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Der Pharmacia Lettre, 2013, 5 (5):271-275
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Pharmacognosy and preliminary phytochemical screening of *Ampelocissus Latifolia* (ROXB.) ROOT

Jitendra G. Patel^{1*}, Natvarlal M. Patel², Amit A. Patel², Amish J. Patel², Sohan a. Patel²

¹Research Scholar Hemchandracharya North Gujarat University, Patan

²Shri B M Shah College of Pharmaceutical Education & Research, Modasa, Gujarat

ABSTRACT

Ampelocissus latifolia (fam. Vitaceae), is climber with annual stems found throughout in India. Traditionally root finds use in skin disease, fracture, as a tonic, for wound healing, diuretic, in eye disease, gonorrhoea, syphillis, menstrual troubles, rheumatic affection. In present study freshly collected root of *Ampelocissus latifolia* (Roxb.) were subjected to morphological and microscopical study and dried powder of *Ampelocissus latifolia* (Roxb.) root was subjected to powder histology and preliminary phytochemical study. All extracts are subjected to general chemical test for different phytoconstituents. The results indicate that root contains saponins, flavonoids, carbohydrates and phenolic compounds etc.

Key words: *Ampelocissus latifolia*, Roots, Morphology, Microscopy, Successive solvent extraction, Phytochemical screening.

INTRODUCTION

Ampelocissus latifolia (fam. Vitaceae), is climber with annual stems found mainly in sub-Himalaya tract from sutlej eastwards to Kumaon up to 4000 ft., Aasam, Konkan, W. ghats from bombay to Nilgiris and Anamallis Deccan, and throughout in india. *A. latifolia* in ayurveda reported to be used as Kustha, Kamala, Sotha, and Vrana^[1]. Traditionally plant is used for Wound healing^[2]. The stem bark is used in stomach Pain^[3]. Stem is used in bone fracture^[4]. Root finds use in skin disease^{[3], [4], [5], [6]}. Roots are used in fracture and as a tonic^{[2], [7]}. Root is used in menstrual troubles^[8]. Root is used for wound healing^[9]. Root is used as diuretic and in eye disease^[10]. Root is used in gonorrhoea, syphillis^[11]. Root used in rheumatic affection^[12].

MATERIALS AND METHODS

Collection and Authentication of plant:

Fresh & fully grown plants of *Ampelocissus latifolia* collected in month of August, 2011 from the near places of Modasa city, Sabarkantha, Gujarat, India. It was authenticated by Dr. H. B. Singh Scientist and Head of Raw Materials Herbarium & Museum Dept of National Institute of Science and Communication and Information Resources, New Delhi (NISCAIR). The herbarium of this plant is deposited (voucher specimen no. BMCPEP/HNGU/11-12), in Dept. of Pharmacognosy, Shri B. M. Shah College of Pharmaceutical Education and Research, Modasa

Preparation of samples:

Fresh roots were used for Pharmacognostical studies. The roots were and separated from leaf and stem and dried under shade. Roots were powdered to 60# separately and stored in airtight containers and used for phytochemical and pharmacological studies.

Pharmacognostical studies:

Macroscopic evaluation of the fresh root of *Ampelocissus latifolia* was studied. Microscopic evaluation of the root was carried out & the transverse section of the root was taken and unstained, stained (Phloroglucinol+HCL), and Iodine stained slides were prepared. Various elements of section were observed under the microscope for further confirmation and identification of the plant. Further, the histological examination of the clear powder mounts of the root was carried out using reported method.

Preliminary Phytochemical Screening ^[13]**Successive solvent extraction:**

10g of the air-dried powdered root of *A. latifolia* was successively extracted with the following solvents of increasing polarity in a soxhlet apparatus.

- a) Petroleum ether (60° - 80°c)
- b) Benzene
- c) Chloroform
- d) Acetone
- e) Methanol
- e) Water

All the extracts were concentrated by distilling the solvents and the extracts were dried in an oven at 50°C. Each time before extracting with the next solvent, the marc was dried in an air oven below at 50°C. The marc was finally macerated with water for 24 hours to obtain the aqueous extract. The completion of the extraction was confirmed by evaporating a few drops of extract from the thimble on watch glass to observe that no residue remained after evaporation of the solvent. The liquid extracts obtained with different solvents were collected. The consistency, color, appearance of the extracts and their percentage yield were noted.

