



## Ethnomedicinal and Pharmacognostical Studies on Leaves of *Cipadessa baccifera* (Roth) miq.

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DOI- 10.5281/zenodo.7701230

### Abstract

With increasing demand in the field of herbal medicines it has become necessary and pertinent to probe into the area of systematic knowledge about herbal drugs. There is a need for the application of this knowledge in authentication and practical utilization of crude drug. The present paper deals with ethnopharmacognostical studies on leaves of *Cipadessa baccifera* (Roth) miq. It belongs to family meliaceae and commonly called as Narang. Ethnomedicinal information was collected from rural traditional practitioners in villages of Kolhapur district of Maharashtra, India. Locally leaves are used for the treatment of urine stone and in cases of indigestion. The present investigation deals with macroscopic and microscopic characters of leaves. Powder behavior indicates the presence of alkaloids, glycosides, proteins, xanthoproteins, carbohydrates and flavonoids. Phytochemical tests showed the presence of phenols, flavonoids, tannins, coumarins, alkaloids, reducing sugars, xanthoproteins and glycosides. The macroscopic and microscopic characters, fluorescence analysis, powder behaviour and phytochemical characters can be used as a diagnostic tool in the correct identification of plants. The adulterants if any in the plant material can also easily identified by these studies

**Keywords:** *Cipadessa baccifera* Leaf, Ethnomedicinal, Pharmacognostical, Phytochemical. ,

### Introduction

The search for biological active compounds from natural sources has always been of great interest to researchers looking for new source of drugs useful in disease treatment. Higher plants have played a vital role as the source of important therapeutic agents. Only a small percentage of higher plant species have so far been exploited and much remains to be done. The curative properties of medicinal plants are mainly due to presence of various complex chemical substances of different composition which occur as secondary metabolites (Karthikeyan et al. 2009). *Cipadessa baccifera* (Roth) miq. belongs to family meliaceae and commonly called as Narang. Traditionally leaves are used for the treatment of urine stone and in cases of indigestion. Proper and detailed Pharmacognostical studies of these plants have not been reported so far. So an attempt was made to standardize the drug on the

basis of botanical and phytochemical parameters.

### Material and Methods

Ethnomedicinal information was collected through interview with traditional rural practitioners (Vaidus) as suggested by Jain (1987). Fresh plant material was collected from Kolhapur district of Maharashtra (India). Plant was identified with the help of Flora of Kolhapur District (Yadav and Sardesai, 2002). For microscopic studies uniform, thin, free hand sections of leaves were taken and stained as per the procedure of Johansen (1940). Macro and microscopic character were studied as described by Trease and Evans (1992). Ash value, dry matter and moisture content of the material were determined by following the method of AOAC (1990). Leaf material was dried in shade so as to prevent decomposition of active principles and made into fine powder for the studies of powder behaviour, fluorescence study and

phytochemical tests as per given in Indian Pharmacopeia. Fluorescence analysis of the powder were examined under U.V light according to the method suggested by Chase and Pratt (1949) and Kokoski et al. (1958).

#### Macroscopic Characters

*Cipadessa baccifera* belonging to family Meliaceae is much branched shrub grows up to a height of 4 metres (Fig.1-A). Young branches are grayish brown, ribbed and covered with yellow velvety hairs and greyish white lenticels. Leaves compound, imparipinnate, alternate, spiral, often crowded at twig ends, pulvinate; terete, pubescent, leaflets opposite, 3-6 pairs and an odd one, elliptic, 3.5 - 10 x 1.5 - 5 cm., apex acute to acuminate, margin entire at base and coarsely serrate towards apex, pubescent beneath atleast one nerves; midrib thinly raised above; secondary nerves 5-9 pairs, tertiary nerves broadly reticulate (Fig.1-B). Flowers small in axillary corymbose panicles, white, ovary glabrous. Berry globose.

#### Microscopic Characters T.S. of leaf

T.S. of *Cipadessa baccifera* leaf lamina shows single layer of upper and lower epidermis. Epidermal cells were cylindrical and covered with thick cuticle. Mesophyll differentiated into upper palisade and lower spongy parenchyma. Upper mesophyll consists of single layer of columnar elongated palisade cells which were compactly arranged with chloroplast. Spongy parenchyma composed of loosely arranged cells with intercellular spaces (Fig.1-E). These cells contain few chloroplasts. Mid rib shows single layer of polygonal epidermal cells. Unicellular, uniseriate trichomes present on upper and lower epidermis. Below epidermis many layered parenchyma present. A centrally placed vascular bundle was conjoint, collateral and consists of xylem and phloem. In the centre, there was parenchymatous pith (Fig.1-D). Anomocytic stomata present on both the surfaces (Fig.1-F). The stomatal index of lower surface of leaf was 15.04 and upper surface was 9.93.

