

ADAPTATION TO THE HABITAT AND LEAF ANATOMY OF ORNAMENTAL, MEDICINAL SPECIES OF VINCA

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Abstract: The article provides information on the ecology and anatomy of the sheet *Vinca erecta* Regel. E.t Schmalh and *Vinca minor*. They purify the soil from heavy metals by accumulating them in the leaves, these types are promising for optimizing the urban environment.

Key words: *Vinca erecta* Regel. E.t Schmalh, *Vinca minor*, epidermis, mesophyll, xylem, phloem, sheet.

In the current era of globalization, the Republic attaches great importance to the biological improvement of the environment and laws are being adopted. Decree of the President of the Republic of Uzbekistan № 4947 of February 7, 2017 on the implementation of measures to further develop the pharmaceutical industry, improve the provision of the population and medical institutions with cheap, quality drugs in five priority areas of development of the Republic of Uzbekistan in 2017-2021 and the need to prevent environmental problems that harm the environment, public health and gene pool.

Given these vital issues, the use of promising evergreen plants to improve the city's environment is a pressing issue today. Our scientific observations are devoted to the study of the anatomy of leaves, which are always green all year round, give people a good psychological mood, and are used as a lawn. Scientific observations were conducted in 2018 on the experimental site of the Department of Ecology in the Botanical Garden of the National University of Uzbekistan. *Vinca* is a perennial herbaceous plant that stores strong alkaloids (vinorelbine, vincristine, vinorelbine, vinorelbine, vincristine and vincristine) in the above-ground and underground organs and is used in medicine in the treatment of neurological and vascular diseases. [1,2].

For the study, upright (*Vinca erecta* Regel. yet Schmalh.) and small *Vinca* (*Vinca minor* L.) species were taken from the *Vinca* family species (Apocynaceae).

The purpose of the work

The purpose is to study the morphological and anatomical structure of the leaves of the genus *Borigul* and to determine their adaptability to living conditions.

Vinca erecta is an endemic plant in the mountainous regions of Central Asia. The stem of *Vinca erecta* grows upright and does not branch. Length 15-35 cm, diameter 0.1-0.4 cm. The leaves are simple lanceolate or ovoid, without bands, opposite the stem, whole, uncut at the edges, 5.5-6 cm long and 2.5-3 cm wide.

The leaves of the *Vinca erecta* plant are covered with cuticle and epidermal tissue on the upper and lower sides. The cells of the upper epidermis are larger than those of the lower ones. There are no gaps in the upper epidermis. The cells of the lower epidermis have a large number of mouthparts, and the mouthparts are of the parasitic type (Figures 1 a, b).

