

An overview on adhatoda vasaka as a medicinal plant

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Abstract- Pharmacognosy was initially described by C. A. Sydler as the study of therapeutic plants or products. The physical, chemical, and biological properties are used in these investigations. Adulsa (or Vasaka) is the popular name for the plant *Justicia adhatoda* (Linn.), which is a member of the Acanthaceae family. Adhatoda leaves have a long history of usage in Ayurvedic medicine, mostly for respiratory conditions. In the current pharmacognostic study of vasaka (leaves), major pharmacognostic techniques such as macroscopy, microscopy, surface preparation, powder characteristics, and physicochemical characteristics were used to identify the presence of trichomes and vascular bundles as well as moisture content, ash values, and extractive values in various parameters. C. A. Sydler first defined pharmacognosy as the study of medicinal plants or products. In these examinations, the physical, chemical, and biological qualities are used.

The common name for the member of the Acanthaceae family *Justicia adhatoda* (Linn.) is Adulsa (or Vasaka). Ayurvedic medicine has historically used adhatoda leaves, primarily for respiratory ailments. Major pharmacognostic techniques, including macroscopy, microscopy, surface preparation, powder characteristics, and physicochemical characteristics, were used in the current pharmacognostic study of vasaka (leaves) to determine the presence of trichomes and vascular bundles as well as moisture content, ash values, and extractive values in various parameters.

Keywords: Microscopy, Morphology, Pharmacognosy, and Adjudication *Justicia adhatoda*.

INTRODUCTION

C. A. Seydler used the term “pharmacognosy” to describe his field. “The investigation of medicinal products obtained from natural sources including plants, creatures, and minerals” is how pharmacognosy is defined. It is also described as “the search for new medications from natural sources as well as the investigation of the physical, chemical, biochemical, and biological properties of drug medications, medication substances, or potential medications of natural origin.” The Greek words *Pharmakon* (drug or medication) and *Gnosis* (to acquire knowledge of), which refer to the knowledge of drugs, were combined to generate the term pharmacognosy [1].

The morphological assessment is additionally called as Organoleptic or Macroscopical assessment, and that implies those assessment done by “feeling of organ” and the assessment which conceivable by “unaided eyes”. The morphological assessment is allude as, the medications are recognized by variety, smell, taste, size, shape and exceptional highlights like touch, surface, sound, and so forth. The investigation of type of a rough medication is Morphology, While the depiction of the structure is Morphography. The variety, shape and size of unrefined medications ought to be noted as depicted in official Book, which might differ relying on a few elements.

The microscopical assessment technique permits more point by point assessment of medication and it very well may be utilized to recognize coordinated drugs by their histological characters. The assessment is inconceivable with unaided eyes; conceivable with a “Magnifying instrument” is named Microscopical Evaluation [2].

It is a profoundly esteemed Indian restorative plant which is utilized in the treatment of respiratory illnesses like asthma, hack, bronchitis and Tuberculosis. The blossoms, leaves and root have antispasmodic property. The exercises against tuberculosis were accounted for by a larger number of people Scientists very early. It has been utilized broadly as a significant natural medication in treating a wide assortment of sicknesses and the leaves of the plant are the primary wellspring of medication definition. For example, the wellspring of the medication ‘vasaka’ is notable in the native system of medication for its gainful wellbeing impacts, especially in treating bronchitis. The various pieces of the plant is utilized in the India Conventional medication for the treatment of different illnesses like asthma, joint agony, blunder torment and injuries, hack, dermatitis, jungle fever, Stiffness, swellings, venereal illnesses [3].

The microscopical evaluation method enables a more in-depth investigation of the medication and can be used to distinguish organized drugs based on their histological characteristics. The evaluation is impossible to perform with the human eye alone; it can only be done under a “Microscope” [2]. It is a highly prized medicinal herb from India that is used to treat respiratory conditions like asthma, cough, bronchitis, and tuberculosis. The root, leaves, and flowers all have antispasmodic properties. Numerous scholars published early reports on the efforts to combat tuberculosis. It has been widely utilized as a significant herbal treatment to treat a wide range of ailments, and the plant’s leaves are the

primary ingredient in drug composition. The origin of the drug “vasaka,” for example, is well documented in the *Adhatoda vasica*, a widely used medicinal plant in Ayurvedic and Unani medicine, is currently known by the scientific name *Justicia Adhatoda* and belongs to the family *Acanthaceae*. Over 2000 years have passed since the herb was first used in India’s traditional system of medicine [4].

