

## ANTHER WALL FORMATION IN *AEONIUM BALSAMIFERUM* AND *A. CILIATUM* (CRASSULACEAE)

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The study has revealed similarities and differences in the anther development and structure in *Aeonium balsamiferum* and *A. ciliatum*. The similarities are: the microsporangium wall on the distal side is formed following dicot type, the wall of the microsporangium consists of five layers of cells (epiderm, endothecium, two middle layers and parietal tapetum), microsporogenesis is simultaneous, tetrads of microspores are tetrahedral, pollen grains are 2-celled. Tannins accumulate in the cells of the connective tissue and epiderm on the distal side of the microsporangium wall. Revealed in epy both species, was variation 2 of the parietal type, i.e. an amoeboid tapetum, and an annular fibrous layer on the inner side of the connective in its lower region, where the anther and filament are not fused.

The differences between the species concern the structure of the inflorescence and flower. Cymose inflorescences in *A. balsamiferum* are represented by both compound monochasia and dichasia, while in *A. ciliatum* predominantly by compound dichasia. The androecium in *A. balsamiferum* most often consists of 16 or 18 stamens, and that in *A. ciliatum* – of 14 stamens with glandular hairs on their surfaces. Microsporangia are rounded in *A. ciliatum*, and oval-oblong in *A. balsamiferum*. As a result, the septum between microsporangia is extended in *A. ciliatum* and very short in *A. balsamiferum*. In the latter species, pollen can spill out through both the stomium and the apical pore (we first discovered this phenomenon in the family Crassulaceae), and both modes of opening the thecae are simultaneous, that probably indicates a greater specialization for pollination in the anther of *A. balsamiferum*. Although the outer tapetum is single-layered in the both species, its cells are uninuclear in *A. ciliatum* and 2-nuclear in *A. balsamiferum*. The inner tapetum is usually 1-layered, rarely irregularly 2-layered, its cells increasing size 2 times in *A. ciliatum* and 3–4 times in *A. balsamiferum* (in the latter, they resemble papilloid cells in structure).

The greatest similarity in anther structure was found between the genera *Aeonium* and *Sedum*. This includes the following: an isobilateral (on a transverse section) anther with an epiconnective, a 4-beamed connective, and an annular fibrous layer on the inner side of the connective in the lower region, where there is no fusion of the anther and filament; pollen grains are of the same type in structure – tricolporate, their surface is striated. The data obtained do not disagree with existing cladistic constructions suggesting that the species of a polyphyletic genus *Sedum* are distributed among the tribes Aeonieae, Semperviveae, and Sedeae. The studied species *Aeonium balsamiferum* and *A. ciliatum*, falling into the *Aeonium* clade, take an intermediate position between the *Telephium* clade (*Sedum kamschaticum*) and the *Acre* clade (*S. palmeri*).

**Keywords:** androecium, anther, microsporangium wall, Crassulaceae, *Aeonium*, *Aeonium balsamiferum*, *A. ciliatum*

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