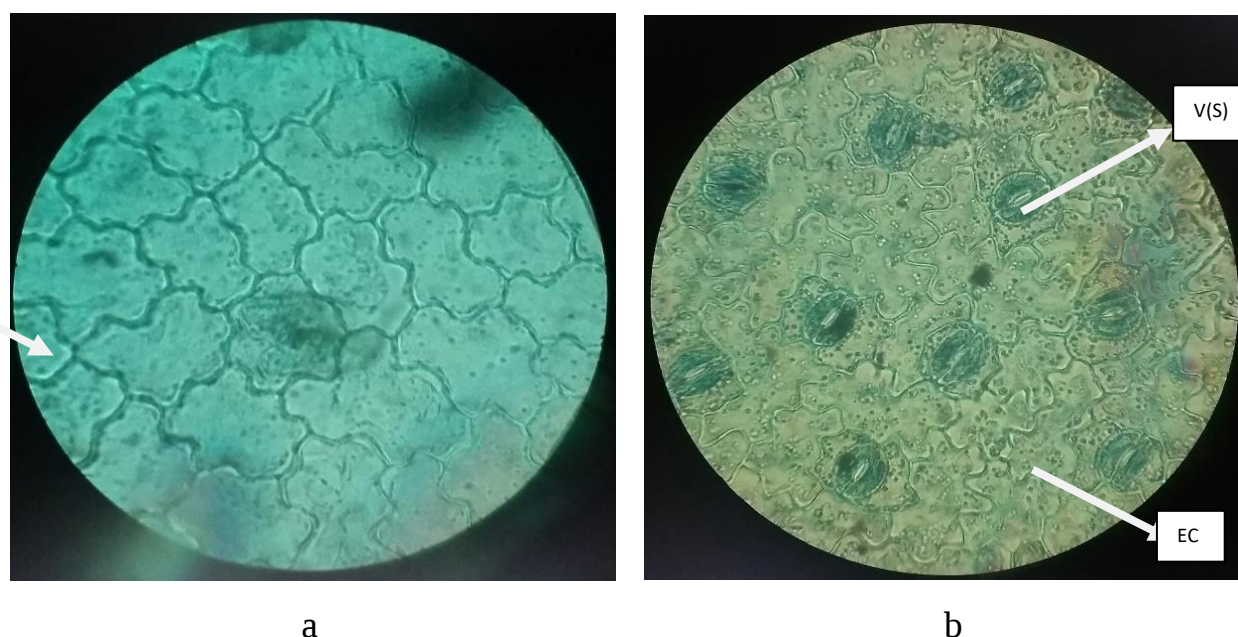


Figure 1. The structure of the upper (a) and lower (b) epidermal tissue of the *Vinca erecta* leaf (40x7).

V - verbally (space).

EC - epidermal cells.

Vinca erecta is a mesophilic dorsoveitral type of leaf with two rows of columnar cells at the base of the upper epidermal tissue of the leaf and 6-7 rows of porous (cloudy) tissue cells with wide cell spaces beneath them. (Figure 2 a, b).

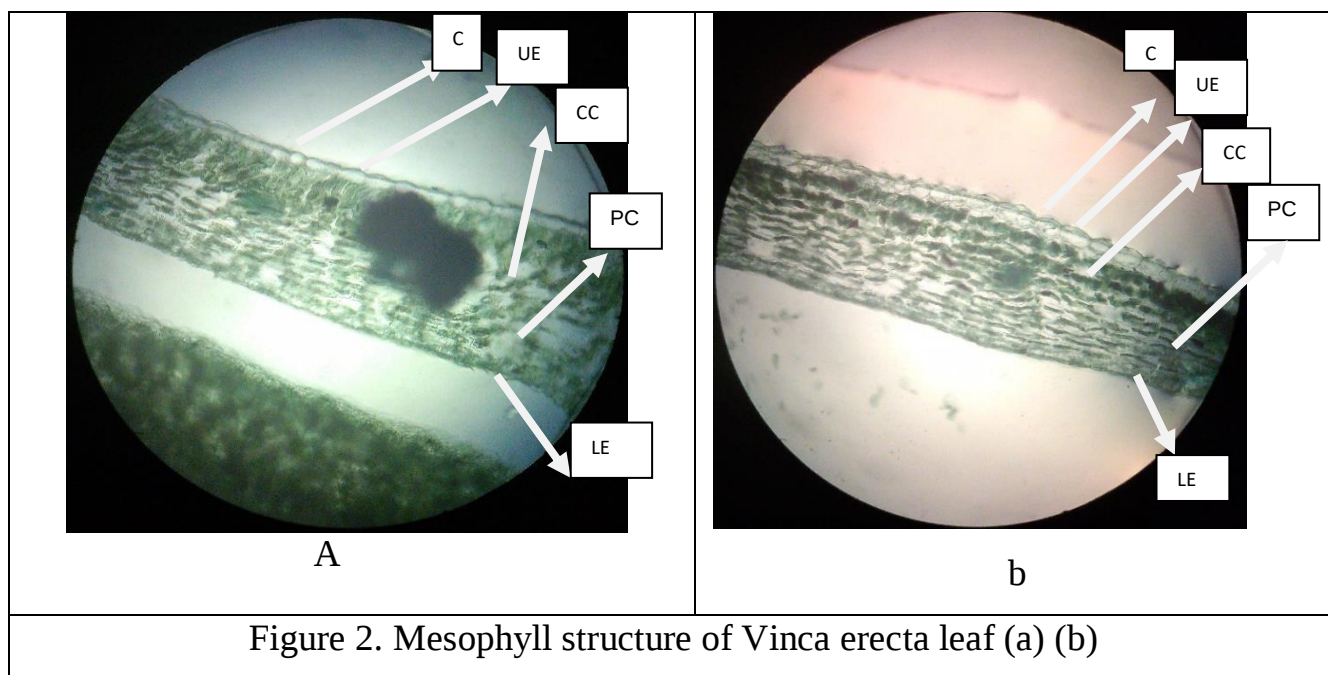


Figure 2. Mesophyll structure of *Vinca erecta* leaf (a) (b)

C - cuticle.

