

Pharmacognostical Studies of *Cissampelos pareira*

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Cissampelos pareira, which is known as velvet leaf is an important medicinal plant belonging to the family Menispermaceae. The plant is used to treat several diseases like ulcer, leucorrhoea, urinary tract infection and rheumatism. The present study provides pharmacognostical details which will be useful for the identification of the crude drug from its closely related species. Some of the important diagnostic characters of the plant are bicellular covering trichomes which are 360 micron length present in the leaf and stem, anomocytic stomata abundant in the lower surface and stem transverse section shows vascular bundles which are 5-7 in number and arranged in ring.

Key words: *Cissampelos pareira*, Pharmacognostical, Standardization, Microscopical characters.

Menispermaceae, the botanical name for a family of flowering plants, has been universally recognized by taxonomists. It is a medium sized family of 70 genera totalling 420 extant species, mostly of climbing plants. *Cissampelos pareira* is the climbing plants of this family used for various ailments in Ayurvedic system of medicine. *Cissampelos pareria* is used in the treatment of indolent ulcers, diarrhoea, urinary tract infection and for its anti-inflammatory property^{1,2}. Cissamperine, Cissampeloflavone are some of the novel chemical components reported in this plant^{3,4}. Because of its wider usage, an attempt was made to study the pharmacognosy of *Cissampelos pareira*. In this paper a thorough study about the histological characters of the aerial parts of *Cissampelos pareira* were carried out.

MATERIALS AND METHODS

The aerial part of *Cissampelos pareira* was collected from Kalakadu Hills of Tirunelveli District. The material was fixed in the field of fixative mixture which consists of 70% Ethyl alcohol, Acetic acid and Formalin in the ratio of 90ml, 5ml, 5ml respectively. The materials were left in the fixative for a minimum period of 48 hours. Dehydration of the materials was carried out employing tertiary butyl alcohol (TBA) in graded series. Serial microtome sections at 10-12mm thickness were prepared with Rotary Microtome. The sections were stained with Toluidine blue as per the schedule suggested by O. Brien *et al.*, (1964). Sections were photographed under NIKON Labphot – 2 Photographic unit under different magnifications.

Analytical parameters

The various analytical parameters like moisture content, total ash, acid insoluble ash, water soluble ash, water soluble extractive and alcohol soluble extractive were carried out as per the standard procedures^{5,6}.

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RESULTS AND DISCUSSION

Macroscopy

Cissampelos pareira is a climbing shrub which is pubescent in nature. Leaves are peltate with the length of 3.8-10 cm diameter. Flowers are minute and yellowish. Male flowers are in axillary cymes with peduncle 18 mm long. It has

4 sepals which are hairy and obovate to oblong. Petals combined into a cyathiform corolla which is half the length of the sepals. The filaments are longer than the corolla. Female flowers are elongate, solitary or twin, axillary racemes with very short pedicles; bracts foliaceous or nearly sessile and orbicular or reniform. It has 1 sepal which is ovate to oblong. It has 1 petal which is

Table 1. Analytical parameters

S. No	Analytical parameters	Values
1.	Moisture content	10% w/w
2.	Total ash value	7.66% w/w
3.	Acid insoluble ash value	5.33% w/w
4.	Water soluble ash value	3.33% w/w
5.	Water soluble extractive value	12.2 w/w
6.	Alcohol soluble extractive value	8.34 w/w

sub rotund in shape. Fruit is drupe, subglobose, hairy, red, endocarp transversely ridged. The plant is distributed throughout tropical & subtropical India.

Phytochemical tests

Methanolic extracts of the *C. pareira* when subjected to qualitative chemical tests showed the presence of alkaloids, flavonoids, carbohydrates, glycosides, proteins, gums, mucilage, and phytosterols.

