



ANATOMICAL STRUCTURE OF THE VEGETATIVE ORGANS OF THE MEADOW LATHYRUS (*LÁTHYRUS PRATÉNSIS L.*)

Mavluda Turgunbaevna Yulchieva

Associate professor, Candidate of Biological Sciences, Department of Pharmacognosy, Tashkent Pharmaceutical Institute, Tashkent-100190, Uzbekistan

Feruz Madiyarovna Dustmuratova

Associate professor, Candidate of Biological Sciences, Department of Pharmacognosy, Tashkent Pharmaceutical Institute, Tashkent-100190, Uzbekistan

Mamlakat Mirganievna Maxmudova

Associate professor, Candidate of Biological Sciences Department of Botany, National university of Uzbekistan named after Mirzo Ulugbek

100174, University str., 4, Almazar district, Tashkent city, Uzbekistan

Makhsuda Usmonkulovna Nizomova

Doctor of Philosophy on Agricultural Sciences (PhD),

Senior Teacher of Medical Plants Department,

Tashkent State Agrarian University, University str., 3, Tashkent-100140, Uzbekistan.

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Abstract:

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This article reveals the scientific data on the anatomical structure of the vegetative organs of *Láthyru s praténsis L.* which naturally grows in the flora of Uzbekistan. The material for anatomical studies was collected during the period of mass flowering in the vicinity of Tashkent. The results of the anatomical structure of the aboveground organs of the meadow lathyrus are presented, which made it possible to identify the diagnostic signs necessary for developing reliable characteristics of the proposed raw materials. The overground part of the meadow lathyrus, which is used in folk medicine, has been subjected to microscopic analysis.

Keywords: *Lathyrus pratensis*, epidermis, abaxial, paradermal, anisocytic, simple fuzzy, palisade.

1. INTRODUCTION

The meadow - *Lathyrus pratensis L.*, (in Uzbek o'tloq burchog'i) is from the legume family (Leguminozae) and a perennial plant. The stems are strongly branched, faceted, not winged, glabrous or less densely short, fluffy pressed and 30-100 cm tall. The leaves are complex, the petioles are 1-5cm long, lance-leaved, linear-lanceolate or oblong elliptic 4-6 cm long, glabrous, runner is simple or branched. The stipules are 1-3cm long, lanceolate or ovate-lanceolate. The flowers collected by 3-12 in not thick brushes, the pedicels are 5-15cm long. The pedicels are 2-3mm in length. The flowers are large (15-19mm). Coloring of the flowers is different: white, colorful, blue, bluish-purple, red or pink. They are self-pollinating plants, cross-pollination is less common. The fruit is bean. The beans are linear-oblong, reticular nerve, glabrous, with 6-12 seeds, 25-35 mm long and 5-6mm wide. The seeds are oval silt and almost rounded, slightly compressed, brown, smooth, often spotty and they are 3-3.5mm long.

12 species of lathyrus grow in Uzbekistan.

The types of lathyrus, growing in Uzbekistan, are almost unexplored.

The meadow lathyrus grows from the middle lines of mountains to foothill valleys, in the meadow zones of woody-shrubby vegetation, among trees, in meadows along the banks of streams in Tashkent, Samarkand and Kashkadya regions[1,8].

It blossoms in May- August and it bears fruit in June-September.



Figure 1. General appearance of meadow lathyrus (*Lathyrus pratensis* L.)

The lathyrus herb contains up to 800 mg vitamin C, carotenes, up to 17.3% protein, fats, alkaloids, bitter and tannin substances, flavonoids, luteolin-4'-O-β-D glucopyranoside, and the meadow lathyrus contains luteolin-7-O-β-D glucopyranoside, luteolin-4'-O-β-D- glucopyranoside and quercetin 3-O-β-D- glucopyranoside [3,4].

Ferulic and caffeic acid, flavonoids were found in the leaves of certain species of the genus; some of them contain signs of alkaloids [3].

In medicine 3 types of lathyrus are used: one species of the sowing lathyrus in Uzbekistan is grown as a decorative one, two species are of wild growing - meadow and tuberous lathyrus.

It is known from the sources that the infusion from the overground part of the plant is clinically tested and recommended as a mild expectorant for chronic bronchitis, lung abscess, pneumonia, especially in hard bronchitis and other diseases [3,4].

The plant has been used for medicinal purposes since antiquity. It is also used in modern folk and scientific medicine. Young shoots of the plant are edible boiled, the seeds of the lathyrus are used as a substitute for coffee, and flour from its seeds is used to increase the "protein content" and the digestibility of bakery and pasta products. Ancient medicine defined the nature of the lathyrus as cold dry. If you drink a decoction with honey, it will cleanse the intestines, cause menstruation, cleanse the chest of moisture, and increase the amount of milk [1, p. 185].