UE - upper epidermis.

CC - columnar cells.

PC - porous cells.

LE - lower epidermis.

The main roots of the leaves protrude from the top and bottom of the leaf. The cells of the upper epidermis in this protruding area have normal single-celled short hairs. The conduction system of the main artery consists of a single collateral ligament. The bundle is composed of xylem tubes and phloem tissue, which form numerous chain rows, and the bundle is surrounded by a thickened mechanical tissue on the upper and lower sides (located at the base of the epidermal tissue). (Figure 3).

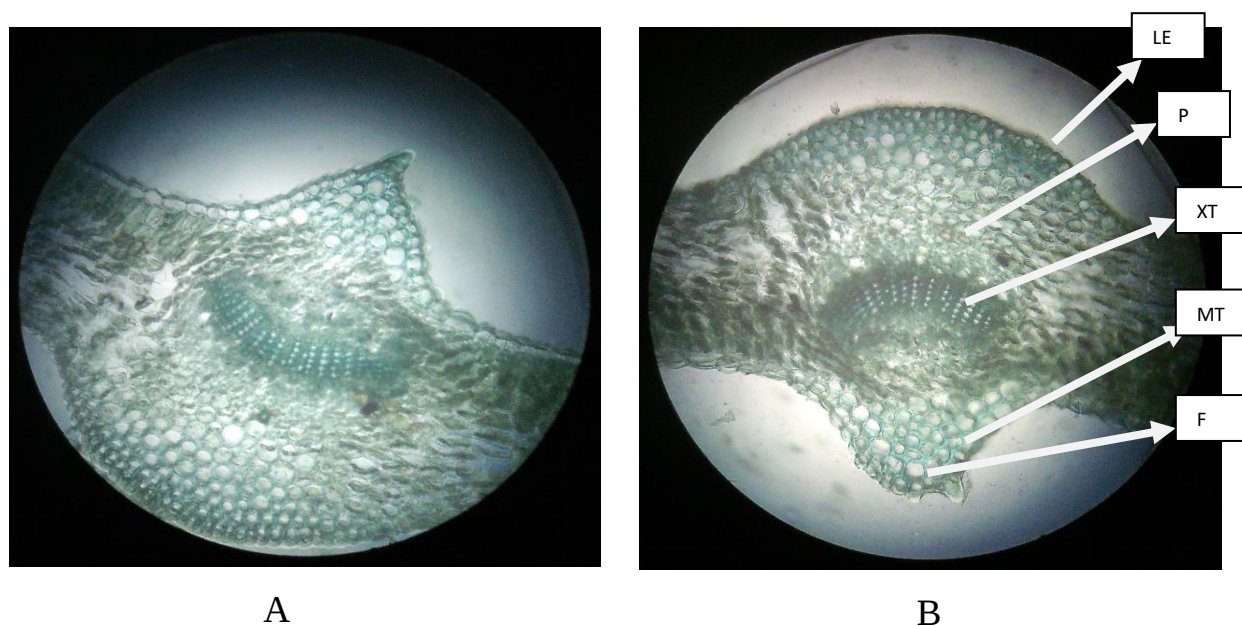


Figure 3 The structure of the main vein of the *Vinca erecta* leaf.

F - feathers.

MT - mechanical tissue

XT - xylem tubes

P - phloem

LE - lower epidermis

Vinca minor is an evergreen, rhizome, polycarpic (annual flowering and fruiting) semi-shrub plant, the aboveground part of the plant consists of two types of generative and vegetative stems. Generative branches grow short, vertically, 30-35 cm long. Vegetative branches are long, spaced, grow horizontally, branched, 100-150 cm long. The leaves are simple elliptical, sharply pointed, entire, glossy, thick, green on the upper side, gray on the lower side, 3-5 cm long, 1.5-2.5 cm wide, short-banded, opposite the stem.

