PHARMACOGNOSTICAL STUDIES ON LEAVES OF *COMMIPHORA CAUDATA* (WIGHT & ARN) ENGL

S.Latha*, P.Selvamani*, T.K.Pal[1], J.K.Gupta[1], L.K.Ghosh*
*Department of Pharmaceutical Engineering and Technology,
Bharathidasan Institute of Technology
Bharathidasan University, Trichy – 620 024, Tamil Nadu, India.
[1]Jadavpur University, Kolkatta – 700 032, West Bengal, India.

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ABSTRACT

Commiphora caudata (Wight & Arn) is a potential medicinal plant used for its antispasmodic activity, cytotoxic activity and hypothermic activity. Owing to its medicinal importance, macroscopic and microscopic characters of leaves of *Commiphora caudata* were studied.

INTRODUCTION

Commiphora caudata (Wight & Arn) belongs to family Burseraceae is distributed through out the Western peninsula, Srilanka and India. In Tamil, it is known as "Pachai kiluvai" and in Telugu it is well known as "Konda mamidi". Carbohydrates, phytosterols, saponins, proteins, amino acids, flavanoids, gums and mucilage were present and alkaloids were absent in leaf of *Commiphora caudata* as reported by Dhar et al ., 1968 and Gunathilaka et al., 1978 [1-2]. As the plant is reported to have various medicinal uses, an attempt to study the pharmacognosy of the leaves was undertaken.

MATERIALS AND METHODS

Fresh leaves of *Commiphora caudata* were collected from Tiruchengode district in Tamil Nadu and their morphological and microscopic studies were carried out in addition to their quantitative analysis.

RESULTS & DISCUSSION

Macroscopy

Leaves were compound, alternative 3, to 7 foliolate, upper surface dark green, lower surface light green in colour. There is no characteristic odour and it has mucilaginous taste. Shape is ovate - oblong; length - 4.5 to 6.5 cm; width - 2.2 to 3.5 cm; apex - acuminate, base - slightly asymmetric; margin - entire, venation - reticulate pinnate; pedicle length - 3.5 to 6.2 cm and texture -

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glabrous, glossy above, subglaucous below[3, 4].

Analytical parameters

Extractive values like alcohol soluble extractive - 8.5 % w/ w; water soluble extractive 10.15% w/w; physical constants like, total ash - 9.2 % w/w; acid insoluble ash - 2.1 %w/w; water soluble ash - 7.0 %w/w; and sulphated ash - 17.4 % w/w were calculated as per standard procedures[5,6].

Phytochemical Tests

Water, alcohol extract of the leaves of *Commiphora caudata*, when subjected to qualitative chemical tests showed presence of carbohydrates, phytosterols, saponins, proteins, amino acids, flavanoids, gums and mucilage.

Microscopy

Bright field was used for observation of the T.S. of the leaf[7,8]. For the study of crystals, starch grains and lignified cells, polarized light was used in which, they appeared bright against dark background.

Leaflet Diagnostic features

The leaflets (Fig. 1, 2) were dorsiventral with prominent midrib**.** Leaves 3-7 foliolate: leaflets ovate, or elliptical, chartaceous and glabrous. Leaflets - dorsiventral, mesomorphic, hypostomatic, glaborous; midrib adaxially projecting into a hump; adaxial part shallowly convex. Vascular bundles of the midrib include one larger median bundle and one smaller, adaxial accessory bundle. Lamina with uniserrate epidermal layers; mesophyll differentiated into a single layer of palisade cells and lobed aerenchymatous spongy parenchyma cells. Vascular bundle of the lateral vein has adaxial bundle sheath extension. Stomata actinocytic type; epidermal cells angular, straight and thick walled. Vein islets polygonal; vein termination branched many times. The petiole is roughly circular in outline (Fig. 3), petiole semicircular with adaxial depression. Vascular strengths of the petiole many, arranged in a circle with adaxial opening. Petiole circular with a ring of vascular strands. Secretory canals occur in the phloem region of leaf, veins and petioles. Large druses of calcium oxalate crystals abundant in the leaf and petiole.

Quantitative microscopy of the leaves

Stomatal index, stomatal number, vein islet and vein termination number (Fig. 4), are calculated as per the standard procedure[7]. All the values are shown in Table – 1.