Chemical tests:

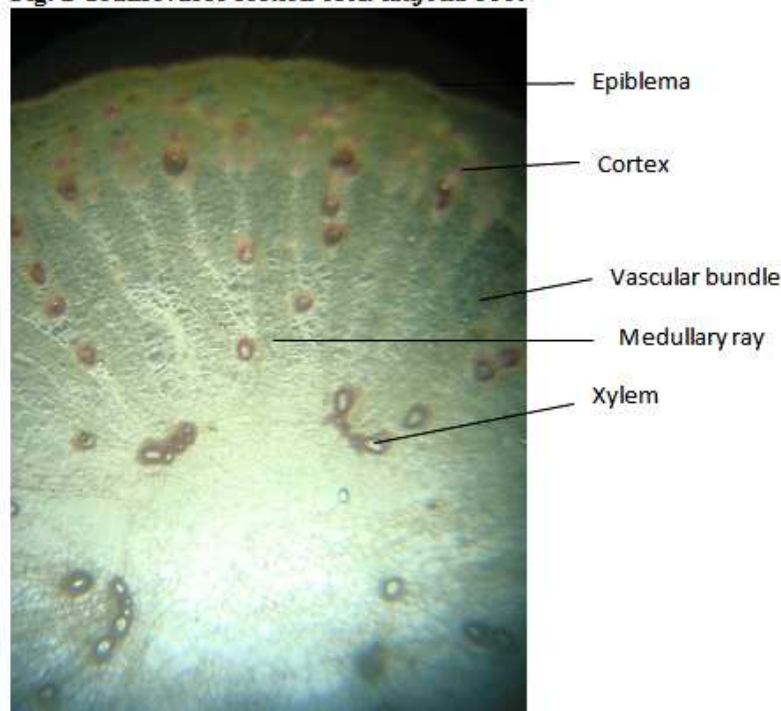
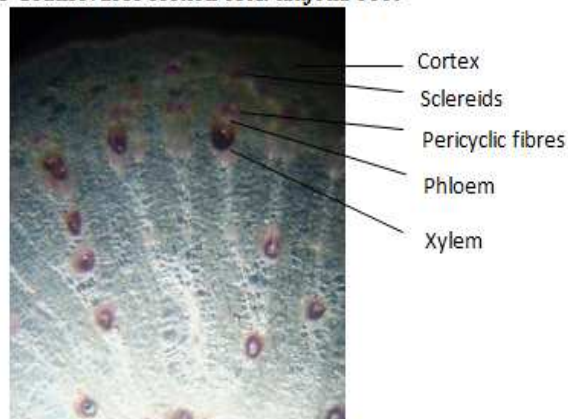
The extracts were then subjected to various qualitative test using reported methods to determine the presence of various phytoconstituents such as alkaloids, glycosides, flavanoids, carbohydrates, aminoacids, saponins, sterols, terpenoids, cardiac glycosides, coumarins, carotenoids, tannins, phenolic compounds, fixed oils and fats.

RESULTS AND DISCUSSION**Pharmacognostic study:****Morphology:**

Roots are arising adventitiously from root stock. Roots found fasciculated with many tuberous roots in cluster having irregular shape, 7 to 15 cm in length and 1.5 to 4 cm in diameter. Roots are tapering at both the end with bulging in middle. Roots are reddish brown in colour and having no any characteristics taste. Dried roots are having scaly skin. (Fig. 1)

Fig. 1 *A. latifolia* root



Fig. 2 Transeverse section of *A. latifolia* root**Fig. 3** Transeverse section of *A. latifolia* root**Microscopy:**

Transverse section of *A. latifolia* root found circular in outline. Root contains following elements: **(Fig. 2 & Fig. 3)**

Epiblema: Single layer of compactly arranged parenchymatous cells having numerous root hairs.

Exodermis: Exodermis is not distinct in *A. latifolia* root T.S.

Cortex: Cortex contains 8-10 layers of parenchymatous cells. Sclereids are present in cortex.

Pericycle: Pericycle is not distinct but Pericyclic fibres are present.

Endodermis: Endodermis is not distinct.

Vascular bundle: Vascular bundle found to contains xylem and phloem. It also contains 6 to 10 seriate medullary ray.

- ❖ Unstained section of root reveals the presence of acicular and Spharophide calcium oxalate crystals.
- ❖ Transeverse section of *A. latifolia* stained with Iodine solution shows presence of starch grain throughout the section. **(Fig. 4)**