• **Plant profile:-**



Figure 1: *Justicia adhatoda* flower and leaves.

Scientific Classification [5]

<i>Justicia adhatoda</i>	
English	Malabar nut
Tamil	Adhathodai
Telugu	Vasa, Addasaramu
Hindi	Arusha, Adusa, Bansa
Sanskrit	Vasaka
Bengal	Adusa, Bakash, Vasok
Gujarati	Araduso, Aduloso
Konkani	Adusoge

Table 2: Vernacular name of *Justicia adhatoda*.

According to its botanical name, *Adhatoda vasica*, a small member of the *Acanthaceae* family, is an evergreen plant with broad, lanceolate (sharp, pointed like a lance) leaves that are 10 to 16 centimeters long and 5 centimeters wide. They taste harsh and turn greenish-brown when dried. They smell something like strong tea. Soft stem wood is excellent for making charcoal for explosives. Large, lovely white petals with purple striations on the lower lip make up the bloom. Four seeds make up the fruit, which is a tiny capsule [7]. The *Justicia adhatoda* Linn. Contains hepatoprotective, antioxidant, anti-inflammatory, analgesic, diarrhoeal, dysentery, sedative, antispasmodic, and anthelmintic effects. Effects on wound healing, antimicrobial action, and antidiabetic activity Infertility, Thrombopoietic activity, mild hypotensive effect, antiulcer, antibacterial, and antihistaminic effects cardiac sedative,

Materials and Procedures

Pharmacognostic Assessments

Assortment of plants

The *Justicia adhatoda* leaves were gathered in Malwadi in the months of May and June of 2022. The Clean, new plant leaves were used for additional analysis [9].

Morphological Analysis

Investigations were also conducted on the new leaves. Studies on the bark's size, form, outer surface, inner surface, fracture, flavor, and odor have been done [10, 11].

Microscopy Research

Utilizing the transverse section approach, *Justicia adhatoda* leaf microscopical analysis was carried out. In this technique, leaves' transverse sections were removed with a sharp blade and a soft hand. The adulteration was then removed by transferring the thin portions into a watch glass filled with water. Generally, the part is separated into the



Surface Cleaning

Fresh *Justicia adhatoda* leaves were used in the surface preparation investigation. Using a sharp razor, the leaves' green surface was removed, and the transparent surface was examined under a microscope using 10X, 40X, and 100X lenses [15].

Characteristics of powder

The *Justicia adhatoda* dry leaf fine powder was first stained with phloroglucinol + HCl (1:1) and examined under a microscope for analysis [16].

Summary and Verdict

This study establishes for the first time the precise pharmacognostic and physicochemical requirements for *Justicia adhatoda* leaves. Through examinations of the morphology and anatomy of plant components, the identification of the crude medicine will be achievable. For detecting adulteration, ash values and extractive values are useful instruments. These easy-to-follow but reliable instructions may prove useful when using the medication as a home remedy. They may also be used by the manufacturers to determine and pick the raw components required to make the medications. As a result, more investigation should be conducted in the future to pinpoint specific chemical components and conduct a full, scientifically sound analysis of the pharmacological activity.

Test No.	Test	Observation	Inferences
1.	Phloroglucinol + Conc. HCl (1:1)	Pink	Xylem, Phloem (V.B.)
2.	Sudan Red III	Red	Epidermis, Oil Globules
3.	Dil.Sulphuric Acid	Soluble	Calcium Oxalate Crystal
4.	Conc.Hydrochloric Acid	Soluble	Calcium Oxalate Crystal

Table 3: Micro-chemical tests of *Justicia adhatoda* Leaves.

