A PHARMACOGNOSTIC EVALUATION ON MOORVA BHEDA
(DREGEA VOLUBILIS (L.F.) BENTH. EX HOOK.F.

INTRODUCTION
The importance of medicinal plants in traditional health care practices, providing clues to new areas of drug research and biodiversity conservation is now well recognized. Marsdenia tenacissima (Roxb.) Moon. is the accepted source of Moorva1 one of the most controversial drugs in Ayurveda with more than 7 plant species from different families being used as the source in different parts of the country2. Dregea volubilis (L.f.) Bent. ex Hook.f. [Syn:Marsdenia volubilis (L.f.) Cooke., Wattakaka volubilis (L.f.) Stapf] is also considered as a source plant of Moorva2. As a closest relative to the accepted source, D. volubilis has been less explored pharmacognostically. Hence in this study an attempt has been made to evaluate D. volubilis pharmacognostically with special reference to macroscopy, microscopy and powder microscopy. The plant D. volubilis is a large woody twining perennial shrub of the family Apocynaceae3 and with a watery sap. Opposite decussate phyllotaxy with leaves are cordate. Pale green flower in dense drooping umbels (Fig. 1).

Distribution: It is found to be growing in high rainfall as well as in low rainfall regions. Common throughout the tropical part of India and Car-Nicobar ascending to an altitude of 1500 m4. The curative properties of medicinal plants are mainly due to the presence of various complex chemical substances such as dregein glycoside and alkaloids5 of different composition which occur as secondary metabolites. The leaves of D. volubilis are used as an application in boils and abscesses to promote suppuration. Root paste is applied to snake bites and abscesses etc. In different states of India it is used by folks as a successful remedy in eye diseases. The study comprises investigation of the plant material for assessing the various system of medicine such as Ayurveda, Siddha and Unani6. Synonyms: - Marsdenia volubilis (L.f.) Cooke., Wattakaka volubilis (L.f.) Stapf.5 Rajanighantu (Ayurvedic text) mentions different synonyms to this plant like hema, hemavati, hemalatha, swarnika, swarnalatha, hemajivanti, swarnajivanti (indicates that the plant has similarity with jivanti plant but it may be golden in colour)7.

Kingdom: Plantae
Sub family: Apocynoideae,Asclepiadoideae
Family: Apocynaceae
Order: Gentianales
Series: Bicarpellatae
Subclass: Gamopetalae
Class: Dicotyledons1
Regional and Linguistic names7:-
San: Madhumalathi, Hema Jeevanti
Hindi: Nakshiki
Bengali: Titakunga
Tamil: Kodipalai
Telugu: Dudhipaala
Malayalam: Vattakakkodi

MATERIALS AND METHODS
Fresh plant material of D. volubilis was collected from Udupi dist. (Karnataka, India). Efforts were made to collect the plants in flowering and fruiting conditions for the correct botanical identification. The plant material was identified by the taxonomist Prof. Radhakrishna Rao, A.L.N. Rao Memorial Ayurvedic medical college, Koppa, Karnataka, India and voucher specimen was placed in the department for future reference (Voucher Ref no. PGDG/VHM - 102).

Organoleptic evaluation:
The color, odor and taste of wet & dry specimen were recorded separately.

Microscopic evaluation:
Microscopic studies were done as follows. Surface preparation was done by placing wet leaf on the glass slide and tissues were scrapped off with the sharp edge off razor blade with utmost care. Water was slowly and continuously added and scraping was done till transparent and colourless...
epidermis was exposed. Free hand transverse sections through midrib of leaves, transverse section of stem and root were taken for microscopic study. Following the micro techniques method based on macro and microscopic characters were studied\textsuperscript{12,13,14}.

**Histochemical test:**
Free hand sections of leaves were taken, cleared with chlrol hydrate and then stained with Saffron to observe the lignified elements. Other reagents were also used separately to starch grains (IKI) crystals (HC\textsubscript{l}) etc. Glycerin was used for slide mounting\textsuperscript{12}.

**RESULTS AND DISCUSSION:**
Results and discussion on Leaf and Petiole:

**Macroscopic characters:**
The leaves are simple, opposite, 15×13 cm broadly ovate or cordate, acuminate at apex and cordate or round at base, glabrous or more or less softly pubescent. The venation patterns of leaves are observed as camptodromous – brochidodromus. Reticulate veined, margin is entire, upper surface of leaves is dark green in colour and lower surface is light green in colour. Green coloured petioles with 3–5cm long. (Fig 1 & 2) Both had peculiar pungent smell and bitter in taste.