In modern folk medicine of the countries of Central Asia, a decoction of the fruits of lathyrus is used for liver diseases and as a choleric, expectorant. The decoction is also used for diseases of the kidneys, gastrointestinal tract, insomnia, heart disease [9, p.308].

In modern scientific medicine, lathyrus is used very rarely. In experiment and clinical studies, the expectorant effect of herbal infusions has been noted.

In this regard, the study of the anatomical structure of the vegetative organs of *Láthyrus praténsis L.* growing in natural habitat is of scientific interest.

The material for anatomical studies of lathyrus was collected during the period of mass flowering in the vicinity of Tashkent

The conducted results of the anatomical structure of the aboveground organs of the meadow lathyrus have been presented, which made it possible to identify the diagnostic signs necessary for developing reliable characteristics of the authenticity of the proposed raw materials.

The supraterraneous part of the meadow lathyrus, which is used in folk medicine, was subjected to microscopic analysis.

2.RESEARCH METHODS:

Simultaneously with the morphological description, the leaf was fixed in 70% ethanol for anatomical study. The epidermis was studied on paradermal and cross cutting. Cross cutting of the leaf was made through the middle. Descriptions of the main tissues and cells were given according to K.Esau [9], N.S.Kiseleva [6], the epidermis in accordance with S.F.Zakharevich [5]. The measurements were carried out depending on the organ, tissues and cells in a 30-90 short repetition of the ocular lens-micrometer with subsequent transfer to microns. Manual preparations were stained with methylene blue, followed by gluing in glycerin-gelatin [2,7].

3.LEAF STRUCTURE.

The epidermis is a single-row, the cells of the adaxial epidermis are smaller than the abaxial. On paradermal cuttings of the main epidermal cells are slightly with winding walls. The leaf is amphistomatous (stomata are present on the upper and lower surfaces of the leaf). The stomata was submerged, being anisocytic type which some epidermal cells form three-cell simple fuzzs. The stomata are more numerous on the abaxial side than on the adaxial side (Table 1). The stomatal guard cells on both sides of the leaf are almost the same length. Anisocytic stomata are surrounded by three peri-stomatal cells.

Table 1.

The number of stomata in the epidermis of *Láthyruş praténsis* L. in the field of the eyepiece view

Repetitions	1	2	3	4	5	6	7	8	9	10	X _{med}
Upper epidermis	11	15	16	11	13	12	16	11	14	12	13,1
Lower epidermis	17	14	16	14	16	15	16	15	15	17	15,5

The mesophyll is dorsiventral. Under the adaxial epidermis situated a single- row palisade parenchyma. The spongy parenchyma is 4-5 row and thin-walled. The main vein is sclerified on both sides; it has 7-8 vessels.