Vinca minor is a plant that grows mainly in shady places and can also be found in open sun. The leaves of *Vinca minor* are covered with a thick cuticle and a single layer of epidermal tissue on the upper and lower sides. The shells of the cells of the upper epidermis are curved and the mouthparts are absent. The shells of the cells of the lower epidermis are strongly curved and have a large number of openings. The mouthparts are of the pasit type (Fig. 4 a, b).

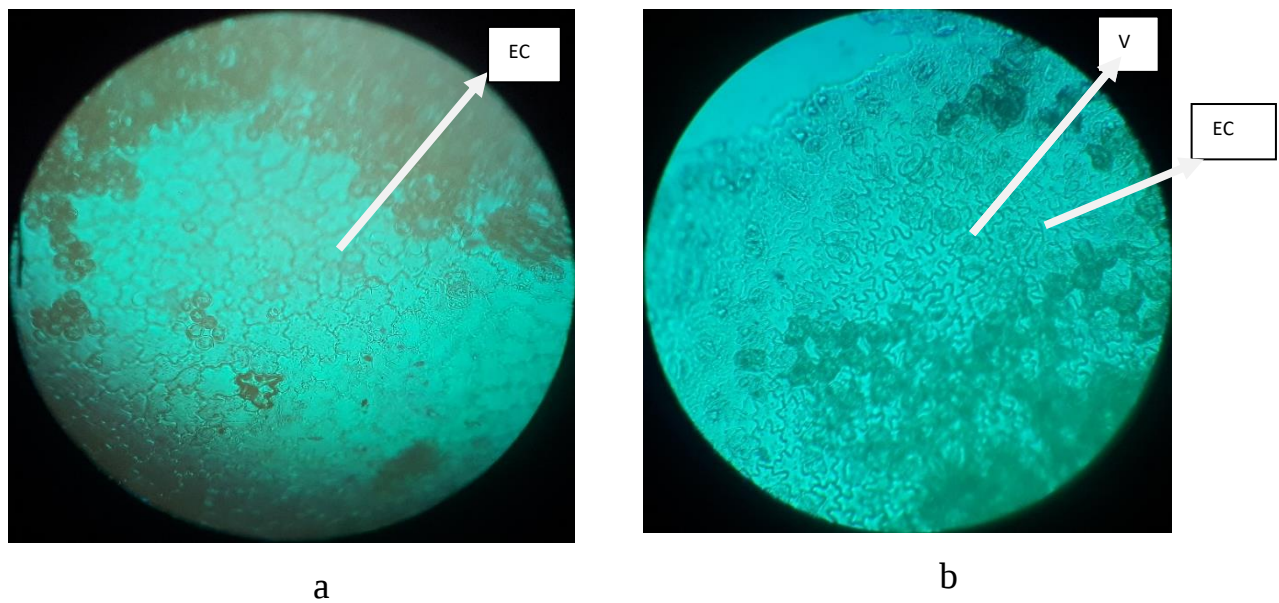


Figure 4. Cells of the upper (a) and lower epidermis (b) of the Vinca minor leaf.

V – verbally (space)

EC - epidermal cells

The leaf is of the mesophilic dorsoventral type and consists of porous tissue cells with 2-3 rows of columnar and 6-8 rows of wide cell spaces (Fig. 5 a, b).

