



ANATOMICAL AND MORPHOLOGICAL STRUCTURE OF THE LEAF OF SOME SPECIES OF SCUTELLARIA DISTRIBUTION IN THE FERGHANA VALLEY

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ABSTRACT

The article presents information about the anatomical and morphological structure of the leaves of groups of *S. comosa* species distributed in various geographical areas.

KEYWORDS: species, genus, polymorph, range, leaf, flora, epidermis, stomata, anamocyte, anisocytosis, mesophyll, dorsoventral.

INTRODUCTION

There is uncertainty in the taxonomy of the cosmopolitan and polymorphic species of *Scutellaria*. The literature sources indicate a different number of species from 200-350. In particular, this applies to species distributed in the Pamir-Alai mountain ranges. In the literature available to us, we did not find information on the anatomical structure of species of the genus *Scutellaria*. We believe that the study of the anatomical and morphological structure of *S.comosa* plant groups belonging to the genus *Scutellaria*, common in the Ferghana Valley in different places, is considered one of the topical issues of our time.

Some species of *Scutellaria* plants have long been used in folk medicine to lower blood pressure. According to A.Paton (1990), 53 species described by Yuzepchuk (1954) are equivalent to *Scutellaria orientalis*. Edmonson (1982) studied *Scutellaria orientalis*, distributed in Turkey, and included it in 1 species and 16 subspecies. The complexity of the taxonomy of this genus lies in the fact that different authors give different names to one species.

That is, these species are called differently depending on the region and locality where they are common.

For example, in the flora of Turkey, this species is called *Scutellaria orientalis*, and in the flora of Iran, the same species is called *S. pinnatifida*. However, according to Poton, the signs of both are the same.

However, we did not find any information about the anatomical structure of the species. The article provides information about the anatomical and morphological features of the structure of the leaves of *Scutellaria comosa* species, common in different geographical zones of the Ferghana Valley, and tried to find additional diagnostic features in them.

MATERIALS AND METHODS

In the course of the work, 5 groups of plants belonging to the *Scutellaria comosa* species collected from the Fergana hills and (Kurama, Chotkal) mountains, Khoji-ota mountains

and Imam-ota hills in Khojabad district of Andijan region, and Koyquloq hills in Pakhtabad district were studied.

From these studies we studied the structure of the leaves. Leaves of naturally growing species were fixed in 65-70 % ethanol.

The leaves taken from the herbarium were first held in boiling water steam, and after 5-10 minutes they were placed in warm water. 1 mm² samples were taken from the middle part of the leaves in fixed and warm water and the upper and lower epidermis were cut from them with a sharp knife or razor. Then temporary preparations (with glycerin) were prepared from them. In addition, cross-sections were made from these samples with a razor, these sections were kept in a not very dark aqueous solution of safronin dye for 2-5 minutes, and in order to clarify the color, sour water was washed with 1-2 drops of alcohol, and temporary preparations were prepared with glycerin. .

In order to study the anatomical structure of the leaf, a preparation was prepared by taking 3-5 sections from each plant, from their middle part using a razor.

In the epidermis of the leaf, the number of cells, mouths, and hairs in the area of 1 mm² was counted, their types and length, and then the shape of the epidermal cells was studied. The upper and lower epidermis of the leaf was macerated with the help of a razor, and the epidermis of other organs was macerated using (shul'se compound) (shul'se concentrated N acid with Bertoli's salt). Preparations prepared from plant leaves were analyzed using Carl Zeiss Amhlival microscopes. The pictures were taken using a Carl Zeiss Amhlival microscope and the "RA-6" imaging apparatus.

RESULTS AND DISCUSSION

The traits studied are the main taxonomic evolutionary marker of species delimitation, as well as how stable and ecologically diverse this species is.

Seed germination of the studied species under laboratory conditions is 50-70%.

The shape of the leaves of the plant group of the adyr zone is obovate, 3-4 mm long and 2-3 mm wide.

The upper epidermis of the leaf structure has stalked glandular hairs (10-20 per mm²). These hairs are 150-300 μm long and consist of 2-3 cells.

The outer epidermis is very large-celled (380-500 cells per 1 mm²), the side walls are of medium thickness, strongly curved, the cells are more elongated. Almost all stomata are anamocytic, sometimes anisocytic, larger than those of the lower epidermis (100-140 1 mm²).

lower epidermis. Covering hairs are absent on the upper and lower leaf epidermis. In the lower epidermis - 2 different types of covering hairs: papillae and thyroid scales. Papillae (15-20 per 1 mm²) 3-celled, 160-300 microns long. Thyroid scales (10-20 pieces per 1 mm²) 6-8 cells.

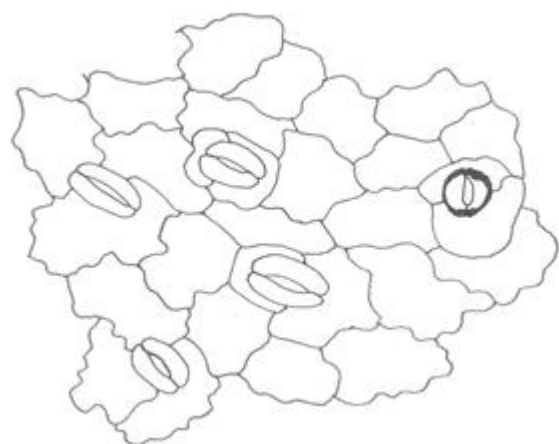
The cells of the lower epidermis are large (800-840 cells per mm²), the cell walls are strongly curved and slightly wavy.