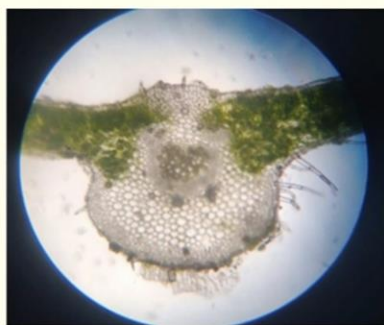


Figure 3: T. S. of *Justicia adhatoda* leaves.

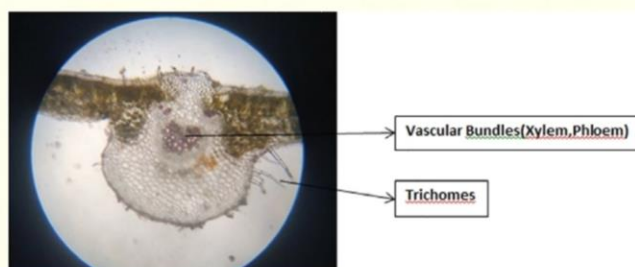


Figure 4: T. S. of *Justicia adhatoda* leaves for Test No.1.

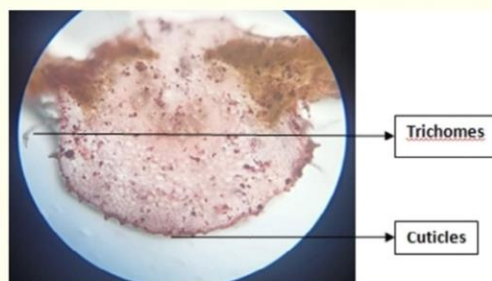


Figure 5: T. S. of *Justicia adhatoda* leaves for Test No.2.

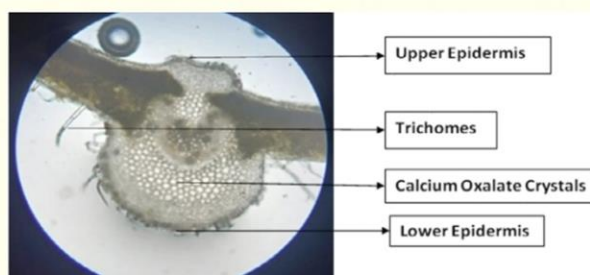


Figure 6: T. S. of *Justicia adhatoda* leaves for Test No.3.

Physiochemical Assessment

Foreign organic matter, moisture content, total ash value, acid insoluble ash value, water soluble ash value, and extractive value (alcohol and water soluble) are just a few examples of the various physiochemical parameters [17, 18].

Conclusion and Discussion

Pharmacognostic Assessments

Morphological Analysis

The leaves are alternating, solitary or complex, and deciduous. The leaflets in compound leaves have

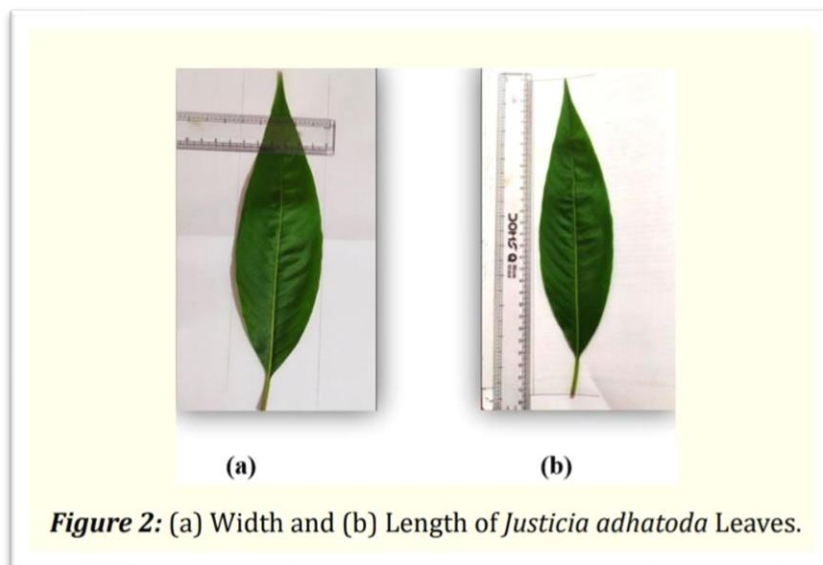


Figure 2: (a) Width and (b) Length of *Justicia adhatoda* Leaves.