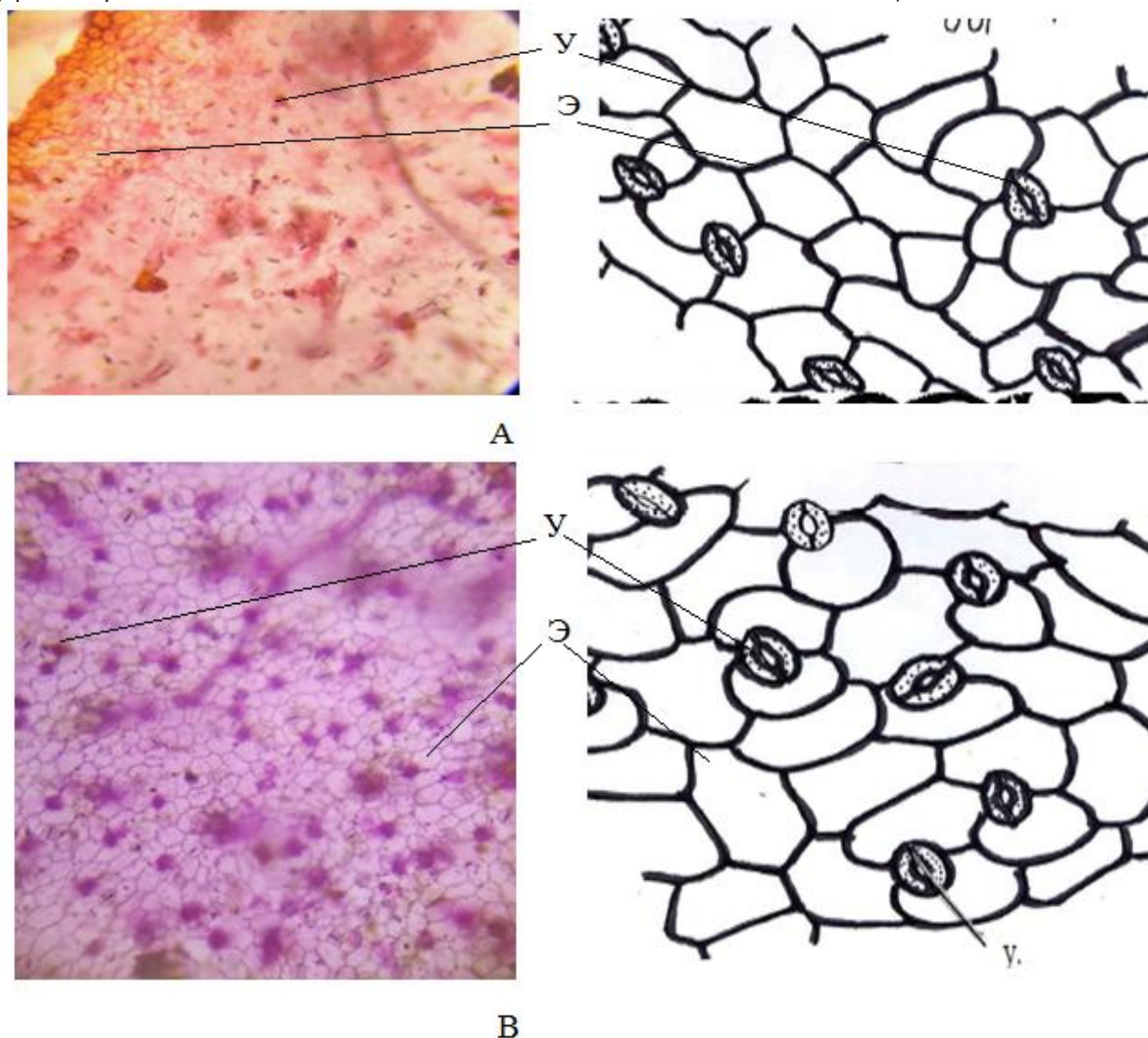


Figure 2. Structure A - upper and B-lower epidermis of *Láthyruş praténsis* L.

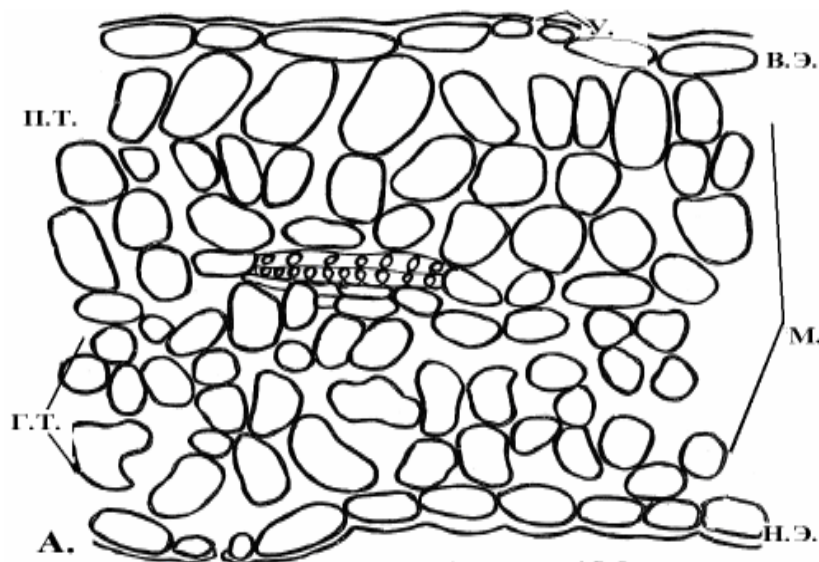


Figure-3. The structure of the leaf mesophyll of *Lathyrus pratensis* L.

U.e.-upper epidermis, m-leaf mesophyll, PP-palisade parenchyma, SP-spongy parenchyma, LE-lower epidermis

Large and medium-sized vascular bundles protrude on the adaxial and abaxial sides of the leaf. Under the adaxial and abaxial epidermis and above the vascular bundles, the angular collenchyma is located. Conducting bundles are closed, collateral, numerous, consisting of phloem and xylem.

The stem structure. The stalk on the cross cutting is four- costal: two ribs of them are more protruded; the two opposite are less convex. The epidermis is straight-line with thickened membranes. The epidermal cell forms a three-celled simple fuzz. Under the epidermis there are 4-5 rows of bark parenchyma. There is a pluriserial angled colenchyma in the protrusions under the epidermis. It contains one sclerified conductive funiculus. In the central cylinder there are 14-15 conductive funiculus of different sizes. The large funiculus alternates with small one. The core is wide and it consists of thin -wall rounded cells.

4.CONCLUSIONS.

Thus, the following features are characteristics of the microscopic structure of the meadow lathyrus:

The leaves are slightly winding epidermal walls with three-cell simple fuzz. Anisocytic types of stomata are dorsiventral type of mesophyll, sclerenchymal lining.

The stem is a four-rib structure on the cross section, the two ribs are more convex, the group of angular collenchymas and the sclerenchymic funiculus in the ribs, the bundle structure of the central cylinder has a three-celled simple fuzz.

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