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**Embryology of *Primula algida* and *Primula amoena*  
(*Primulaceae*)**

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**ABSTRACT.** The development of ovule and seed is described in two species - *Primula algida* and *P. amoena*.

**Key words:** EMBRYO SAC, FERTILIZATION, EMBRYO, ENDOSPERM.

The earlier investigations on the embryology of *Primulaceae* [1-5] have been reviewed by T. B. Mametieva [6]. The general reproductive traits of genus *Primula* have been discussed in these publications. However, this information is based on data obtained on only 9 investigated species from 500 species of *Primula* distributed worldwide [7]. Only one species - *P. bavernii* distributed in Georgia have been studied so far [8,9].

In this report the development of ovule from time of formation up to establishment of the mature seed is described in two species - *Primula algida* Adam. and *P. amoena* Bieb.

The material was collected from the plants growing in the Central Caucasus, Kazbegi region, near church Samebâ. The flowers and fruits at different stages of development were fixed in formalin, glacial acetic acid, 70% alcohol (5:5:90). The permanent preparations were made according to Kamelina et al. [10]. The observations were taken on microscope "Polyvar" (Austria, Reichert).

The ovules and seeds of investigated species reveal great similarity in structure, but specific peculiarities of some species were observed.

The following embryologic characters are general for *P. algida* and *P. amoena*. The ovule is bitegmic and tenuinucellate. The outer integument is three layered consisting of two epidermal layers and one middle layer of small parenchymatous cells. The inner integument possesses outermost layer of epidermal cells, middle 5-6 layers of parenchymatous cells and innermost layer which is developed into integumentary tapetum. Micropyle is formed by both integuments. The nucellus is represented by one layer of cells surrounding the embryo sac at the time of its formation. However, during the maturation the enlarging embryo sac presses the nucellar cells and they are degenerated. In the mature ovule the nucellus is completely absent and embryo sac directly adjoins to the integumentary tapetum.

Only one archesporial cell is present in the ovules of *P. algida* and *P. amoena*. It functions directly as megaspore mother cell and forms linear tetrad. The chalazal megaspore gives rise to the embryo sac of *Polygonum* type. The newly formed embryo sac (Fig. 1, a) contains three celled egg apparatus, central cell with two polar nuclei and three antipodal cells. In the mature embryo sac egg cell shows a similar organization characterized for most of angiosperm species. The micropylar part of the egg cell is occupied by