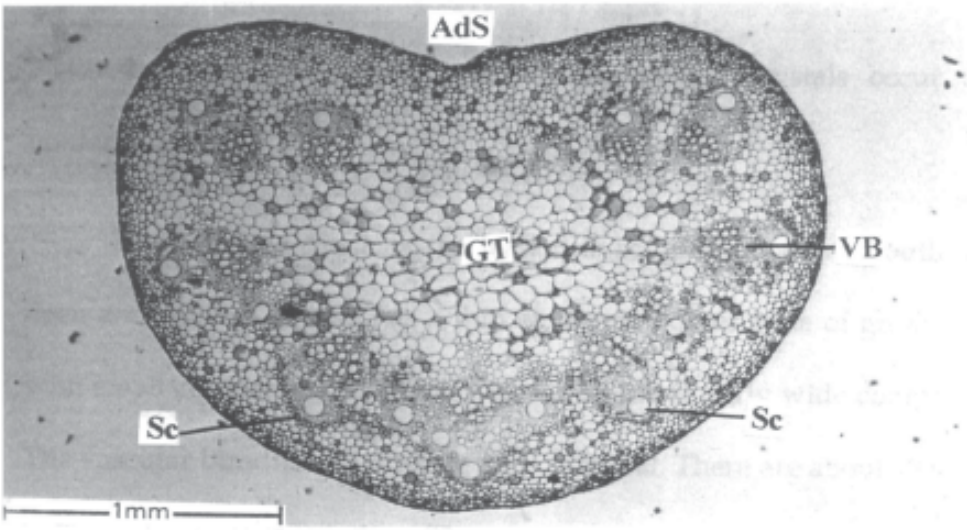
CONCLUSION

The present study on pharmacognostical characters of *Commiphora caudata* may be useful to supplement information in regard to its identification and authentication of the plant and powdered sample of leaves.

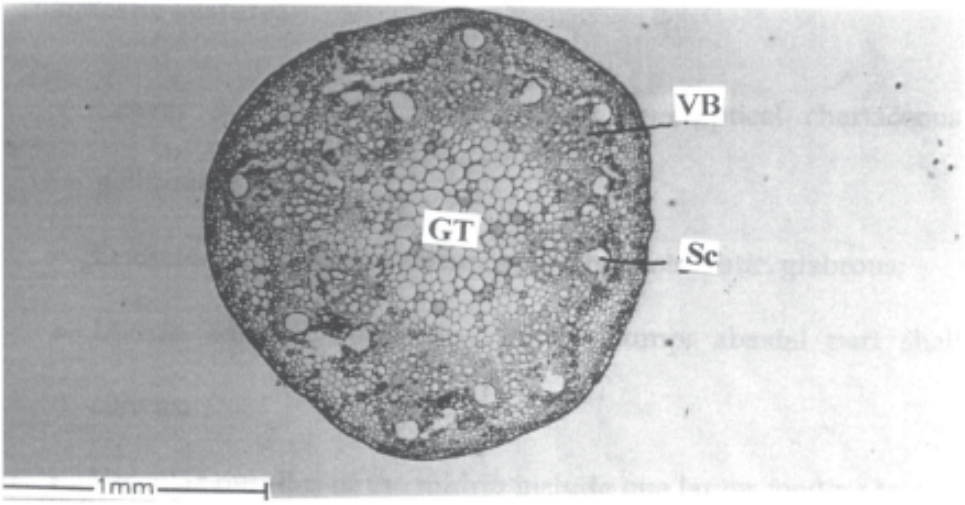
Table – 1
Data showing different quantitative values of leaf of *Commiphora caudata*

Quantitative parameters	Values
Stomatal Index	15.48 %
Stomatal Frequency	24 / mm ^{2}
Vein islet number	5 / mm ^{2}
Vein termination number	1.5 / per islet
Thickness of the lamina	180.00 micro meter
Thickness of the midrib	576.00 micro meter
Thickness of the upper epidermis	36.00 micro meter
Thickness of the lower epidermis	28.08 micro meter
Height of the palisade zone	72.00 micro meter
Diameter of the secretary cannal	57.60 micro meter
Vertical dimension of the petiole	2448.00 micro meter
Horizontal dimension of the petiole	1728.00 micro meter
Diameter of the petiole	1548.00 micro meter

