

STUDIES ON THE MORPHO-ANATOMICAL PARTICULARITIES OF *LYSIMACHIA NUMMULARIA* L.

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Introduction

Lysimachia nummularia L. (Primulaceae) (Figure 1), is a herbaceous, perennial, chamefite plant, widespread in our country, in wetlands, in meadows and on the waterfront, through bushes and meadows, ditches and micro-depressions in mountain, hill and plain regions.

In the present study, we aimed to identify and describe the anatomical structure of vegetative organs in order to identify the peculiarities of *Lysimachia nummularia* L, necessary to differentiate the peculiarities of the plant species from other species of the genus *Lysimachia*.

Materials and Method

The fresh plant was harvested on July 19, 2020, from the edge of Lake Tău-Brazi in the Roşia Montană area of Alba County (Figure 2), where the yolk forms large associations (Figure 1). In order to research from a histo-anatomical point of view, the material represented by the vegetative organs (root, stem and leaves) was subjected to several stages of work.

The obtained sections were subjected to the bleaching process (with sodium hypochlorite) for 20-35 minutes, after which they were washed with acetic water and distilled water [11, 12]. The sections were then stained with iodine green and ruthenium red (staining used in plant histo-anatomical studies) as follows: The sections were first stained with iodine green (1 minute), washed with 90% ethyl alcohol, and then stained with ruthenium red (1 minute) and finally washed with distilled water [13,14].

The colored sections were mounted in drops of glycerol gelatin, between the slide and the slide, thus making permanent preparations. After the preparations thus obtained, color photographs were taken with the OPTIKA photon microscope, with Canon A540 digital camera. Scale for photographs = 100 µm.

Conclusion

The analysis of the cross sections through the vegetative organs of the species *Lysimachia nummularia* L. showed that the analyzed species has a structure characteristic of the group to which it belongs, respectively of the Primroses.

The endoderm has lenticular thickenings (Casspari punctuation); the primary endoderm shows obvious Casspari scores.

The bark is of the meatic type with large intercellular spaces and cells with calcium oxalate dredges.

The stem has the contour of the elliptical-oval cross section, at the ends with four visibly prominent ribs. The leaf has epidermis covered by an obvious cuticle, asymmetric heterogeneous mesophilic, is devoid of periectors and has a dorsiventral bifacial structure with unistratified palisade tissue.

Results

Figure 1. Association with *Lysimachia nummularia* L.

Cross section through the root:

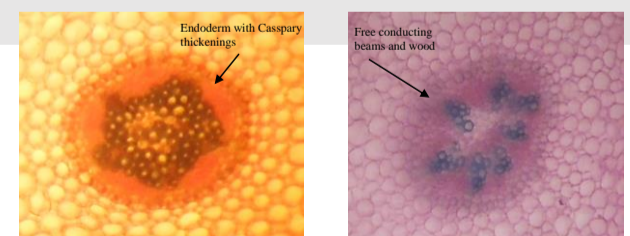
- ✓ The contour of the section is circular, slightly wavy.
- ✓ The structure is primary with the beginning of secondary structure, due to the presence of a multilayered suber formed of cells with thin walls.
- ✓ On the outside there is a rhizoderm, formed by a single layer of cells covered by a cuticle. The primary bark is very thick, comprising 8-10 layers of round oval cells. The cortical parenchyma is compact and moderately cholenchymatized to the exoderm. The central cylinder, located deep, starts with a unilayered pericycle, on which 5-7 wooden beams rest, alternating with as many free beams included in the fundamental parenchyma of the central cylinder.

Stem cross section:

- ✓ The contour of the cross section is elliptical-oval, with four visibly prominent ribs at the ends;
- ✓ The bark is parenchymal-cellulose of meatic type;
- ✓ The secondary free ring consists of sieved tubes;
- ✓ The wooden ring consists of protoxilem vessels, towards the outside and metaxilem vessels;
- ✓ The marrow is thick, parenchymal-cellulosic.

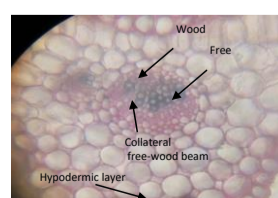
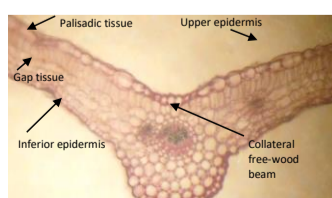
Leaf cross section:

- ✓ At the level of the nerve there is a single hypodermic layer of colenchyma, a fundamental parenchyma formed by large isodiametric cells with thin parts and large intercellular spaces, and in the center, a large, free-wood beam with primary structure, next to which appears a beam of very small dimensions;
- ✓ The conducting beam is surrounded by a unilayered parenchyma sheath;
- ✓ The mesophile has 5-6 layers of cells and consists of a unistratified palisade on the upper face (the cells being 3-4 times higher than wide) and a lacunar multilayered parenchyma on the lower face;
- ✓ The limb has a dorsoventral bifacial structure.



Cross section through the root

Cross section through the leaf



Cross section through the stem

