

## Research Article

# Pharmacognostical Studies on *Ficus elastica* Roxb. Root

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### ABSTRACT

*Ficus elastica* Roxb. or Rubber Plant is a very common and famous species of Genus *Ficus*. Literature survey has revealed little information on the plant in every aspect. So, an attempt has been made to study the pharmacognostical properties of this plant.

Keywords:

### INTRODUCTION

*Ficus elastica* Roxb. is a large, handsome, evergreen and most important indigenous rubber tree of India, occurs in the outer Himalayas from Nepal eastwards to Assam and Khasi Hills, propagated either by seeds or by cuttings and layers<sup>1</sup>. The plant contains a flavonoid, which exhibits anti-inflammatory activity comparable to indomethacin. A coumarin 'Bergapten', a terpenoid ' $\alpha$ -Amyrin' were isolated from the latex<sup>2</sup> and polyprenols are reported from the leaf<sup>4</sup>. Ethanolic extract of aerial parts exhibited diuretic properties<sup>5</sup>.

### MATERIALS AND METHODS

The roots of plant were collected from Patti, Tarantaran, Punjab in July 2005. It was authenticated by Professor P. Jayaraman, Scientist, PARC, Medicinal Plant Research Unit, Chennai. A voucher specimen (No. VFE/10) has been retained in the Pharmacognosy Laboratory, Department of Pharmaceutical Sciences, Gutu Jambheshwar University of Science and Technology, Hisar (India) for future reference.

Table – 1: Ash Values and Extractive Values

Parameter	Result (% w/w)
<b>Ash Values</b>	
Total ash	16.46
Acid insoluble ash	10.0
Water soluble ash	2.33
Sulphated ash	14.94
<b>Extractive Values</b>	
Ethyl acetate	2.51
Chloroform	2.71
Benzene	2.2
Alcohol soluble	3.0
Water soluble	5.5

### Pharmacognostical Studies<sup>6</sup>

In Pharmacognostical studies<sup>6</sup> the morphological studies were performed to determine the color, shape, size, odour, taste, fracture etc. of the plant specimen.

In microscopy<sup>7-9</sup>, anatomy (T.S.) and powder characteristics of the root were studied. One of the plant specimen was selected, different organs were cut and removed from the plant and fixed in a mixture FAA including Formalin (5ml),

Acetic acid (5 ml) and 70% Ethyl alcohol (90ml). Photographs of different magnifications were taken with Nikon Labphot 2 microscopic unit. Bright field was used for normal observation and polarized light was employed for the study of crystals, starch grains and lignified cells.

Ash values and solvent extractive values were determined in accordance with Khandelwal<sup>10</sup> and Indian Pharmacopoeia<sup>11</sup>.

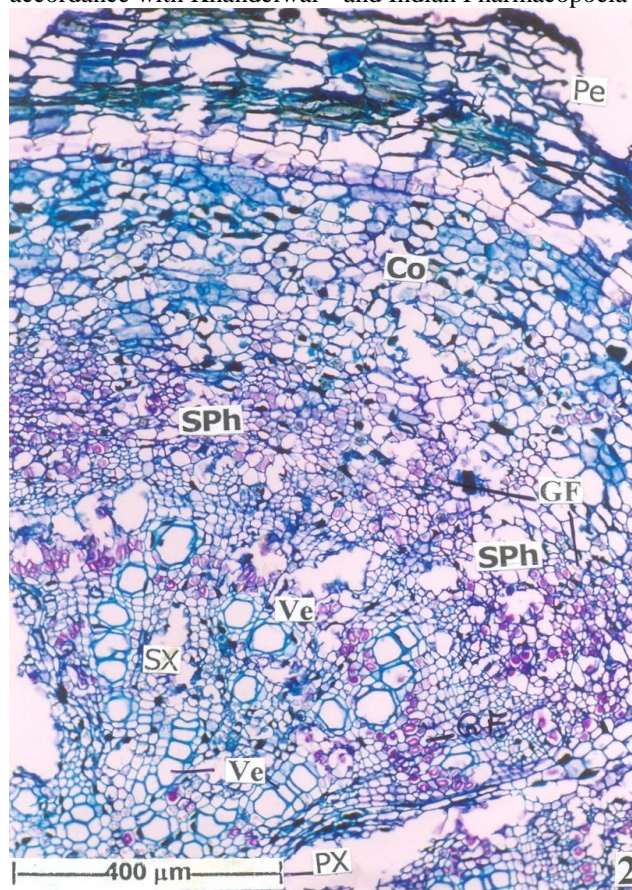


Figure 1. T.S. of *Ficus elastica* Roxb. root

[Pe – Periderm, Co – Cortex, SPh – Secondary Phloem, GF – Gelatinous fibres, Ve – vessels, PX – Primary xylem, SX – Secondary xylem]



**Figure 2. Powder characteristics of *Ficus elastica* Roxb. root**

[Pe – Periderm, XF – Xylem fibres, VE – Vessel]

## RESULTS AND DISCUSSION

Anatomy of the root with diameter (2 mm) revealed a broad, irregularly fissured periderm (250 µm in width), fairly broad cortex (Fig. 1). The periderm had outer broken phellem cells, middle thick walled, phelloid cells and inner intact cells. The cortex consisted of small, thin walled compact parenchyma cells. The cortical zone was nearly 300 µm wide. Secondary phloem consisted scattered gelatinous fibres, ray cells and sieve elements and secondary xylem consisted sparsely distributed, angular, thin walled, solitary or radial multiples of vessels. The ground tissue of the xylem consisted of thin walled, lignified fibres as well as gelatinous fibres.

In powder microscopy, narrow, cylindrical, vessel elements (200-400µm in length), libriform (1.7 mm long) and wide (1.2 mm long) fibres, small masses of thin walled polygonal periderm cells and bundles of xylem parenchyma cells were also seen (Fig. 2.).

Controlled incineration of crude drugs results in an ash residue consisting of an inorganic material (metallic salts and silica). This value varies within fairly wide limit and is therefore an important parameter for the purpose of evaluation of crude drugs<sup>12</sup>. Extractive values determine the estimation of specific constituents, soluble in that particular solvent used for extraction<sup>9</sup>. Ash values and extractive values are reported in Table 1.

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