T.S OF THE PRIMARY RACHIS – PETIOLE

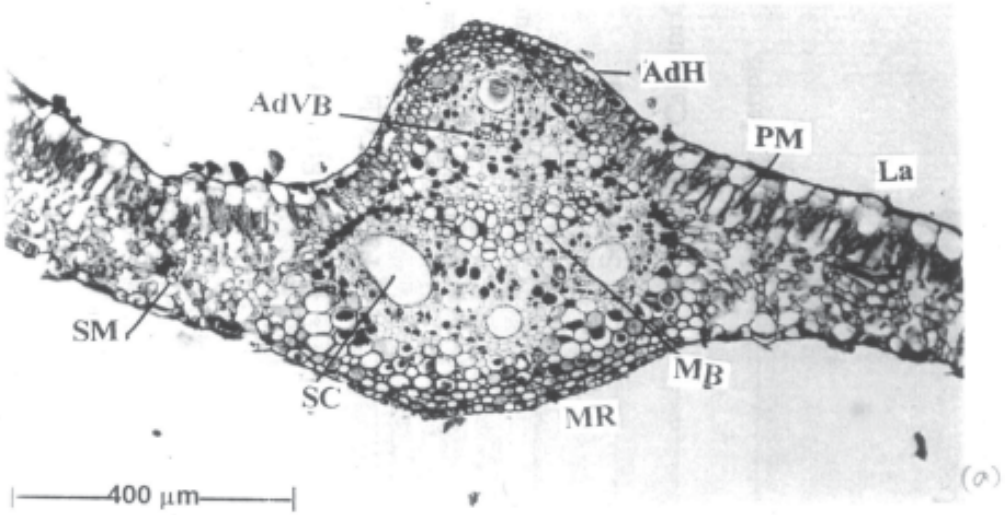


T.S. OF SECONDARY RACHIS – PETIOLE

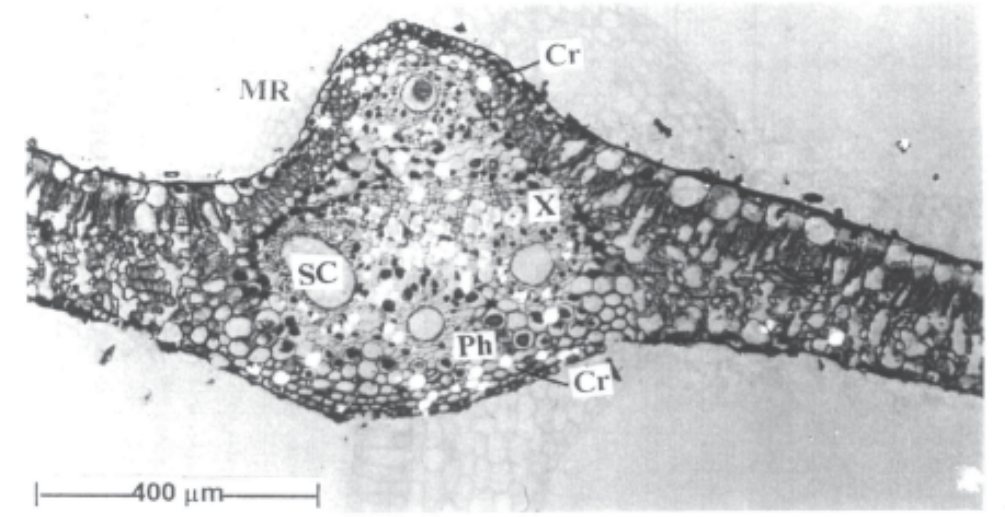


AdS-Adaxial side; Cr-Crystal; GT-Ground tissue; SC-Sclerenchyma ring; SeC-Secretory canal)

