https://doi.org/10.17816/ecogen568297

Development of a system for the formation of transgenic somatic embryos in the liquid medium in *Medicago truncatula*

Anastasiya M. Artemiuk, Varvara E. Tvorogova, Ludmila A. Lutova

Saint Petersburg State University, Saint Petersburg, Russia

Somatic embryogenesis is the formation of embryos from plant's somatic cells. It is widely used in biotechnology for reproduction of plants, studying of regeneration process and it also represents a convenient way to obtain transgenic plants. Currently, a solid medium is usually used for the formation of transgenic somatic embryos, which has a number of disadvantages.

We are developing a system for cultivating explants in a liquid medium for the transformation and formation of somatic embryos for *Medicago truncatula*. Unlike a solid medium, it should allow using petioles as explants, simplify the renewal of the medium, replace disposable cultivation containers with reusable ones, and also reduce the time required for the formation of somatic embryos.

Currently, the optimal concentration of hygromycin as a selective agent in such a system was found. Interestingly, it appeared to be lower than the selective hygromycin concentration in a solid medium.

The addition of cefotaxime to the medium reduces the number of somatic embryos formed, but does not completely suppress their formation. Thus, cefotaxime can be used to eliminate agrobacteria during transformation using this cultivation system.

Embryos with *GUS* overexpression transformed with this method were successfully obtained.

Keywords: *in vitro* culture; alfalfa; selective agents.

AUTHORS' INFO

Anastasiya M. Artemiuk, Saint Petersburg State University, Saint Petersburg, Russia; e-mail: nastyaart2004@gmail.com

Varvara E. Tvorogova, Cand. Sci. (Biol.), Senior Researcher, Department of Genetics and Biotechnology; Saint Petersburg State University, Saint Petersburg, Russia; ORCID: 0000-0002-0549-1457; eLibrary SPIN: 6489-5206; e-mail: v.tvorogova@spbu.ru

Ludmila A. Lutova, Dr. Sci. (Biol.), Professor; Saint Petersburg State University, Saint Petersburg, Russia; ORCID: 0000-0001-6125-0757; eLibrary SPIN: 3685-7136; e-mail: la.lutova@gmail.com