



AgroSym

# BOOK OF ABSTRACTS



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*IX International Scientific Agriculture Symposium  
"Agrosym 2018"  
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# SOMATIC EMBRYOGENESIS OF *CENTAURIUM ERYTHRAEA* RAFN. TIME-LAPSE DOCUMENTATION OF *IN VITRO* DEVELOPMENT

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## Abstract

Organogenesis and somatic embryogenesis (SE) are often used for mass propagation of high quality material of medicinal, endangered and rare plant species. In *Centaurium erythraea* Rafn. (Gentianaceae), used as a model system in developmental studies, both pathways can be exploited. SE from centaury leaf tissues starts with the formation of embryogenic callus which develops into somatic embryos following globular, heart, torpedo and cotyledonary embryo phases. SE potential of leaf explants and embryogenic calli is highly dependent on concentration and ratio of added plant growth regulators, genotype, explant type and number of subcultures. Frequent (weekly) subculturing of the calli slows down growth and differentiation, whereas biweekly subculturing results in better embryogenic response. Higher CPPU to 2,4-D ratio drives the callus development towards embryo differentiation. Embryogenic potential of the callus cultures also depends on the presence of already formed globular embryos, since their removal reduces both growth and embryogenic potential. Once this potential is reduced, it cannot be restored by increasing exogenous hormone concentration. In order to further characterize and improve these processes in centaury, a documentation system was developed, using LED white light epi illumination, coupled with a smartphone camera with macro lens. Developmental processes were observed sequentially on leaf sections subjected to different 2,4-D and CPPU concentrations. Image processing of focal stacks from developing explants was automated in Adobe Photoshop and Bridge. A relational database containing all relevant sample information and photographs was then built using Excel and R.

**Key words:** *development, somatic embryogenesis, 2,4-D, CPPU.*

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