REFERENCES:

1. Padmini Shukla and Shashi Alok. Pharmacognosy and Phytochemistry-I; Nirali Prakashan (2021): 1.1.
2. SB Gokhale and CK Kokate. Pharmacognosy and Phytochemistry-I; Nirali Prakashan (2019): 3.2-3.3.
3. G Jayapriya and F Gricilda Shoba. "GC-MS analysis of bio-active compounds in methanolic leaf extracts of *Justicia adhatoda* (Linn.)". *Journal of Pharmacognosy and Phytochemistry* 4.1 (2015): 113-117.
4. Pharmacology and Morphology of Some Species of *Adhatoda vasaka*. *International Journal of Pharmaceutical Research and Ap-Plications* 6.4 (2021): 276-283.
5. Gauri Badgujar and Samiksha Bhagat. "Pharmacology and Morphology of Some Species of *Adhatoda vasaka*". *International Jour-Nal of Pharmaceutical Research and Applications* 6.4 (2021): 276-283.
6. M Prathapa Reddy and TR Shantha. "Pharmacognostical and Physicochemical Evaluation on the Flowers of *Justicia adhatoda* L.". *Research Journal of Pharmacognosy and Phytochemistry* 7.2 (2015): 73-90.
7. Dhankhar S. "Aegle marmelos (Linn.) Correa: A source of Phytomedicine". *J MediPlants Res* 5.9 (2010): 1497-1507.
8. Santosh Kumar Singh., et al. "Pharmacognostic study and phytochemical screening of leaf of *Adhatoda vasica* (Acanthaceae)". *Journal of Medicinal Plants Studies* 2.4 (2014): 29-31.
9. R Nithyatharani and US Kavitha. "Phytochemical Analysis of the Leaves of *Adhatoda Vasica*". *IJCRT* 6.1 (2018): 451-454.
10. Thokchom P Singh and Okram M Singh. "*Adhatoda vasica* Nees: Phytochemical and Pharmacological Profile". *The Natural Prod-Ucts journal* 1 (2011): 29.39.
11. R Parthasarathy and R Ilavarasan. "Pharmacognostical Studies on *Thespesia populnea* Bark". *Research Journal of Pharmacogno-Sy and Phytochemistry* 1.2 (2009): 128-131.
12. Khandelwal KR. "Practical Pharmacognosy (Techniques and Experiments)". Nirali Prakashan (2008): 09-
13. Satish Kumar BN and Gobinda Mohan Behera. "Pharmacognosy, Phytochemistry and Pharmacology of *Annona squamosa* Linn". *Research Journal of Pharmacognosy and Phytochemistry* 3.3 (2011): 93-102.
14. Tushar P Dukre, Ganesh N Wadekar and Harshad B Pawar. "Pharmacognostic and Phytochemical Evaluation of Herbal Plant: *Alangium lamarkii*". *Research Journal of Pharmacognosy and Phytochemistry* 14.2 (2022): 65-68.
15. Kokate CK. "Practical Pharmacognosy". 3rd edition, Vallabh Prakashan (1994): 107.
16. Gupta Abhishek and Joshi Apurva. "Pharmacognostic Study of *Justicia adhatoda* Linn. Leaf". *International Journal of Herbal Med-Icine* 1.6 (2014): 01-04. Khandelwal KR. "Practical Pharmacognostic Techniques and Experiments". Nirali Prakashan (2010): 12.30-13.32.
17. Kokate CK, Purohit AP and Ghokale SB. "Pharmacognosy". 39th edition, Nirali Prakashan 13 (2007): 536-537.