PHARMACOGNOSTICAL AND CLINICAL STUDIES ON WATTAKAKA VOLUBILIS (Linn.f.)

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ABSTRACT: Morphological, anatomical and clinical studies of the leaves of Wattakaka volubilis (Linn.f) were carried out. The taila of this leaf was found to be effective in pyoderma, tinea pedis scabies cuts and wounds and plantar psoriasis.

INTRODUCTION

Wattakaka volubilis (Linn.f) Syn: Dregia volubilis (Linn.f) Marsdenia volubilis Cooke of Asclepiadaceae is a small genus of stout woody twining shrub distributed in India and south East Asia. Only one species is found in India.

Vernacular names:
Sans : Madhumalathi, Hemajeevanti
Hindi : Nakchhikni
Bengali : Titakunga
Tamil : Kodipalai
Telugu : Dudhipaala
Malayalam : Vattakakkodi

Wattakaka volubilis is used in ayurvedic system of medicine for contusions, fresh wounds and even for fractures, Its taila is to be equally effective as Murivenna. A preliminary clinical study was carried out in the regional research institute (CCRAS), Poojappura, Thiruvananthapuram, under the supervision of Dr., N. Gopala Krishna pillai, research officer, The oil was supplied in ointment form prepared by the pharmacist, M.P Rosamma of our unit, the ointment was found to be effective in pyoderma, tinea pedis, scabies, cuts and wounds and plantar psoriasis.

MATERIALS AND METHODS

The fresh leaves of W. volubilis were collected from the plats grown in the botanical garden, Ayurveda research institute, poojappura, Thiruvanathapura. Leaf is the official part of the plant, (Plat I) Hence a detailed pharmacognostic study of the leaf was carried out.

Abbreviations used in the paper are:
Ep - epidermis
Up - upper epidermis
L.ep - lower epidermis
Pal.par - Palisade parenchyma
Crls - crystals
Sp.par - spongy parenchyma
Xy - xylem
Ph - phloem
Col - collenchyma

The taila was prepared as per the pharmacy Pharmacopoeia of he Ayurveda College Thiruvananthapuram for other tailas, the samples were prepared under the
supervision of Dr. S. Vijayalakshmi, research officer (Ayurveda) of our unit. The details of the ingredients are given in Table I.

**External Morphology**

**Habit.** It is a tall woody climber 11 M high and 5 Cm in girth with densely lenticellate and pustular branches. Older branches ash coloured, very long; glabrous often with lenticels and sometimes with black dots, young branches green slender and smooth. Leaves 6.5 – 14 by 4.5-11 cm broadly ovate or sub-orbicular, acuminate glabrous or more or less softly pubescent, reticulately veined and with a few small glands just above the petioles. Base rounded or cordate. Petioles. 1.5-3 cm. long flower numerous green or yellowish green in lateral drooping umbellate gyms, peduncles arising from been the petioles, 2.5-5 c.m. long flower numerous green or yellowish green in lateral drooping umbellate gyms, peduncles arising from between the petioles, 2.5-5 c.m. long slender puberulous pedicles 1 cm – 2.5 cm long, very slender, calyx divided nearly to the base, ovate oblong, obtuse, ciliolate, corolla deeply divided glabrous outside, lobes broadly ovate, obtuse, veined overlapping to the right, corona lobes large, fleshy, the upper free portion rounded on the outer edge obliquely truncate at top and with a small apiculation on the inner edge, which lies against the top of the anther, staminal column arising from the base of the corolla, anther tips membrane broadly ovate oblong obtuse pollen masses oblong attached to the pollen carriers by very short caudicles, style aped domeshaped follicles 7-10 c.m long slightly tapering to a very blunt point rugosely straite glabrous .1 &2.

**Anatomy**

Petiole. T.S of the petiole is almost circular in shape (Plate II, Fig 1) cuticle thin epidermal cells are thin walled and very small, below the epidermis 3-4 layers of collenchymatous cells are observed, these cells are circular to oval, isodiametric with angular thickenings, Inner to the collenchyma is the cortex consisting of thin walled circular to oval parenchymatous cells having distinct intercellular space, some of these cells contain chloroplast several stellate crystals are present in the parenchyma cells, there are one median and two accessory vascular bundles, petioles exhibit a crescentic bicolllaoral Vascular strand. Xylem is located in the centre followed by phloem on both sides surrounding xylem. Xylem strands consists of 2-4 vessels arranged somewhat parallel to each other with protoxylem facing towards the upper surface.

**Mid-rib (plate II, Fig. 2&3)**

T.S of the mid rib shows the following parts. Lower and upper epidermis consists of thin walled, compact oval to oblong cells covered with cuticle, some of the epidermal cells possess simple, unicellular and uniseriate hairs, in the midrib region adjoining and inner to the upper and lower epidermis zones of collenchyma cells, parenchyma lying next to collenchyma consists of thin walled round to oval, or elongated cells with frequent intercellular spaces. Stellate crystals are present in abundance in the cortical portion. The vascular bundle is bicollateral. Xylem strand consists of 2-6 vessels arranged somewhat parallel to each other with protoxylem facing towards the upper side, there is no sclerenchymatous bundle-sheath encircling the vascular bundle.
**Lamina** (Plate II, Fig 4)

T.S of Lamina shows dorsiventral structure with palisade tissue lying towards the upper surface, the palisade cells are two layered near the mid-rib portion and mostly one layered in the lamina portion, palisade tissue is compact and elongated followed by spongy parenchyma with oval to oblong, large thin walled compactly arranged cells the upper and lower epidermis consists of cubical to rectangular thin walled compactly arranged cells covered with thick cuticle stomata are present only on the lower epidermis numerous stellate crystals are present in the mesophyl portion of the lamina also.

**RESULTS AND DISCUSSION**

Morphological and anatomical study of the officinal part of wattakaka volubilis (Linn f) supports the genuineness of the drug taken for the preparation. The preliminary screening of the ointment hemajeevanti was carried out in different dermatological conditions, It is found to be effective in the following conditions.

1. Pyoderma - pooya pitaka
2. Tinea - Vipadika
3. Scabies - Pama
4. Cuts and wounds - Kshata and vrana
5. Plantar psoriasis - Dadru of soles.

A detailed clinical study is going on in the regional research institute (CCRAS), Poojappura, Thiruvananthapuram.
Plate II

Anatomy of the leaf of watakaka volubalis (Linn. f.)

Fig. 1 T.S. of petiole (Diagrammatic sketch)
Fig. 2 T.S. of mid-rib (Diagrammatic sketch)
Fig. 3 Mid-rib (Portion enlarged)
Fig. 4 T.S. of lamina - (portion enlarged)
Fig. 5 Surface view of lower epidermis.
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Table -1
Details of Hemajeevanti ointment

| Sl. No | Ingredients           | Sanskrit Name | Malayalam Name | Quantity               | Parts used |
|--------|-----------------------|---------------|----------------|------------------------|------------|
| 1.     | Wattakaka volubilis   | Hemajeevanti  | Vattakkakkakoti| 1000gms+125gm Kalkum  | Leaf       |
| 2.     |                       |               |                | 1000gm                 |            |
| 3.     |                       |               |                | 200 gm                 |            |

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