Microscopy

TS of young stem

It shows a single layer of epidermis, many cells of which are elongated to form bi-cellular

covering trichomes. The cortex is represented by only 3-5 layers of cells, which are slightly collenchymatous in the outer two layers. Vascular bundles are 5-7 in number and arranged in ring, each is capped by a pericycle and separated by 4-7 cells wide medullary rays, which are parenchymatous and radially elongated, but with age, the outer ray cells and adjoining cortical cells become sclerosed, forming moderately thick walled stone cells. The cells of pericycle gradually become thick walled and lignified in outer 5-7 layers and form sclerenchymatous fibers. The vessels are drum shaped with simple or bordered pits. The central pith is composed of parenchymatous cells which



Fig. 1. Transverse section of the stem *Cissampelos pareira*



Fig. 2. Transverse section of portion of the stem *Cissampelos pareira*



Fig. 3. Transverse section of the leaf
Cissampelos pareira

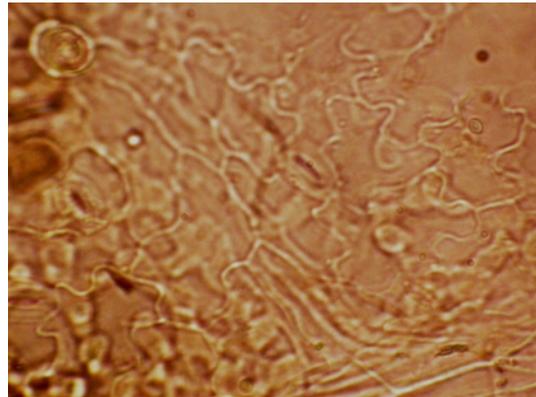


Fig. 4. Lower epidermis showing stomata

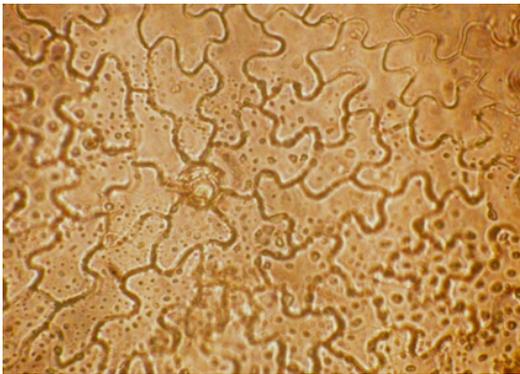


Fig. 5. Upper epidermis with the scar of detached stomata

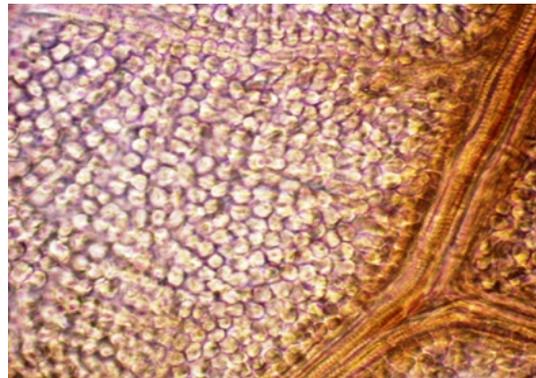


Fig. 6. Palisade cells in surface view from leaf



Fig. 7. Trichomes present in different fields

are more or less isodiametric (Fig. 1 and Fig.2).

Leaf

It is dorsio-ventral. Stomata are of anomocytic type, present on lower surface. Upper surface is practically free from stomata. Epidermal cells have wavy walls. A single layer of palisade is present below upper epidermis. Mesophyll consists of parenchymatous cells. Leaf bears bicellular covering trichomes. The midrib region shows collenchymatous cells beneath both epidermal layers. The central region is occupied by vascular bundle. The phloem is present on dorsal side and radiating medullary traverses these cells (Fig. 3 and Fig. 4).

Trichomes

Trichomes are bicellular with the length upto 360 micron (Fig. 5).

CONCLUSION

The present study on pharmacognostical characters of *Cissampelos pareira* will be useful to supplement information for identification and authentication of the plants.

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