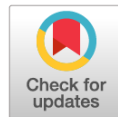


The search for inhibitors of somatic embryogenesis in *Medicago truncatula*

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The success of protocols for the genetic transformation of legumes is limited by their low ability to regenerate. Plant regeneration can occur both along the path of shoot regeneration and their further rooting, and along the path of somatic embryogenesis (SE). SE is similar to zygotic embryogenesis (ZE). It is a method of asexual reproduction, in which the somatic cell, due to its totipotency, switches on the embryogenesis program.

SE and ZE involve common participants in transcriptional, hormonal, and epigenetic control. Like many processes in the plant organism, SE is controlled by the activity of various stimulants or repressors.

As a result of transcriptional analysis of embryogenic and non-embryogenic calli of *Medicago truncatula* at different stages of development, putative genes-inhibitors of SE were found. Using the Golden Gate system, we created vectors for agrobacterial transformation to overexpress genes of interest in embryogenic calli and evaluate their effect on SE. Overexpression of two genes encoding the transcription factors from WRKY and Homobox-WOX families had a significant inhibitory effect on SE (the average number of somatic embryos per callus decreased).

The *MtCLE16*, a previously found SE inhibitor from the CLE peptides group, was edited and heterozygous frameshift mutants were obtained. The impact of loss of its function on the SE capacity remains to be analyzed.

This research was supported by the Sirius University of Science and Technology, project PBB-RND-2243.

Keywords: transcription factors; regeneration inhibitors; somatic embryogenesis.

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