



## PRELIMINARY PHYSICO-PHYTOCHEMICAL STUDY OF *CYNODON DACTYLON* LEAVES

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### ABSTRACT

*Cynodon dactylon* (L.) Pers. Family (Graminae/Poaceae) possess great medicinal importance. It is used for treatment of various diseases like diarrhea, gastroenteritis, dysentery, diabetes, hypertension, caries, wounds, pain and fever. It also possesses anti-microbial, anti-malarial, antitussive, hepatoprotective effects etc. It is very important to standardize the plant part pharmacognostically for its utilization in different formulation. The present study compacts with the pharmacognostical characterization along with preliminary phytochemical screening for understanding the active components in the plant. In preliminary phytochemical screening, presence of alkaloids, steroids, cardiac glycosides, flavonoids, triterpenoids were observed in methanol extract of the leaves.

**KEYWORDS:** *Cynodon dactylon* (L.) powder.

### 1. INTRODUCTION

India has tremendous wealth of medicinal plants and its resources which are of different kinds they grow in different climatic and ecological conditions. *Cynodon dactylon* is hardy, perennial grass, very variable, with long rapid growing, creeping runner or stolons, rooting at nodes, forming a dense tuft on the surface of the soil, runners sometimes 20m long, 2-6mm broad, flat or sometimes folded or convolute; inflorescence on culms 15cm to 1m tall consisting of 2-12 spikes arranged star like at apex of stem; spikes 2.5-10cm long with

numerous spikelets, arranged in 2 rows on one side of spike; spikelets flat, 2-2.5mm long, awnless, with 1 floret; glumes unequal, the upper longer and one third to three fourth length of floret. *Cynodon dactylon* plays an important role in conservation, because it prevents soil erosion. It provides good grazing, is very useful as a lawn grass and is recommended for the protection of waterways.<sup>[1]</sup> In traditional medicine it is used for indigestion and the treatment of wounds. According to an old Venda tradition, it is used in the fermentation process to make beer sour.<sup>[2]</sup> It is used for treatment of various diseases like diarrhea, gastroenteritis, dysentery, diabetes, hypertension, caries, wounds, pain and fever. It also possesses anti-microbial, anticonvulsant, anti-inflammatory, anti-malarial, antitussive, hepatoprotective effects etc.<sup>[3-4]</sup>

## 2. MATERIAL AND METHODS

### Plant material

Fresh leaves of *Cynodon dactylon* were collected from fields of veer bahadur singh purvanchal university,jaunpur, Uttar Pradesh, India in February 2012. The leaves parts were dried under shade and powdered (40 mesh size) and stored in airtight containers. The macroscopic characters were studied as per given procedure in WHO guidelines on quality control methods for medicinal plants materials.<sup>[5]</sup> Fluorescence analysis of powdered leaves was carried out according to the method.<sup>[6-7]</sup>

### Physicochemical studies

The ash values (total ash, acid insoluble ash, water soluble ash) were determined according to the official methods of Indian Pharmacopoeia.<sup>[8]</sup> The loss of drying, foaming index, swelling index and extractive values in different solvents (Petroleum ether 60-80°C, benzene, chloroform, methanol and water) were performed according to the official methods prescribed in Indian Herbal Pharmacopoeia<sup>[9]</sup> and the WHO guidelines.<sup>[6]</sup>



a). *Cynodon dactylon*

(b). weighing balance

(c). dace cater

(d). Hot air oven

**A. determination of loss on drying**

It is used to determination of the premiacible limit of moisture in a given sample of plant material. It is necessary to prevent the (microbial growth) contamination of plant product or formulation by the attack of microbes all to prevent their determination.<sup>[10]</sup>

**Procedure**

- Take specified quantity of plant material (depend upon the capacity of plant the weighing bottle).
- Transfer the plant product in weight bottle and measure the weight. Transfer it into oven at the temperature of not more than 60°C for the removal of moisture from the sample.
- Measure the weight at every 15 min. if two reading are equal it shows the complete removal of moisture from the sample
- Than measure the weight as soon as possible and calculate the amount of moisture with respect of 00gm of air dried plant material by calculating a different between initial and final weight of the sample.

Loss on drying of *Cynodon dactylon* =

Weight of bottle = 16.49

Weight of bottle + Powder Weight (1gm) = 17.69

1<sup>st</sup> reading (15min) = 17.69

2<sup>nd</sup> reading (15min) = 17.59

3<sup>rd</sup> reading (15min) = 17.59

4<sup>th</sup> reading (15min) = 17.59

Moisture Content = 17.69 - 17.59

= 0.1gm

So, 2gm power contain Moisture = 0.1gm

Then, 1 gm power contain Moisture = 0.1gm ÷ 2

= 0.05gm × 100gm

= 5%

**% Moisture = 5%**

**B. Determination of swelling index**

- Take 1g of air dried plant material, transfer it into 25ml of Stoppard measuring cylinder and measure the length of plant material (having 16mm internal diameter and 125mm of total length and each division is equivalent to 0.2ml).
- Then water is added up 25ml and shake it at every 10min for next 1hr then allow standing for next 3hr.

The length of material to determine the swelling index-

Swelling index= final height- initial height

$$= 4.2-1.9 = \mathbf{2.3cm}$$

**C. determination of foaming index**

It is used to determine the amount of saponin in given plant sample by measuring the length of foam.

**Procedure**

Take specified quantity (1gm) of plant material of required (sieved no.1250) fineness Transfer it into conical flask and boil for specified time period (30min)



Finally filter and cool the mixture and transfer it into 100ml of volumetric flask and make-up the volume up to mark. Then transfer the filtrate into 10 test tubes in gradually increasing volumetric flask and diluted it up to 10ml (1-10ml in 10 test tubes).



Then stopper the test tube and shake it for 15sec. (2 shake/ sec). Then allow settling foam content for the next 15min. And measure the length of foam in each test tube.

- ❖ If length of the foam is less than 1cm in every test tube than the foaming index is considered as less than 100.
- ❖ If length of the foam is more than 1cm in every test tube than the foaming index is considered as less than 1000.
- ❖ If length of the foam is less than 1cm in every test tube (it may be 1<sup>st</sup> or 2<sup>nd</sup> of the series) in that the foaming.<sup>[11]</sup>

Index is considered intermediately dilution is prepared for determine the foaming index.

$$\text{FOAMING INDEX} = 1000/a$$

Where, a = volume of decoction in mm

|           |   |   |     |     |     |     |     |     |     |     |
|-----------|---|---|-----|-----|-----|-----|-----|-----|-----|-----|
| Test tube | 1 | 2 | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
| Water     | 9 | 8 | 7   | 6   | 5   | 4   | 3   | 2   | 1   | 0   |
| Foaming   | 0 | 0 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 |

Foaming Index =  $1000/a$

$$= 1000/0.6 = 1677.66\text{mm}$$

### 3. RESULT

The values of the physical constant like loss on drying were determined. Loss on drying, foaming index, swelling index were mentioned in table.

| S. No. | Parameter      | Result   |
|--------|----------------|----------|
| 1.     | Loss on drying | 5%       |
| 2.     | swelling Index | 2.3cm    |
| 3.     | Foming Index   | 1677.6mm |

### 4. CONCLUSION

Preliminary physico-phytochemical study of the leaves of *Cynodon dactylon* phytochemical screening will help the presence of secondary metabolites, which are responsible for the pharmacological importance of the plant.

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