#### Organoleptic evaluation

Colour, taste, texture, ash value, moisture content, and dry matter are recorded in table-1.

#### Behavior of leaf powder with different chemical reagents -

Behavior of leaf powder with different chemical reagents was studied to detect the

presence of phyto constituents with color changes under daylight and results were shown in table 2. Leaf powder gives positive tests for alkaloids, flavonoids, cystein steroids, xanthoproteins, glycosides and proteins while negative tests for starch, tannins and oils.

#### Fluorescence character of leaf powder under visible and UV light.

Leaf powder treated with NaOH in water produces coffee colour fluorescence under visible light, green fluorescence under 254nm and black fluorescence under 366nm UV light. Powder treated with acetone gives green fluorescence under visible and 254nm where as black fluorescence under 366nm UV light (Table - 3).

#### Phytochemical screening.

Methanolic and aqueous leaf extract shows higher concentration (+++) of phenols, tannins and alkaloids. Petroleum ether and chloroform extracts shows positive tests for only coumarins and alkaloids. The test was negative for anthraquinones (Table-4).

#### Conclusion

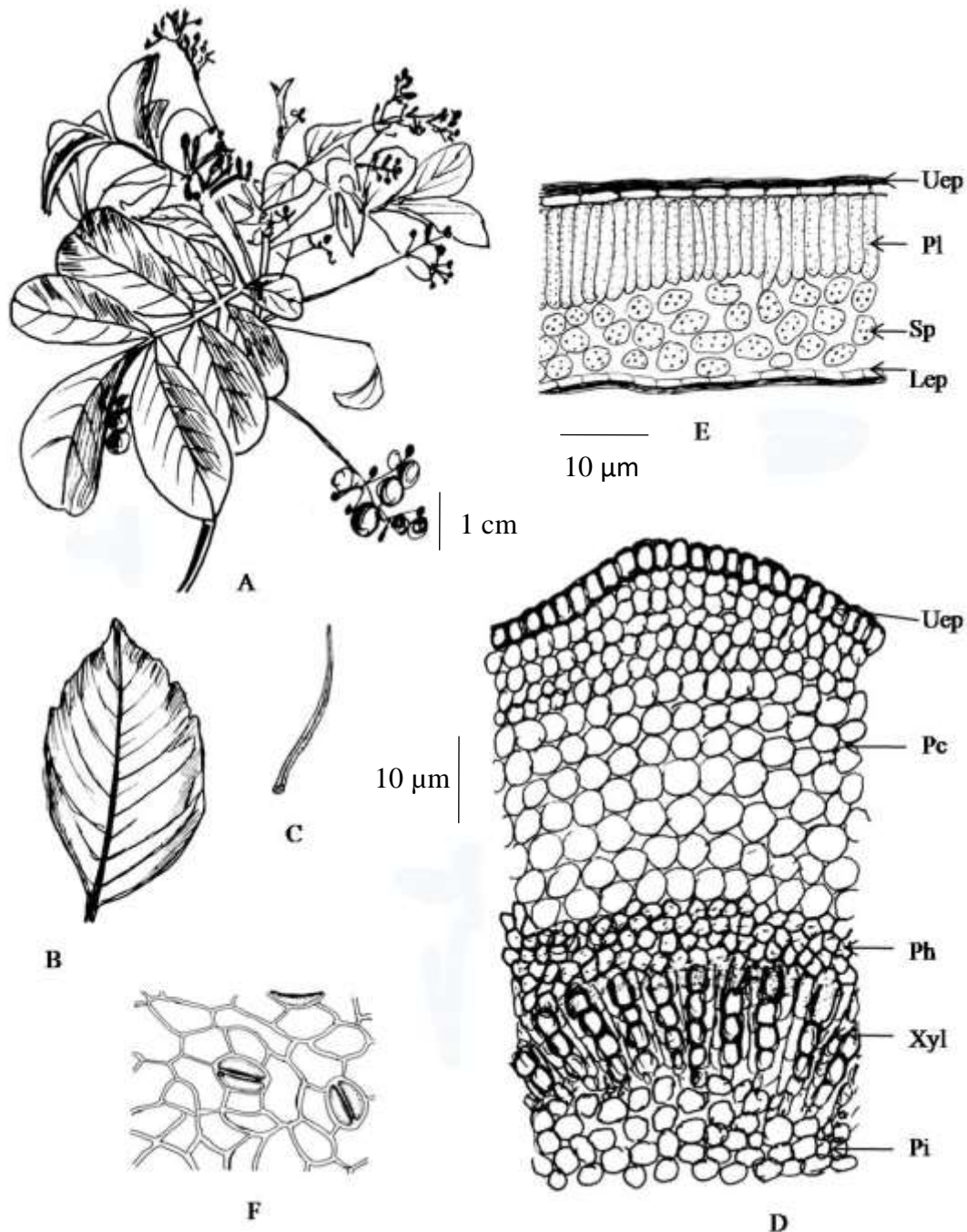
The present study on pharmacognostical and phytochemical evaluation of leaves of *Cipadessa baccifera* (Roth) miq. provide useful information for its identification. Macroscopic and microscopic characters, behavior of bark powder analysis, fluorescence characters of bark powder and phytochemical tests can be used as a diagnostic tool in the correct identification of plant. Phytochemical tests revealed the presence of tannins, phenols, reducing sugars, xanthoproteins, alkaloids and coumarinns. The adulterants if any in the plant material can also easily identified by these studies. The study scientifically validates the use of plant in traditional medicine. **References**

