
PHARMACOGNOSTIC AND PHYSICAL EVALUATION OF LEAVES OF DRACAENA REFLEXA LAM

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ABSTRACT

Introduction: *Dracaena reflexa* belongs to the Asparagaceae family. Around the world, it is a common ornamental potted plant in tropical and subtropical climes. Traditionally, *D. reflexa* was cultivated in kitchen gardens in Madagascar to treat symptoms of malaria, diarrhea, poisoning, dysentery, and dysmenorrhea. It was also thought to be a helpful haemostatic and antipyretic. The conditions of a plant's habitat are reflected in its anatomical structure. Therefore, the purpose of the present investigation was to assess the physical parameters, morphology, and anatomy of *D. reflexa*, particularly when the plant is exposed to harsh climatic conditions.

Experiment and Method: For anatomical studies, morphological measurements were taken from the fresh plant material's leaves using a razor. The transverse section was cut to make a very thin slice of the leaves, which was then placed onto a glass slide under a microscope, onto which one drop of glycerin was added, and examined under a microscope.

Result: The moisture content (6%), ash value (7.5%), and other standardization characteristics were assessed. Crude fiber content (2.46%), extracted value (25%), and Color, taste, odor, shape, texture, sclerenchyma, fiber vascular tissue, xylem vessels (powder), collenchyma, xylem, companion cell, and sieve cell (T.S of leaf) were all proved in the morphological and anatomical examination of *Dracaena reflexa* leaves.

Conclusion: Due to their high ash content, *Dracaena reflexa* are a good source of mineral elements. Because low moisture content inhibited microbiological growth, leaves with moisture content between 5 and 15% are suitable for formulation. Most members of the Liliaceae have sclerenchyma groups encircling the leaf vascular bundle. In the transverse section of *D. reflexa* leaves, we found sclerenchyma groups on the adaxial and abaxial portions of the vascular bundles. We estimate that these results will be useful in future taxonomic and phylogenetic research on the *dracaena* species.

Keywords: *Dracaena reflexa*, Extractive value, Microscopically, Companion cell, Collenchyma.

1. INTRODUCTION

The recent success of Taxol, a plant-derived anticancer drug isolated from *Taxus brevifolia*, has inspired a renewed focus on plant-based drug discovery by industrial, academic, and governmental sectors ⁽¹⁾. Research into medicinal plants continues to offer a vast reservoir of potential therapeutic agents, including physiologically active prototypes and valuable legitimate devices ⁽²⁾. Conventional medicine is defined by the WHO as a collection of therapeutic procedures and ideologies that involve plant, animal, and mineral-based remedies, used alone or in combination to promote well-being and treat diseases ⁽³⁾. Nevertheless, validation through systematic research and a robust scientific infrastructure is essential before these remedies can be integrated into modern therapeutic frameworks or drug development pipelines ⁽⁴⁾.

Plants owe their medicinal properties primarily to secondary metabolites, or phytochemicals, such as alkaloids, tannins, flavonoids, and phenolic compounds, which exert significant physiological effects ⁽⁵⁾. Herbal medicines, whether in the form of crude extracts or synthesized analogues, are still widely used—especially in developing countries—due to their affordability, cultural acceptance, and therapeutic efficacy. According to WHO, about 80% of rural populations in Herbal medicines are used in nations with limited resources. as their primary healthcare resource ⁽⁶⁾.

Among these medicinal plants, *Dracaena* species have been assessed for numerous pharmacological actions, comprising oxidative and anti-inflammation, antibacterial, and anticancer activities. In particular, *Dracaena reflexa* has shown significant bioactive potential, backed by biological assays and phytochemical screening, while other species, including *D. cinnabari*, *D. cambodiana*, *D. cochinchinensis*, and *D. arborea*, have similarly shown therapeutic potential. There are around 50 varieties in the class of *Dracaena*. Primarily found in tropical and subtropical regions of Asia and Africa. These plants are valued not only for their aesthetic qualities but also for their medicinal and environmental advantages ⁽⁷⁾.

