity. In other words, the physicochemical features examined in the current study may serve as tool for identification of the plant for validation of the raw material and for standardization of its formulations at herbal industrial level in the coming days.

## REFERENCES

Chanda S, Nagani K, Parekh J. Assessment of quality of Manilkara hexandra (Roxb.) Dubard leaf (Sapotaceae): Pharmacognostical and Physicochemical profile. Pharmacognosy Journal. 2010; 2:520-24.

Dave R, Nagani K, Chanda S. Pharmacognostic studies and physicochemical properties of the Polyalthia longifolia var. pendula Leaf. Pharmacognosy Journal. 2010; 2:572-76.

Ibrahim Jemilat A, Makinde Opeoluwa and Nneka N. Ibekwe. Pharmacognostic, Physicochemical Standardization and Phytochemical Analysis of leaves of Cultivated Crotalaria lachnosema Stapf. Journal of Applied Pharmaceutical Science. 2012; 2 (9): 067-070.

Karthika C and Manivannan S. Pharmacognostic, physicochemical analysis and phytochemical screening of the leaves of W. trilobata L. International Journal of Chem Tech Research. 2018; 11 (2): 124-131.

Kasturi OR, Ramesh B. Physicochemical and Fluorescence Analysis of leaves of Alternanthera brasiliana and Alternanthera bettzickiana. International Journal of Pharmaceutical Sciences Review and Research. 2018; 51 (1): 66-71..

Mujeeb M, Siddique NA, Najmi AK, Akram M. Evaluation of antioxidant activity, quantitative estimation of phenols and flavonoids in different parts of Aegle marmelos. African Journal of Plant Science. 2010; 4 (1):1-5.

Nawagish M, Ansari SH, Ahmad A, Preliminary pharmacognostical standardization of Lawsonia inermis Linn seeds. Research Journal of Botany. 2007; 2(3): 161-164.

Rakholiya Kalpna, Kaneria Mital and Chanda Sumitra. Physicochemical and Phytochemical Analysis of Different Parts of Indian Kesar Mango. A unique variety from Saurashtra Region of Gujarat. Pharmacognosy Journal. 2016; 8(5):502-506.