

FUNCTIONAL PLANT ANATOMY

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COMPARATIVE ANATOMY OF LAMINAS
IN *LONICERA ILIENSIS* POJARK.
(CAPRIFOLIACEAE)

Lonicera iliensis Pojark. is a geographically isolated, rare, almost endemic species with a dramatically decreasing natural habitat. It needs an integrated approach to the study of its eco-coenotic features to be efficaciously protected (Red List Kazakh SSR, 1981). There is profound knowledge of the biology of rare species and the structure of their vegetative organs and population that is the basis for prognoses of further development of the populations and for predictions of the plant reactions to the unfavorable environment. The present investigation is aimed to scrutinizing comparative anatomy of the foliage leaves in representatives of 3 populations of the Ile Honeysuckle which grew under different eco-coenotic conditions. The dependence of morphological and anatomical structure of the plant vegetative organs from the natural habitat is widely known and described (Poplavskaya, 1937; Serebryakov, 1952). The leaf anatomy especially closely correlates with ecological factors (Goryshina, 1992). It most clearly reflects plant adaptations to different environmental factors and allows a botanist to comprehend ecological specificity of species and to estimate its ecological plasticity (Ergasheva, 2011).

During the complex expedition, 3 populations, 9 cenopopulations (3 per each population) of *Lonicera iliensis* were found and examined. Population No 1 was found in Balhash district of Almaty region in the flood plain of the Ile River near the village Bakanas, downstream the former Pioneers' Camp, N 44°45.784', E 076°19.710' GPS, 351 to 398 m altitude. Population No 2 was found in Raiymbek district of Almaty region in the flood plain of the Chilik River near the village Algabas, downstream the bridge, N 43°12.079', E 078°31.412' GPS, 1216 to 1232 m altitude. Population No 3 was found in Raiymbek district of Almaty region in the flood plain of Charyn river on the left bank in Aktogay area, N 43°12.959', E 078°50.576' GPS, 1142 to 1156 m altitude. Age structure of the coenopopulations was studied according to Rabotnov (1978)

and Uranov (1973). Leaf anatomy was studied according to Barykina et al. (2004).

Lamina anatomy in young generative specimen of population No 1

The lamina has 1-layered epidermis of tightly arranged cells without intercellular spaces. The epidermal cells are tangentially flattened: their widths significantly exceed their heights. The outer walls of epidermal cells are covered by thin cuticle. The plants from cenopopulation № 3 have evident indumentum on some places. Mesophyll is differentiated into palisade and spongy tissues, the latter one having many intercellular spaces and air cells. Palisade mesophyll consists of 2–3 cell layers; the spongy one is as thick as the palisade counterpart and has the same number of cell layers. The vascular bundles are collateral, closed, arranged in one row in the lamina. Much larger bundle with sclerenchyma sheath is in the midrib (Fig. 1).

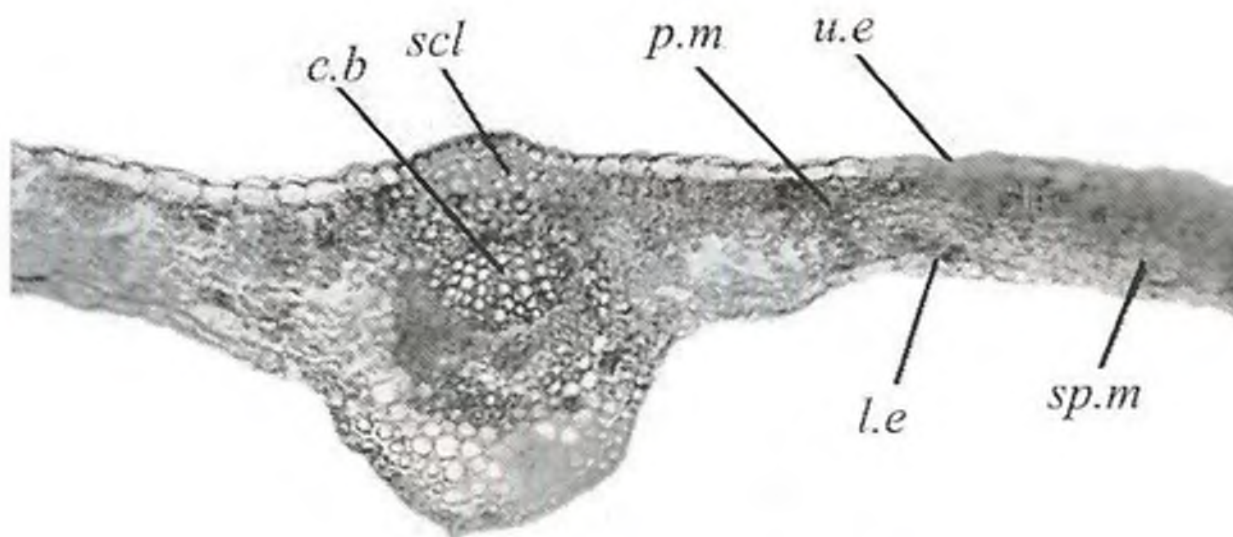


Fig. 1. Lamina anatomy in young generative plant of population No 1:
c.b – vascular bundle, *l.e* – lower epidermis, *p.m* – palisade mesophyll,
scl – sclerenchyma, *sp.m* – spongy mesophyll, *u.e* – upper epidermis

In the majority of the studied plants, the cells of the lower epidermis are slightly thicker than those of the upper epidermis in plants of cenopopulations № 1 and 2 due, perhaps, to thicker cuticle, covering the lower epidermis. Correlation between thicknesses of the palisade and spongy tissues is invariable in all cenopopulations under study. The plants from cenopopulation № 1 have the thickest lamina among the plants of the population No 1.