T.S OF *COMMIPHORA CAUDATA (WIGHT & ARN) ENGLOR* LEAF

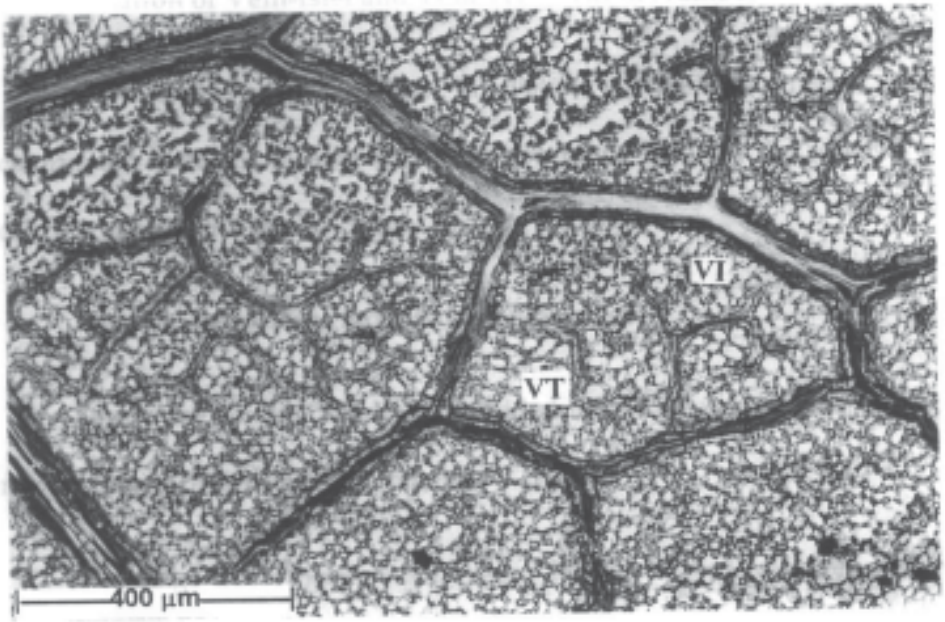


T.S OF *COMMIPHORA CAUDATA (WIGHT & ARN) ENGLOR* LEAF UNDER POLARISED LIGHT

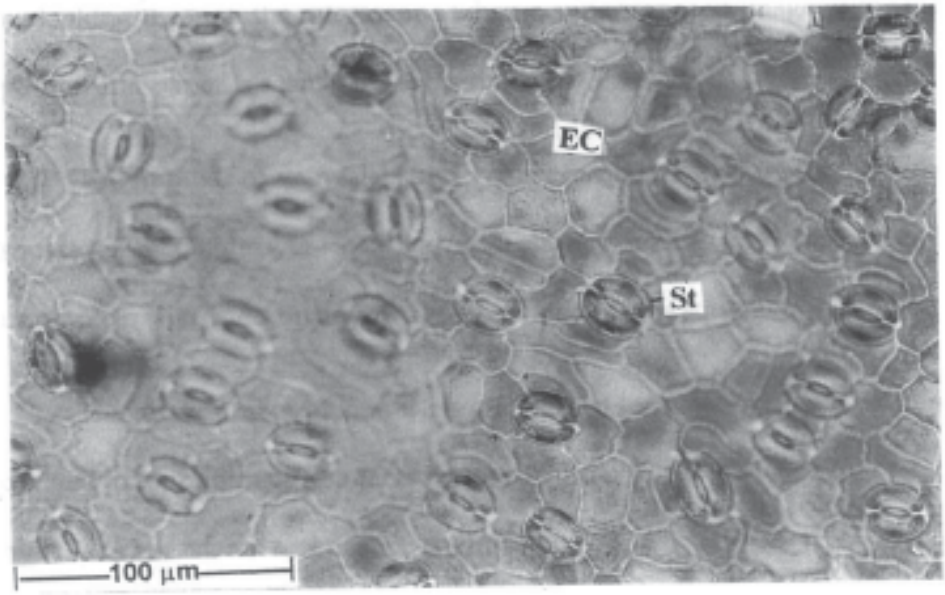


(AdH-Adaxial hump; AdVB-Adaxial (Accessory) Vascular bundle; Cr-crystals of calcium oxalate; La-Lamina; MB-Median (main) Bundle; MR-Midrib; Ph-Phloem; PM-Palisade mesophyll; SC-Secretory canal; SM- Spongy mesophyll; Ta-Tannin; X-Xylem)

VEIN TERMINATION AND VEIN ISLET

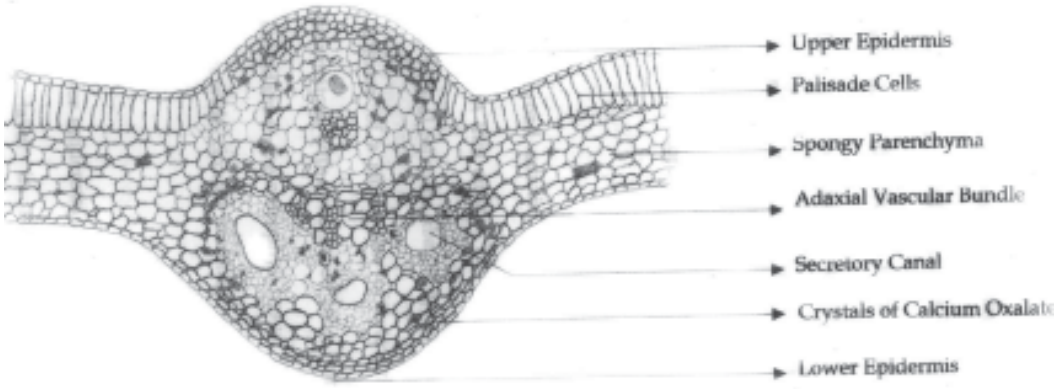


STOMATAL MORPHOLOGY



(EC- Epidermal cells; St- stomata; Vl-vein islet; VT-Vein termination)

TS OF LEAF OF COMMIPHORA CAUDATA (WIGHT & ARN) ENGLOR



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