

Viroids elimination from *Solanum jasminoides* by temperature and urea treatments

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Abstract – *Solanum jasminoides* is ornamental plant and is often infected with viroids, which results in significant economic and agricultural losses. The aim of our study within the scope of VirEx-project (supported in the framework of the “KNU-innovativ” program, BMBF (031A400C) project) is to study the possibilities and effectiveness of targeted elimination of viroids from the callus cells by physiochemical methods, so that the cells can finally be regenerated into viroid-free plants. Three types of *S. jasminoides*, Bluerom, Lilliom and DenHaag, were tested and pre-infected by the Pospiviroids. Callus was induced from the plants by means of culturing the buds at the branches. The callus suspension cultures were treated by thermal shock, as well as chaotropic chemical agents, inside a specially developed laboratory bioreactor called Plant Development Cycler. The osmolarity of the suspension medium, the viability of the cells and the cell number were monitored regularly during the treatments. For the purposes of viroid RNA monitoring, the cell suspensions were homogenized and RNA-extraction was performed before, during and after several weeks of treatment. Some of the applied treatment regimens have brought encouraging results. In particular, one-step PCR followed by agarose gel-electrophoresis indicated reduction or even removal of viroidRNA from the suspended *Solanum* cells, which underwent 11 weeks of 33°C thermal treatment.

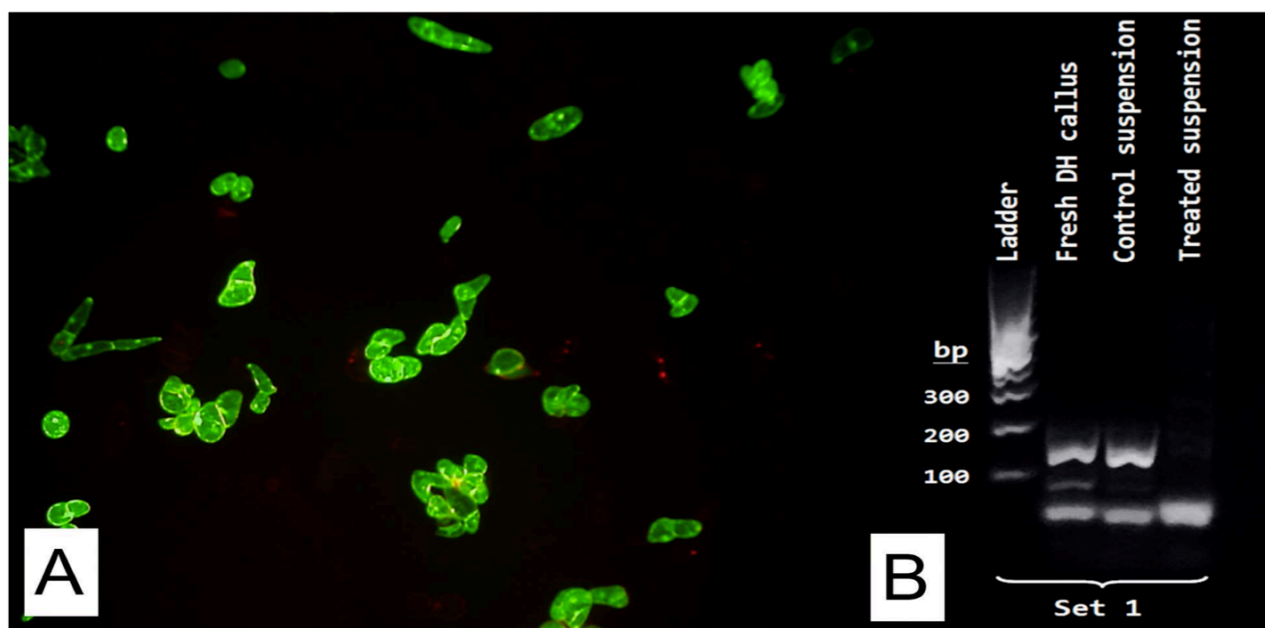


Fig.1: (A) Monitoring of the viability of the treated cells is critical for successful RNA extraction as well as for the subsequent regeneration experiments. The microphotograph showed live (green) and dead (red) suspended *Solanum* cells stained by fluorescein diacetate (FDA). (B) Gel-electrophoresis of one-step PCR showed the reduction of the viroid RNA concentration (150 bp band) in suspension culture, especially after thermal treatment.