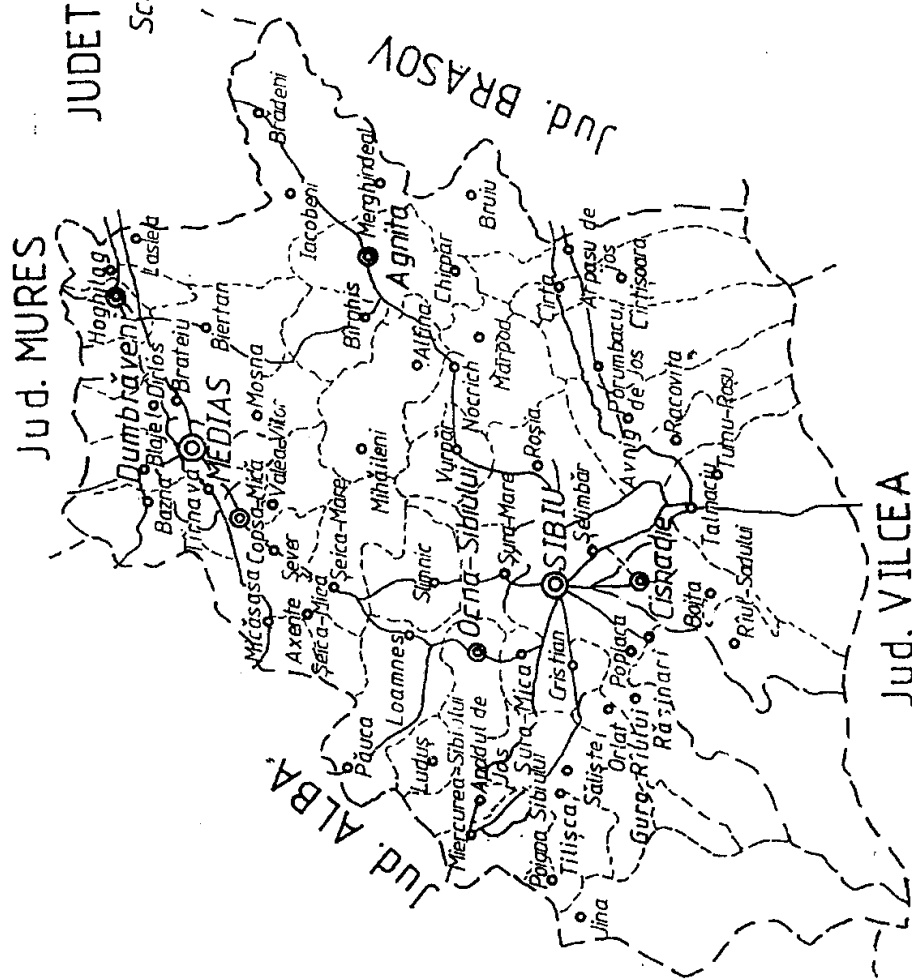


JUDETUL SIBIU  
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MORPHO-ANATOMICAL ASPECTS OF  
THE EPIDERM IN TWO SPECIES OF *LATHYRUS*

IOANA GABOREANU, ADRIANA FLORINCESCU, AURELIA MOLDOVAN

Abstract:

IOANA GABOREANU, ADRIANA FLORINCESCU, AURELIA MOLDOVAN, 1998, Morpho-anatomical aspects of the epiderm in two species of *Lathyrus* (in English), Not. Bot. Hort. Agrobot. Cluj, XXVIII.

The paper deals with the microscopic study of the leaves epiderm in *Lathyrus latifolius* L. and *Lathyrus odoratus* L. The transversal sections through the foliar limb shows slight differences between the two faces of the limb and a weak development and differentiation of the mesophyll. The epidermic cells have rectangular or polygonal shapes, with undulated walls with great and medium amplitudes in *Lathyrus latifolius* and medium and small ones in *Lathyrus odoratus*. Stomate apparatus consists of two reniform cells, with two, three, seldom four epidermic cells. *Lathyrus odoratus* has the ranunculaceous anomocytic type of stomate and *Lathyrus latifolius* presents both this type and the ranunculaceous hemiparacytic type.

Keywords: *Lathyrus*, epiderm, stomate.

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Material and method

The biologic material microscopic studied comes from mature individuals of *Lathyrus latifolius* and *Lathyrus odoratus*, Royal Mixed, Zig-Zag and Spencer varieties.

Epidermic preparates were obtained from fresh leaves by epidermic peeling. The samples were colorated and fixed in glycerin-gelatine.

There were cut off some parts from the central-medium zone of the foliar limb in order to obtain transversal sections. The material was fixed in Stieve mixture, colored and sectioned in parts of 7 microns width.

