



## FLORAL STRUCTURE AND POLLEN MORPHOLOGY ARE IMPORTANT CHARACTERS IN TAXONOMY OF THE GENUS *VIOLA* (VIOLACEAE)

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Flower structures, especially the shape of the pistil with stigma, stamen appendages (nectaries) and pollen heteromorphism are important diagnostic features in the genus *Viola* L. The style characters were crucial in the very early classifications of this genus (CLAUSEN 1927).

We analyzed in details, using scanning electron microscopy (SEM), the microstructural characters of generative organs (style and stigma, stamens with nectaries) and pollen in representatives of three sections (*Viola* L., *Melanium* Ging., *Dischidium* Ging.) occurring in Poland to get insights into the relatedness among far-related (different sections) and closely related (sub-sections within section) species.

There is a great difference in stigma micromorphology between sections. In the section *Viola* flowers have style beaked at the apex, glabrous or covered by papillae and/or hairs, depending of subsection. Monotypic section *Dischidium* with one species *V. biflora* L. characterizes 2-lobed stigma. Cup-shaped stigma with the hole on the top and a lip below, covered with papillae and hairs on its outer surface occurs in pansies of the section *Melanium*.

Pollen is highly heteromorphic (different pollen morphs, from three up to six apertures within one flower or even within one pollen sac) in the *Melanium* section and weakly

heteromorphic mainly with three apertures in diploids of *Viola* and *Dischidium* sections. This character is independent of the polyploidy in the *Melanium* but not in *Viola* section (DAJOZ 1999).

The flower micromorphological characters are also useful in reconstruction of closely related species origin. Based on stigma and nectaries features, two zinc violets are more similar to the alpine *V. lutea*, than to *V. tricolor*, indicated also as the ancestor (KUTA *et al.* 2012).

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