Fig. 4 Transverse Section of *A. latifolia* root stained with Iodine solution

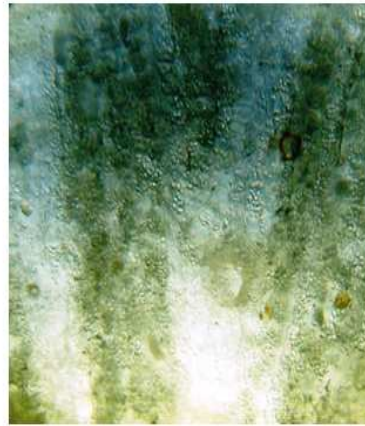
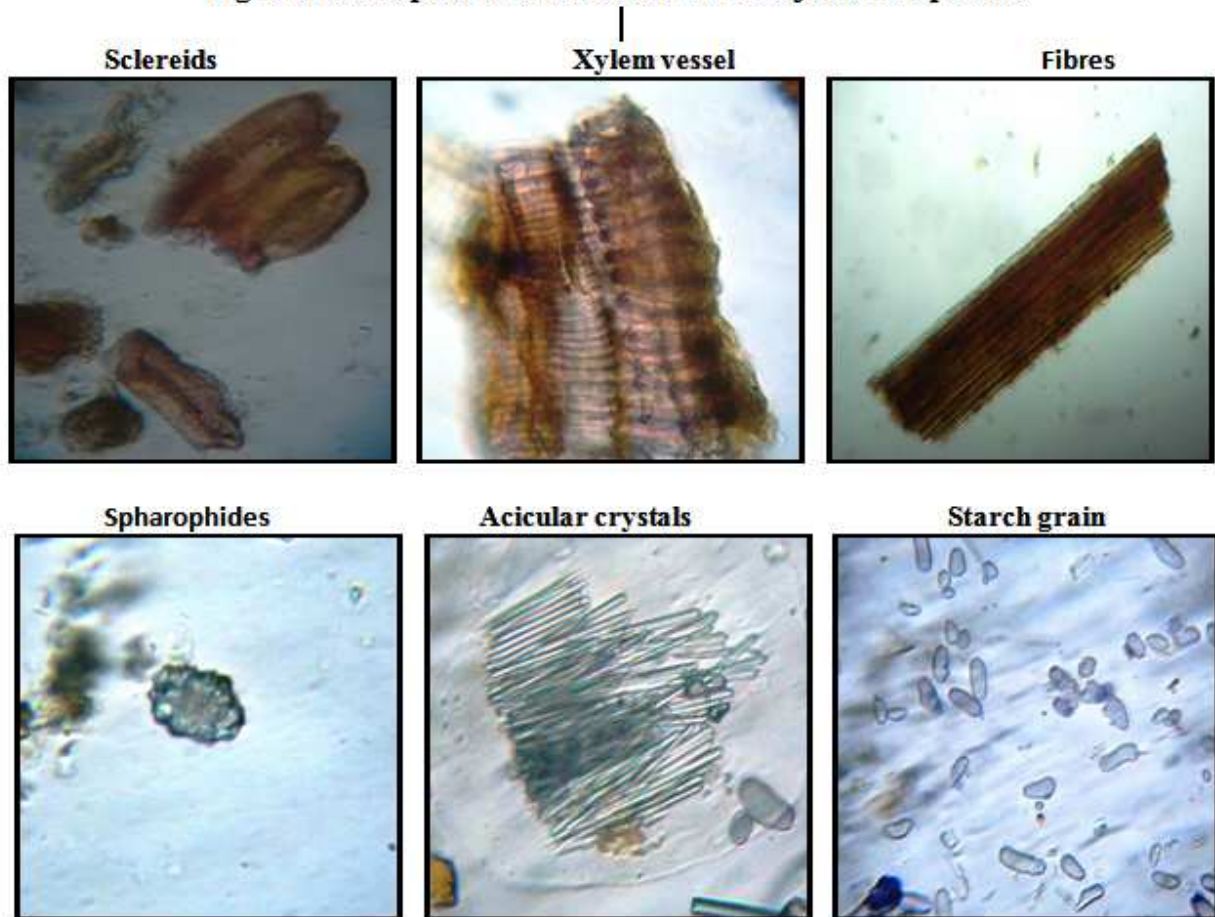


Fig. 5 Microscopical characteristics of *A. latifolia* root powder



Powder characteristics:

Powdered root of *A. latifolia* was subjected to microscopical study. Stained , unstained and Iodine stained preparation are observed under microscope, Which reveals presence of following characteristics.(Fig. 5)

Sclereids: may be present single or in group of two or many and stained with pink colour.

Xylem vessel: spiral xylem vessels are present.

Fibres: pink coloured bunch of fibres are present.

Calcium oxalate: Root powder contain Spharophide and Acicular type of calcium oxalate crystal.

Starch grains: Root also contains plenty of starch grains.

Preliminary Phytochemical screening

The Phytochemical Screening revealed the presence of **Saponins, flavonoids** and **Reducing sugar** in methanolic and water extract of root. The results of phytochemical screening are given in **Tab. 1**.

Table 1: Microchemical tests of the Root extract

Tests/ Reagents	Tests For	Nature of Changes	Root
Salkowski test	Steroids and triterpenoids	-	-
Dragendorff's reagent	Alkaloids	-	-
Wagner's reagent Orange	Alkaloids	-	-
Shinoda tests	Flavonoids	Pink Color	+
Benedict reagent	Reducing sugars	-	+
Fehling reagent	Reducing sugars	-	+
10% aq. potassium dichromate sol.	Tannins	-	-
10% aqueous lead acetate solution	Tannins	-	-
5% aqueous ferric chloride solution	Tannins	-	-
Foam Test	Saponins	Persistent froth	+
Haemolytic test	Saponins	Haemolytic zone	+
Borntrager test	Anthraquinones	-	-

+ = Present, - = Absent

CONCLUSION

From the above investigation is quite clear that *A. latifolia* root contains saponins, flavonoids and starch. Microscopy of *A. latifolia* suggest that roots can easily identified and standardized by presence of Sclereids, spiral xylem vessels, fibres, calcium oxalate crystals and starch grains.

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