1. Pharmacognostic evaluation of *Dracaena* Leaves

Dr. Anupam Srivastav, a botanist of the Patanjali Herbal Department in Patanjali Research Foundation Herbarium, PRFH/18 Haridwar, Uttarakhand, verified the fresh leaves of *Dracaena reflexa* Lam. that had been taken from an Indian nursery from Roorkee

2. *Dracaena reflexa* lam. (leaves)

Synonyms

Song of India, *Cordyline reflexa*, *Draco*, *Pleomele reflexa*.

Commonly to as dragon trees, these plants belong to the genus *Dracaena* and are now extensively utilized as beautiful plants.

Dracaena reflexa Linn. Often known as Horticulture, is a species of the Asparagaceae family. There are several *Dracaena reflexa* vascular plants with various leaf varieties. Many of the most common garden plants are part of *Dracaena reflexa*. These magnificent leaves spread out and reach an approximate length and width of one foot in diameter⁽⁸⁾.

3. Botanical Classification of *Dracaena reflexa* Lam. (Leaves)

Table no. 1. The Botanical classification of *Dracaena reflexa* (Leaves)

Kingdom	Plantae
Subkingdom	Tracheobionta
Super division	Spermatophyte
Division	Magnoliophyta
Class	Liliopsida
Subclass	Monocots
Order	Asparagales
Family	Asparagaceae
Sub family	Nolinoideae
Genus	<i>Dracaena</i> .
Species	<i>D. reflexa</i>

4. Morphological Classification

Table no. 2. Macroscopic Evaluation of *Dracaena reflexa* Lam. (Leaves)

Color	Heavy green and Yellowish and Creamish
Odor	More aromatic
Taste	Slightly Peppery
Size	4 to 21 cm long, 1.4 to 4 cm wide and 4 to 5 m height.
Shape	Elongated
Cultivation Status	Decorative plant



Figure no. 1 Leaves of *Dracaena Reflexa*

METHODS & MATERIALS

Table no. 3. List of instruments

List of instruments used		
S.No.	Particulars	Company Name
1.	Autoclave	Sonar Plus, India
2.	Heating mantle	Spark, India
3.	Hot air oven	Naugra Export, India
4.	Incubator	Qwin Well, India
5.	Magnetic stirrer	Sonar, India
6.	Water bath	Naugra Export, India

Table No. 4. List of Glassware used

S.No.	Particulars
1.	Beaker (50, 100, 250, 500 ml.)
2.	Condenser
3.	Column
4.	Glass-rod
5.	Measuring cylinder (10, 50, 100, 500 ml.)
6.	Petri dish
7.	Round bottom flask
8.	Funnel
9.	Volumetric Flasks (25, 50, 100 ml.)
- All were of Borosil Co. unless & otherwise mentioned.	

5. Microscopical Assessment (Transverssection of *Dracaena reflexa* (Leaves))

So should take one leaf and steep into the alcohol. Now cut an extremely thin, almost transparent slice via a razor. One drop of glycerin is added to the slice after it has been placed on a glass slide and examined under a microscope. Spongy mesophyll, xylem, phloem, fiber, sieve cells, and companion cells⁽⁹⁾.

6. Physical parameter of powdered of Dried leaves of *Dracaena reflexa* Lam.:

Physical evaluation was used to determine the amount of moisture, ash, and crude fiber extractive value in the powdered *Dracaena reflexa* leaves.