50-60 % of the stomata of the lower epidermis (140-180 per mm²) are of the diacytic type, the rest are of the anisocytic and anomocytic type. At one of the poles of some stomata, a T-shaped thickening is observed.

Cross section of a leaf. The leaf mesophyll is thick (224–260 μm) and consists of 5-6 rows of dorsoventral, sometimes isolateral, palisade type chlorenchyma cells. Under the upper epidermis there are 2 rows of columnar cells, under it there are 4 rows of spongy cells, sometimes under the lower epidermis there is a row of short, wide columnar cells. In a cross section, the outer walls of the upper epidermis are 1-1.5 μm thick, and the outer walls of the lower epidermis are 0.5 μm thick. Stomata are located on the lower and upper epidermis of the entire leaf surface.

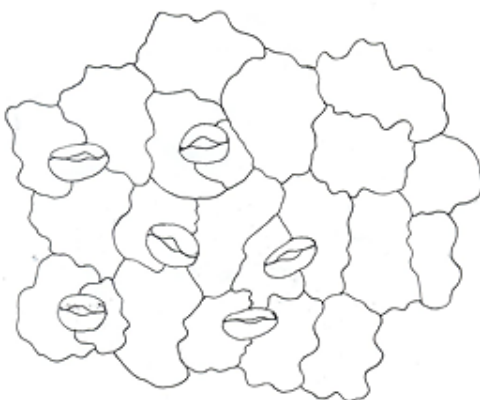


Upper Epidermis

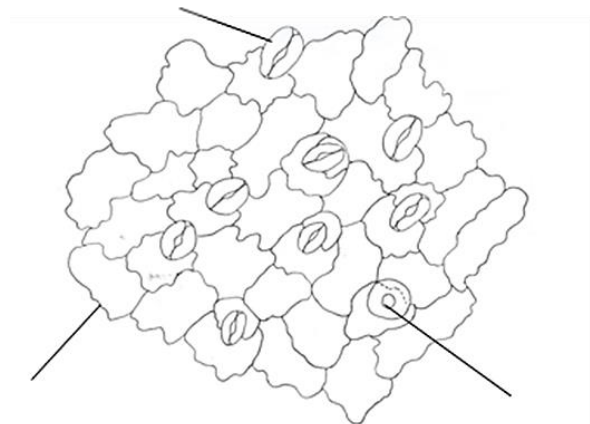


Lower Epidermis

The structure of the leaf epidermis of the Imam-Ata group of plants.



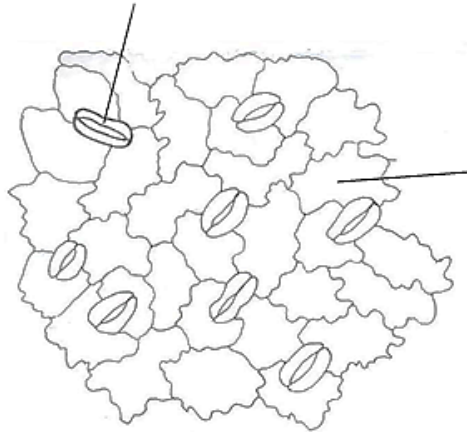
Upper Epidermis



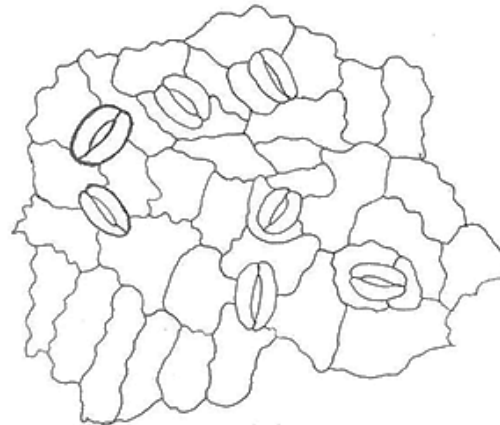
Lower Epidermis



The structure of the structure of the epidermis of the group of plants Kuykulak



Upper epidermis



нижний эпидермис

The structure of the structure of the epidermis of the Mindon plant group.

CONCLUSIONS

Based on the anatomical structure, the following conclusion can be drawn.

Common features are characteristic of all studied groups of *S. comosa*; -

- Obovate leaf shape.
- Dorsoventral structure of the mesophyll.

The multicellularity of the epidermis, curved, wavy walls, as well as the majority of stomata of the anamocytic, less often anisocytic and diacytic type.

We consider the anomocytic and anisocytic type of most stomata, the dorsoventral type of mesophyll, large cells and wavy walls to be ancestral-ancestral characters.

Thus, the leaf structure retained some ancestral features, which indicate that the ancestor of the species under study existed under relatively mesophilic conditions.

The number of columnar cells and rows of parenchyma cells, stomata cells, the number and type of hairs are variable and are adaptive features adapted to environmental factors.

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