

**International Journal of Pharma and Bio Sciences****PHARMACOGNOSTICAL INVESTIGATION ON *CISSUS QUADRANGULARIS* LINN.****SHAH UNNATI\*<sup>1</sup>**<sup>1</sup>G.H.B. PHARMACY COLLEGE, ANIYAD, GUJARAT.\* *Corresponding author* shahunnati\_3@yahoo.com**ABSTRACT**

*Cissus quadrangularis* Linn. is a succulent plant of family Vitaceae commonly found in tropical and subtropical xeric wood. It is a fleshy, cactus-like liana widely used as a common food item in India. The plant contains calcium oxalate,  $\beta$ -carotene, ascorbic acid,  $\beta$ -sitosterol and 3-ketosteroids, also flavonoids such as quercetin, and kaempferol. The stem contains two unsymmetric tetracyclic tri terpenoids, onocer-7-ene-3 $\alpha$ , 21 $\beta$ -diol and onocer- 7-ene-3 $\beta$ , 21  $\alpha$  -diol, two steroidal principles I and II,  $\delta$ -amyrin,  $\delta$ -amyrone. The plant is prescribed in the ancient Ayurvedic literature as a general tonic and analgesic, with specific bone fracture healing properties. In the present studies pharmacognostic investigation done on basis of macroscopy, microscopy and physicochemical parameters. These findings will be useful towards establishing quality control parameter for the standardization of the drug.

**KEYWORDS***Cissus quadrangularis* Linn., Physicochemical parameter**INTRODUCTION**

*Cissus quadrangularis* L. is a succulent plant of family Vitaceae commonly known as Asthisamhari found in tropical and subtropical xeric wood. It can be found throughout the hotter parts of India alongside hedges, neighboring countries like Pakistan, Bangladesh, Shrilanka and Malaysia. It can be cultivated in plains coastal areas, jungles and wastelands up to 500m elevation. Plant is propagated using cuttings. The stem juice of plant is used to treat scurvy, menstrual disorders, otorrhoea and epistaxis<sup>1</sup>. The plant has been documented in Ayurveda for the

treatment of osteoarthritis, rheumatoid arthritis and osteoporosis<sup>5, 8</sup>. A paste of stem is given in asthma, burns and wounds, bites of poisonous insects and for saddle sores of horses and camels<sup>1, 7</sup>.

**MATERIALS AND METHODS**

The plant, *Cissus quadrangularis* Linn. was collected from Anand Agriculture University campus, Anand, Gujarat, India and authenticated by Dr A. S. Reddy, B. R. Doshi School of Biosciences, Sardar Patel University, Vallabh Vidhyanagar, Gujarat, India, (Plant specimen No. PHPL/HB/003). A voucher

specimen was deposited at the department of Pharmacognosy, R. C. Patel Institute of Pharmaceutical Education and Research, Shirpur for future reference. The drug was subjected to macroscopic studies, microscopic studies and physicochemical parameters<sup>6</sup>.

## RESULTS

The fresh plant is green in color which on drying shows buff color with greenish ting. The odor is characteristic with acrid taste. The surface of fresh plant material is smooth and glabrous to touch. Fresh stems are thick, fleshy, quadrangular with acutely 4 winged internodes whereas leaves are simple, opposed, thick coriaceous, ovate or reniform, highly coiled.

Transverse section of stem showed squarish outline with prominent projection at each annular point. Epidermis is single layered, covered externally with thick cuticle. The epidermal cells are thin walled rectangular and

tangentially elongated, followed by 2-3 layers of cork. The cortex is composed of 8-16 layers of thin walled, circular to oval parenchymatous cells; four patches of collenchymatous cells present in all the four angular points embedded in cortical region like an umbrella arching over large vascular bundles. The cortical cells are filled with brown-red contents. The endodermis is not distinct and stele consists of a large number of vascular bundles varying in size, in each angular region, below collenchymatous patch, while rest of bundles smaller in size. Vascular bundles are collateral and open type, capped by sclerenchymatous sheath, which is well developed in larger bundles. The cambium and interfascicular cambium are quite distinct; central region occupied by wide pith composed of thin walled, circular to oval parenchymatous cells. Idioblasts containing raphides and acicular crystals of calcium oxalate present in the outer region of cortex and in number of cells throughout the region.

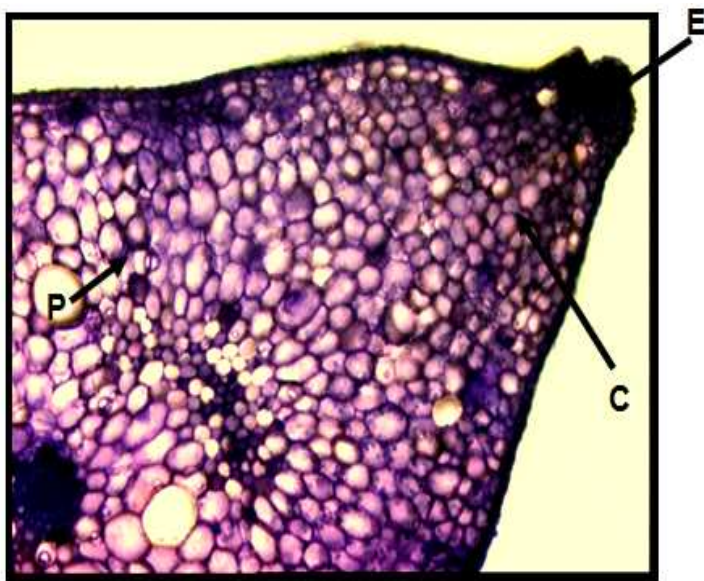


Figure 1.