- **Moisture Content (Lose on drying):** The weighing balance shows that the empathy crucible weighs 69.87g. A 0.50g sample of powdered herbal had been collected. Before drying, the crucible containing the sample weighed 70.37 grams for 15 minutes; place the Crucible at 100 to 105°C in a hot air oven. Next, allow the crucible to cool in Desiccators After drying, weigh the empathy crucible containing the drug sample to determine the proportion of water content (70.34g).^(10, 11).
- **Ash Value (Total ash Value):** A container that is made of silica is utilized, and it needs to be left for fifteen minutes in a muffle furnace. The crucible needs to cool in desiccators after being taken out of the muffle furnace. The empathetic quartz crucible is then weighed is 35.93gm, again weight the sample is 2gm. In a muffle furnace set on a temperature of 450 to 600 °C, to set the sample. The silica crucible will take out from the muffle oven then cool. The percentage of ash value was determined using the silica crucible's weight is 36.08gm with amount of the ash substance^(12, 13).
- **Extractive value (Petroleum ether soluble):** a conical flask was used to hold a 4 gm sample of the crude drug. Petroleum ether was added as the solvent, and the flask was agitated continuously for 6 hours before being left on one side for 18 hours. Complete period a 24-hour. Weight of the empathy china disc is 62.46 gm. The produced mixtured will strain via porous paper, and then filtrate will transport to a measuring cylinder with a capacity of 250 ml. The extract will placed in a dish and put on a water bath to cause the water for dry out; he compound is heated to 105°C inside hot air oven. the dish is lifted and allows it to cool using desiccators. After the drug sample on a 62.51gm weight of china disc had dried in water, the extractive value percentage was measured^(14, 15).
- **Extractive value (Dichloromethane soluble):** a conical flask was used to hold a 4 gm sample of the crude drug. Dichloromethane was added as the solvent, and the flask was agitated continuously for 6 hours before being left on one side for 18 hours. Complete period a 24-hour. Weight of the empathy china disc is 62.46

gm. The produced mixture will strain via porous paper, and then filtrate will transport to a measuring cylinder with a capacity of 250 ml. The extract will be placed in a dish and put on a water bath to cause the water to dry out; the compound is heated to 105°C inside a hot air oven. The dish is lifted and allowed to cool using desiccators. After the drug sample on a 62.55 gm weight of china disc had dried in water, the extractive value percentage was measured⁽¹⁶⁾.

➤ **Extractive value (Methanol soluble):** a conical flask was used to hold a 4 gm sample of the crude drug. Methanol was added as the solvent, and the flask was agitated continuously for 6 hours before being left on one side for 18 hours. Complete period a 24-hour. Weight of the empty china disc is 62.46 gm. The produced mixture will strain via porous paper, and then filtrate will transport to a measuring cylinder with a capacity of 250 ml. The extract will be placed in a dish and put on a water bath to cause the water to dry out; the compound is heated to 105°C inside a hot air oven. The dish is lifted and allowed to cool using desiccators. After the drug sample on a 62.60 gm weight of china disc had dried in water, the extractive value percentage was measured⁽¹⁷⁾.

➤ **Extractive value (Water soluble):** a conical flask was used to hold a 4 gm sample of the crude drug. Distilled water was added as the solvent, and the flask was agitated continuously for 6 hours before being left on one side for 18 hours. Complete period a 24-hour. Weight of the empty china disc is 62.46 gm. The produced mixture will strain via porous paper, and then filtrate will transport to a measuring cylinder with a capacity of 250 ml. The extract will be placed in a dish and put on a water bath to cause the water to dry out; the compound is heated to 105°C inside a hot air oven. The dish is lifted and allowed to cool using desiccators. After the drug sample on a 62.71 gm weight of china disc had dried in water, the extractive value percentage was measured^(18, 19).

➤ **Crude fiber content:** Fill a conical flask with 200 milliliters of acidifying agent at an acid concentration of 0.128 M. An acid solution is added to a 2 gm extract of the herbs, which will transport inside a flask and stirred then heated to 30 minutes on a hot surface. The compound will strain using fabric (elimination of acid residue). Then, add 200 ml of a 0.313 M NaOH chemical inside a flask, wash the filtrate with water to eliminate any NaOH residue, and then combine the filtrate well with vigorous stirring on a hot plate. After viewing the fibre, the filtrate was collected in a clean, dried crucible until there was no more filtrate left, and the crucible was then set on a hot plate to dry out. Now, heat the dish for two hours inside a hot air oven. The crucible will then be removed from the oven and cooled in desiccators. Then, using a crucible that has covers on it, weigh the dry fibre with crucible is 22.1333 gm. The inside crucible should then be set inside a muffle furnace that has been adjusted to 550°C for two hours. Take the crucible out of the muffle furnace and let it cool for 20 minutes in desiccators. After 4 hours of collection and weighting, the ash fibre is 2.0816 gm, so the percentage of crude fibre was computed⁽²⁰⁾.