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**Fig. 1- *Cipadessa bassifera* (Roth.) Miq.: A- Flowering twig, B- Leaf, C- Trichome, D- T. S. of midrib, E- T. S. of leaf lamina, F- Stomata.**

Table-1: Organoleptic evaluation

Sr.no	Particular	Observation
1	Colour	Olive green
2	Taste	Astringent
3	Texture	Coarse
4	Ash value	5.0%
5	Moisture content	61.11%
6	Dry matter	38.89%

Table 2: Behavior of powdered drug with different chemical reagents

SN	Treatment / Reagent	Behaviour	Inference
1	Powder as such	Dark olive green	--
2	Powder + 1 N NaOH	Yellow	Flavonoid
3	Powder + 5% Iodine	Dark olive green	--
4	Powder + 40% NaOH + Lead acetate	Yellowish green	Cystein
5	Powder + Conc.H <sub>2</sub> SO <sub>4</sub>	Brown	Steroid
6	Powder + Conc. HNO <sub>3</sub> + Ammonia	Yellowish brown	Xanthoprotein
7	Powder + 5% FeCl <sub>3</sub>	Field drab brown	-
8	Powder + 5% KOH	Brown	Glycoside
9	Powder + 1% AgNO <sub>3</sub>	Grey	Protein
10	Powder + Sudan III	Dark olive green	--
11	Powder + Glacial acetic acid	Dark olive green	--
12	Powder + Picric acid	Green yellow	Alkaloid

Table 3: Fluorescence characters of powdered drug under Visible and U.V. light

.SN	Treatment / Reagent	Visible	254nm	366nm
1	Powder as such	Dark olive green	Dark olive green	Black
2	Powder + NaOH in water	Brown	India green	Black
3	Powder + NaOH in Alcohol	Coffee	Dark spring green	Black
4	Powder + Conc. HCl	Dark olive green	India green	Black
5	Powder + Conc. H <sub>2</sub> SO <sub>4</sub>	Brown	Forest green	Black
6	Powder + Conc. HNO <sub>3</sub>	Orange yellow	Yellow green	Black
7	Powder + 10% HCl	Apple green	Green	Black
8	Powder + Acetone	Apple green	Apple green	Black
9	Powder + 5% KOH	Brown	Olive drab green	Black
10	Powder + Iodine	Apple green	Asparagus	Black
11	Powder + FeCl <sub>3</sub>	Apple green	Yellow green	Black
12	Powder + D.W.	Dark olive green	Fern green	Black

Table 4: Phytochemical tests

Chem. constituents	Solvents					
	Methanol	P. ether	Acetone	Chloroform	Ethanol	Aqueous
Phenols	+++	-	+	-	+	+++
Anthraquinones	-	-	-	-	-	-
Flavones	++	-	-	-	-	++
Tannins	+++	-	-	-	+	+++
Coumarins	-	+	++	+	-	-
Saponins	+	-	-	-	+	+
Alkaloids	+++	+	+++	+	+++	-
Reducing sugars	-	-	-	-	-	+++
Xanthoprotein	++	-	-	-	-	++
Glycosides	-	-	-	-	-	+

(+ = Low, ++ = Medium, +++ = High, - = Absent)