For the examination of the relief of the leaves surface there were prelevated parts of 1 cm<sup>2</sup>, from the central-median zone of the limb, fixed in Stieve mixture and dehydrated. The samples were metalized with copper on both faces and then microscopic studied.

### Results and discussions

The microscopic study of the transversal sections through the foliar limb in the studied species, points out the existence of slight differences between the two faces of the foliar limb, both morphologically and anatomically.

There are many amphidermical ribs, nipples, many-celled secretory hairs (fig. 1, 2, 3, 4). Their number and display differ from a species to another.

The transversal sections through the limb shows a weak development and differentiation of the mesophyll in both studied species. The palisadic parenchyma is formed of one-two rows of slightly prolonged transversal cells, with large intercellular spaces (fig. 5).

The microscopic study of the epiderm from the mesophyll points out some aspects:

The epidermic cells in both studied species have rectangular or polygonal shape with undulated walls. These undulations differ in amplitude from a species to another. In *Lathyrus latifolius* the inferior epiderm has cells with undulation which presents great amplitudes (fig. 6a). The superior epidermic cells have undulations with medium amplitudes (fig. 6b). In *Lathyrus odoratus*, the inferior epidermic cells have undulations which shows medium amplitudes (fig. 7a) and those of the superior epiderm has undulations with small amplitudes (fig. 7b).

In the epiderm of the studied species there are many stomates (fig. 6, 7): the stomate apparatus consists in two reniform cells, sometime prolonged, with two, three, seldom four epidermic cells. Usually, one of the cell of the stomate is smaller and is parallelly situated with the opening of the stomate. These stomates are of hemiparacytic ranunculaceous type (Dilcher, 1974). The stomates demarcated by three, seldom four standard epidermic cells are of anomocytic ranunculaceous type. *Lathyrus latifolius* presents both types of stomates. Where as *Lathyrus odoratus* varieties the stomates are of anomocytic ranunculaceous type.

### Conclusions

The anatomical structure of the leaves epiderm in *Lathyrus latifolius* L. and *Lathyrus odoratus* L. shows evident differences between the species and less evident ones between the varieties.

There are slight differences between the two faces of the foliar limb, both morphologically and anatomically, in the two studied species.

In both studied species, the palisadic parenchyma has small intercellular spaces and the mesophyll shows a weak development and differentiation.

The cells of the epiderm have undulations with different amplitudes, depending on the species and the face of the limb (superior or inferior epiderm).

*Lathyrus latifolius* has stomates of hemiparacytic and anomocytic ranunculaceous type, where as *Lathyrus odoratus* has only anomocytic ranunculaceous stomate.

### Rezumat

IOANA GABOREANU, ADRIANA FLORINCESCU, AURELIA MOLDOVAN, 1998, Aspecte morfo-anatomice ale epidermei la două specii ale genului *Lathyrus*. Not. Bot. Hort. Agrobot. Cluj, XXVIII.

Lucrarea se referă la studiul microscopic al epidermei frunzelor L. de *Lathyrus latifolius* și *Lathyrus odoratus* L. Secțiunile transversale prin limbul foliar relevă existența unor diferențe foarte mici între cele două fețe ale limbului precum și o slabă dezvoltare și diferențiere a mezofilului. Celulele epidermice au forme rectangulare sau poligonale, cu pereții ondulați, cu amplitudini mari și mijlocii la *Lathyrus latifolius* și cu amplitudini mijlocii și mici la *Lathyrus odoratus*. Aparatul stomatic este format din două celule reniforme, însoțite de două, trei rar patru celule epidermice. *Lathyrus odoratus* prezintă stomate de tip ranunculaceu anomocitic, iar *Lathyrus latifolius* prezintă atât acest tip, cât și tipul ranunculaceu hemiparacitic.

### References

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Fig. 1 General aspects of the epidermic structure in *Lathyrus latifolius* L. (1000 x)



Fig. 2 Epiderm structure in *Lathyrus latifolius* L. (6000 x)  
ar, amphidermical rib;  
sc, stomate cell; os, ostiole



Fig. 3 General aspects of the epidermic structure in *Lathyrus odoratus* L. (1000 x)

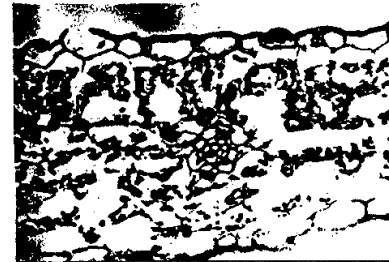


a) before drain off (2000 x)

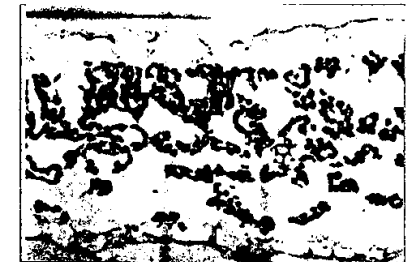


b) after drain off (4000 x)

Fig. 4 Many-celled secretory hair in *Lathyrus odoratus* L.