RESULT AND DISCUSSION

7. PHARMACOGNOSTICAL INVESTIGATION

7.1. Microscopical evaluation of *Dracaena reflexa* Lam. (Leaf).

A suitably designed transverse section and longitudinal section of the leaf was studied and different tissue organizations were viewed^(21, 22, 23).

Labeled characters showed in Figures.

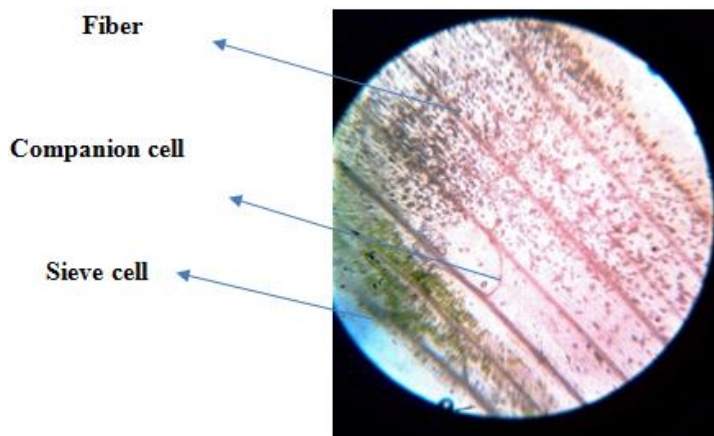


Fig. 2. L.S of Leaves

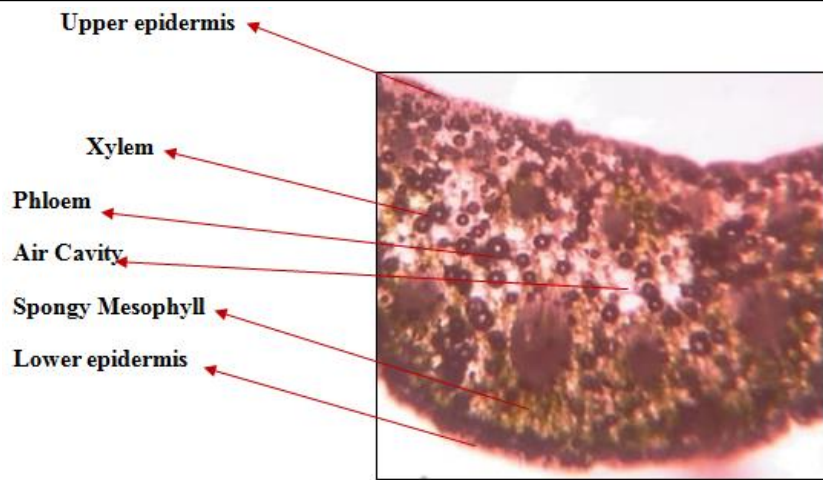


Fig. 3. T.S of Leaves

Physical Assessment of Dried Leaves of *Dracaena Reflexa Lam* (Leaves)

Table no. 5. Physical Evaluation of *Dracaena reflexa* leaves

S.No.	Parameter	Percentage % w/w
1.	Moisture content (Lose on Drying)	6 % w/w
2.	Ash value (Total Ash value)	7.5 % w/w
3.	Crude fiber	2.46 % w/w

