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Changes in the Photosynthetic Pigment Content and RuBPcase Activity during the Development of Globular Somatic Embryos of Siberian ginseng (*Eleutherococcus senticosus* Maxim) into Plantlets

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Objectives

To determine the changes in the photosynthetic pigment content and RuBPcase activity during the development of globular somatic embryos into plantlets.

Materials and Methods

1. Plant materials: Somatic embryos of Siberian ginseng (*Eleutherococcus senticosus*)
2. Methods: The embryos were cultured on solid (agar 0.9%) MS medium in Petri-dish and in the liquid medium of air-lift type bioreactor under 500 lux white fluorescent light with a 16 h-light, 8 h-dark photoperiod at 24°C. Using biochemical analysis and spectrophotometry, photosynthetic pigment and Rubisco activity were determined.

Results and Discussion

During the development of the globular embryos via heart-shaped, torpedo-shaped, cotyledonary embryos into plantlets, the photosynthetic pigments such as chlorophyll (Chl) a and b, carotenoids (Cars) and ribulose-1,5-bisphosphate carboxylase (RuBPcase, EC 4.1.1.39) activity were investigated. On the solid medium, the parameters, Chl a, Chl b, Chl a/b, total Chl, and total pigments were continuously increased, while in liquid medium these parameters were increased till torpedo-shaped stage, but decreased at cotyledonary embryo stage. On the solid medium, RuBPcase activity based on total soluble protein content increased upto torpedo-shaped embryo stage and decreased with the further development in liquid medium. The relationship between the parameters and the RuBPcase activity was discussed.

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