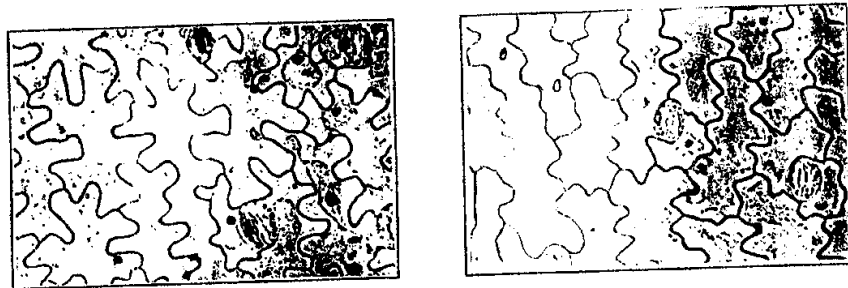


a) *Lathyrus latifolius*



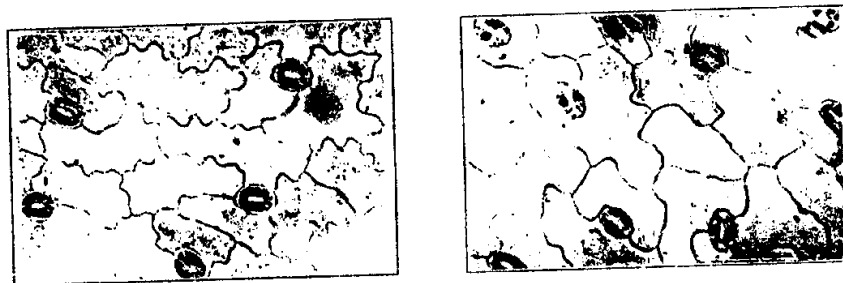
b) *Lathyrus odoratus*

Fig. 5 Transversal section through the limb (800 x)



a) the inferior epiderm

b) the superior epiderm

Fig. 6 *Lathyrus latifolius* L.

a) the inferior epiderm

b) the superior epiderm

Fig. 7 *Lathyrus odoratus* L.SOME BIOLOGICAL ASPECTS IN *VICIA FABA* L.

ELENA TĂMAȘ, M.SAVATTI, R.SESTRAȘ

## Abstract

ELENA TĂMAȘ, M.SAVATTI, R.SESTRAȘ, 1998, Some biological aspects in *Vicia Faba* L. (in English), Not.Bot.Hort.Agrobot.Cluj, XXVIII

*Vicia faba* L. is an annual plant useful both in man's and animal's nutrition. Horsebean seeds are rich in protein thus being an excellent source of lysine. One major drawback with these is the presence of vicins, co-vicins and tannins in the seed cover.

Researches were carried out at the University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca and focused upon certain cytogenetical aspects; also, on the biology of flowering and on vegetation period.

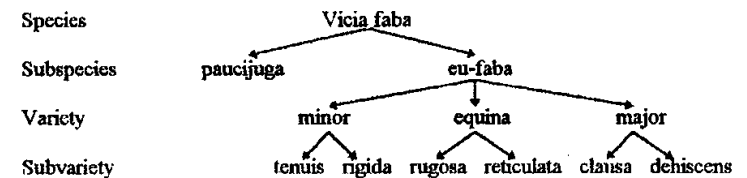
Keywords: *Vicia faba*, biological aspects

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Received:

*Vicia faba* L. is an annual-legume species, originating in the Mediterranean area, known and grown in ancient times.

The botanical classification of horsebean still raises problems as the bulk of botanists still agree with the classification done by MURATOVA (1931, cf. CUBERO, 1984) who divided the species into two subspecies, i.e., *ssp. paucijuga* and *ssp. eu-faba*.



The variety *Vicia faba* major, also known as "edible horsebean", is cultivated mainly in the Mediterranean area, South America and South-East Asia. The varieties *Vicia faba* equina and *Vicia faba* minor are comprised in animal nutrition.

Differences among botanical subspecies, varieties and subvarieties are based on the shape of pods, as well as on size and shape of the seeds:

- *Vicia faba* minor displays egg-shaped, regular, smooth seeds and short pods of two to three ovules and their destiny is fowl feed;