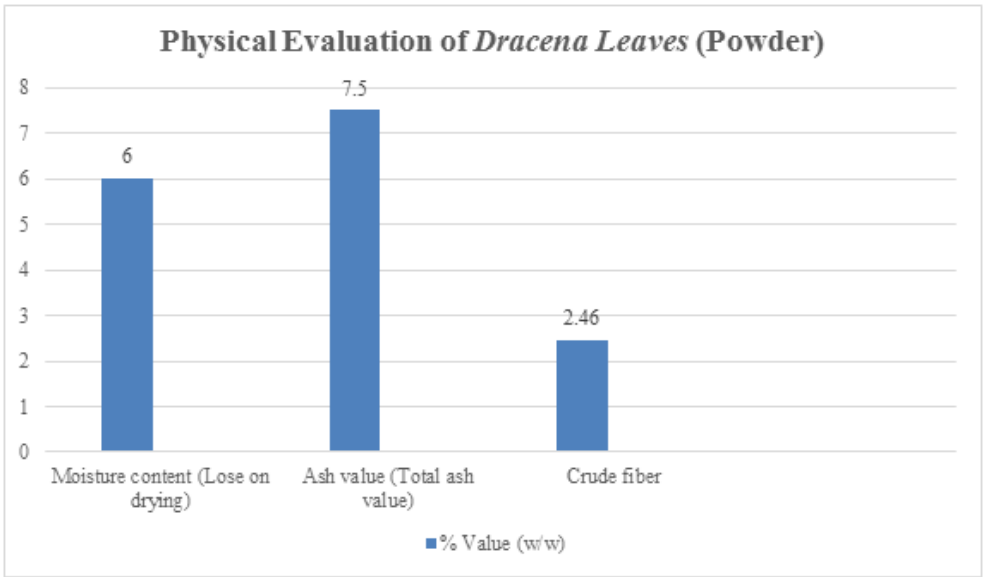


Fig no. 4. Physical Evaluation of Dracena reflexa Leaves

Table no. 6. Extractive value of *Dracaena reflexa* in different solvents

S.No.	Parameter	Percentage % w/w
1.	Extractive value (Petroleum ether)	5 % w/w
2.	Extractive value (Dichloromethane)	9 % w/w
3.	Extractive value (Methanol)	14 % w/w
4.	Extractive value (Water soluble)	25 % w/w

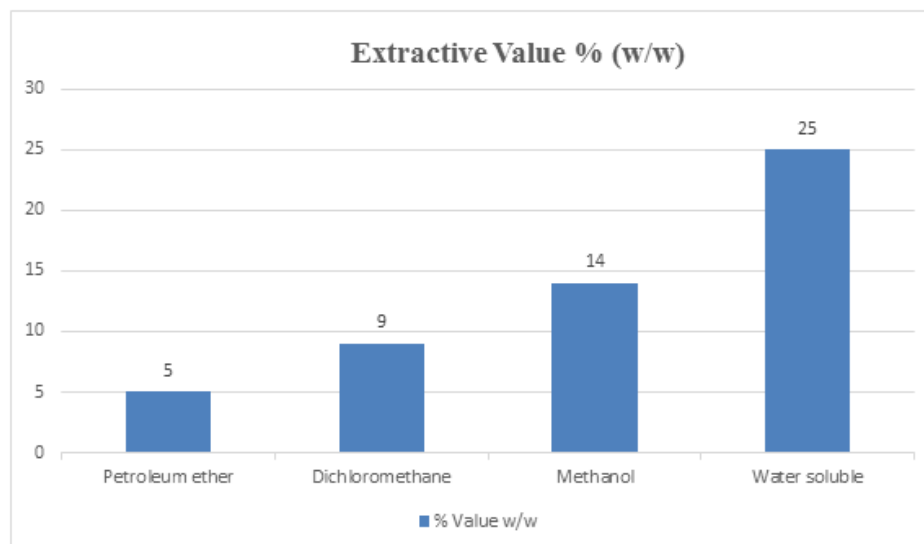


Fig. no. 5. Extractive Value of *Dracaena reflexa* (Leaves Powder)

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