**Microscopic characters:**
In transverse section of the mid rib, lower and upper epidermis consists of thin walled compact oval to oblong cells which are covered with thin cuticle. Collenchymas cells are seen below the upper and above the lower epidermis, in lower around 6–7 layers of collenchymas cells were as in upper 2–4 layers were observed. The vascular bundle was bicollateral. Protoxylem facing towards the upper side. Remaining cells in midrib was filled with parenchymatous cells. Cluster crystals were seen at places in midrib. Mesophyll tissue has two types of cells just below the upper epidermis: one-two layers of palisade parenchyma cells were seen which extends up to midrib below upper epidermis. Followed by spongy parenchymatous cells with ovate to oblong in shape which covers the rest of the portion of the lamina. Both epidermises were seen with uniseriate multicellular and glandular trichoms. Numerous prismatic, rosettes and cluster crystals were present in the mesophyll portion of the lamina. (Fig 3 & 4) Upper epidermis did not possess stomata whereas in lower epidermis two types of stomata which were paracytic and anomocytic were observed. (Fig 4)
Transverse section of the petiole showed similar structure of petiole except presence of small and separate bands of vascular bundles. Near both the edges of bicollateral vascular bundle, tannin, rosette and cluster crystals were observed. (Fig 5)

Results and discussion on Stem:

Macroscopic characters:
Stems are woody, much branched; 11M high and 95 Cm girth with densely lenticellate and pustular branches. Older branches ash-coloured, very long, glabrous often with lenticels and sometimes with black dots, young branches were green and slender. Latex was colourless and watery. Odour was characteristic and taste is bitter. (Fig 2.3)

Microscopic characters:
The outline of the transverse section of stem was almost circular. The outermost layer showed single row of epidermal cells. A distinct endodermis with casparian strips was absent. Pericycles were represented in the inner region of the cortex by scattered groups of thick walled lignified fibers in circular manner. Intraxylary phloem present at the periphery of the pith, in the form of separate strands. Medullary rays were uniseriate or biseriate. Cortex and pith were occupied by many rosette, cluster crystals and tannin. (Fig 7 & 8)

Results and discussion on root:

Macroscopic characters:
Strong stout root, with almost round in shape; its size is 8cm×2cm×2cm in length, breadth and circumstance. Outer surface was rough, dark brown color and with traverse wrinkles. Internally creamish yellow in color. Fracture is fiberous, odor nil and rough texture. (Fig 2)
Microscopic characters

Transverse section of root showed cork and cortex region by an endodermic layer. Cork possessed 5–15 layers of thick walled rectangular cells (Fig 9.1). Followed by the cortex, it contained thin walled parenchymatous cells; in inner cortex region 5–7 layers of stones cells in circular manner were observed. Both cork and cortex was rich with cluster, rosette & prismatic crystals. Compared to cork, cortex had more crystals. Single layer of Endodermis was present between the cortex and stellar region. In stellar region, Scattered Vascular bundles were observed (Fig 9.4). Uniserated Medullary rays (Fig 9.5) and root was devoid of pith. Simple starch grains were seen in section.

CONCLUSION

Identification and authentication of raw material is the major problem in the herbal pharmaceutical industry. D. volubilis is not only a substitute to Moorva but is also a potential drug commonly used in Folklore therapeutics. In the present investigation, a detailed pharmacognostic account of D. volubilis which includes macroscopic and microscopic characters has been reported, which will be support for the correct botanical identification of the drug and helps to maintain the genuinity of the plant material used in the Ayurvedic Pharmaceutical Industry.

REFERENCES

1. Anonymous (2001), The Ayurvedic Pharmacopoeia of India, Govt. of India, part 1, vol 2, p123-124
2. Bapalal, Some Controversial Drugs In Indian Medicine, Jaikrishnadas Ayurvedic series no.33, Chowkambha Orientalia, Varanasi, Delhi, p 8-15
6. Huber l.c; Stevens l.c Bot. Mag. t. 8976. (1923)
7. Lakshmi. N and Jagadamma A, Pharmacognosy of Ayurvedic drugs Kerala, Pharmacognosy unit, Ayurveda Research Institute, poojapura, Thiruvananthapuram-12; (1998); series;1; Number:12 p 117-126
10. Indradeva Tripathi, Raja nighantu, Chowkambha Krishnadas Ayurvedic series, Chowkambha Krishnadas Academy, 2006 Varanasi, Delhi, p 29
12. Khandelwal K R, Practical Pharmacognosy, Techniques and experiments, Nirali prakashan, Pune, p 51

Source of support: Nil, Conflict of interest: None Declared

IRJP is an official publication of Moksha Publishing House. Website: www.mokshaph.com. All rights reserved.