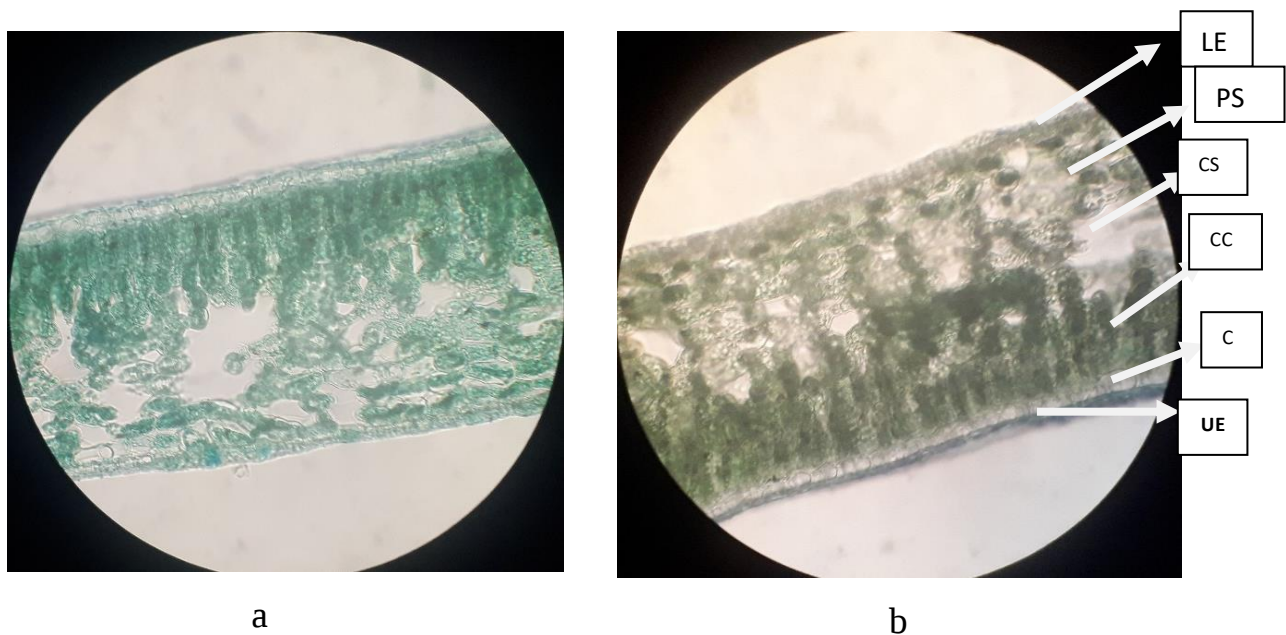


Figure 5. The mesophyll structure of the Vinca minor leaf (a) (b).

C - cuticle

UE - upper epidermis

CC - columnar cells

CS- the cell space

PS - porous cells

LE - the lower epidermis

The main middle root of the leaves protrudes from the upper and lower sides of the leaf. The conduction system of the main artery consists of a network of numerous xylem tubes and phloem tissue. The ligament is of the callateral type and is surrounded by mechanical tissue with thickened cell membranes at the top and bottom (Fig. 6).

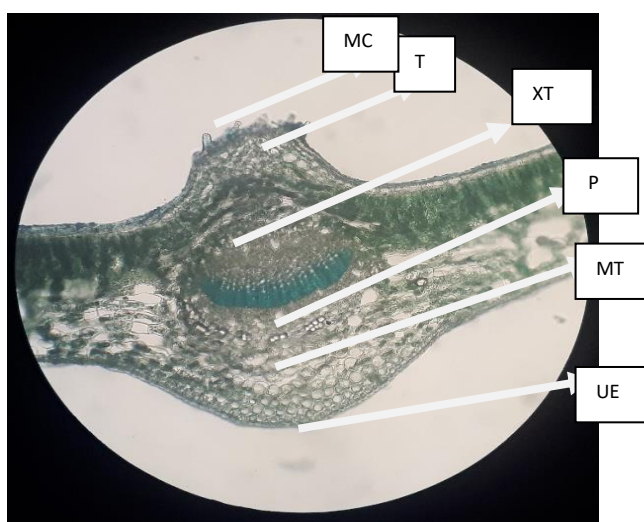


Figure 6. The structure of the main middle vein of the Vinca minor leaf.

UE - upper epidermis

MT-mechanical tissue

CC - columnar cells

XT - xylem tubes

P- phloem

MC-mechanical cell

LE - the lower epidermis.

Habitat adaptation features: strong curvature of the shells of leaf epidermis cells surrounded by thick cuticles, absence of pores in the upper epidermis, the presence of numerous pores in the lower epidermis, dense location of columnar cells in the leaf mesophyll, the presence of wide cell spaces in the porous tissue, the mechanical tissue

surrounding the upper and lower sides of the main vein of the leaf, the accumulation of large amounts of dust and heavy substances in the mesophyll tissue. These studied species are promising in optimizing the ecological condition of the environment, particularly: in cleaning the soil and air from waste, and it is advisable to plant them around newly built houses as lawns in the urban environment. Due to their medicinal properties, they are recommended for the preparation of medicines in a clean environment, which plays an essential role in protecting human health.

References:

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