Figure 2.

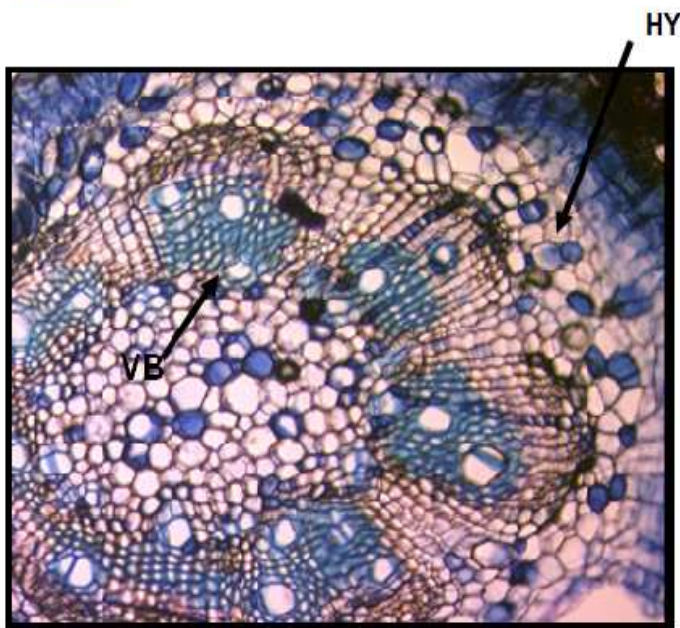


Figure 3.

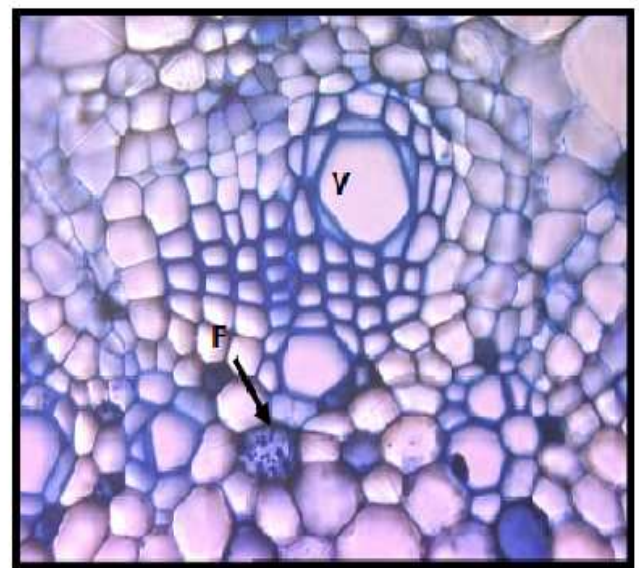


Figure 4.

Figure 1. Transverse section of stem showing epidermis (E) with thick cuticle and prominent projection at each annular point, cortex parenchyma (P) and Collenchymatous patch (C)

Figure 2. Transverse section of stem showing vascular bundle (VB) with pericyclic bast fibers (BF)

Figure 3. Transverse section of root showing primary growth of vascular bundles (VB) and hypodermal cells (HY)

Figure 4. Transverse section of root showing lignified vessels (V) and fibers (F)



The results of physicochemical parameters were tabulated in Table no 1 and 2.

**Table 1.**

***Physicochemical parameters***

Sample	Foreign matter (%w/w)	Ash value (%w/w)	Acid insoluble ash value (%w/w)	Water soluble ash value (%w/w)
Drug material	1.14	14.160±0.107	1.200±0.012	3.567±0.426

**Table 2.**

***Physicochemical parameters***

Sample	Water soluble extractive value (%w/w)	Alcohol soluble extractive value (%w/w)	Moisture content (%w/w)
Drug material	32.940±0.005	10.380±0.011	06.340±0.663

## DISCUSSIONS

The macroscopic as well as microscopic studies of any drug material are the preliminary steps for establishing the botanical parameters prior to any kind of study. As per WHO guidelines, botanical standards are to be proposed as a protocol for the diagnosis of the herbal drug. The quantitative determinations of some physicochemical parameters are useful for setting standards for crude drugs. The physical constant evaluation is an important parameter in detecting adulteration or improper handling of the drug. Since the plant *Cissus quadrangularis* Linn is useful in the traditional system of medicine in

treatment of various diseases, it is important to standardize it for use as a drug. The macroscopic studies, microscopic studies and physicochemical parameters reported in this work could be useful for the compilation of a suitable monograph for its proper identification.

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