

Results and Challenges in Isolated Microspore Culture of *Capsicum annuum* L.

Csaba Lantos¹, Anikó Gémesné Juhász², György Somogyi³, Zsuzsanna Táborosiné Ábrahám³, Pál Vági⁴, Zoltán Kristóf⁴, Róbert Mihály¹, Norbert Somogyi³, Péter Fónad¹, János Pauk¹

¹Department of Biotechnology, Cereal Research Non-profit Ltd., Szeged, P.O.Box 391, 6701 Szeged, Hungary; ²Medimat Ltd., Budapest, XIV u. 37., 1224, Hungary; ³Red Pepper Research and Development Ltd., Szeged, Küllerület 7., 6728 Szeged, Hungary; ⁴Department of Botany, Eötvös Loránd University, Budapest, P.O.Box 120, 1518 Budapest Hungary; e-mail: janos.pauk@gabonakutato.hu

Pepper is a widely known crop plant which can be used as a vegetable, an ingredient of sauces a colouring and pungent agent of foods or in pharmaceutical application. Furthermore, pepper is one of the most important basic ingredients in the Hungarian cuisine. The biotechnological methods like doubled haploid (DH) plant production can give an opportunity for breeders to accelerate the breeding process of a new marketable variety.

In DH plant production of *Capsicum annuum* L., three alternative methods based on androgenesis are published, namely: anther culture, shed microspore culture and isolated microspore culture. These essays focused on the critical steps of isolated microspore culture.

In our experiments, effect of different pre-treatment factor and culture conditions were tested on the number of microspore – derived embryoids. Heat shock (32°C) during pretreatment period increased significantly the number of embryoids in the cultures. Foreign species ovary co-culture was efficient for the production of microspore-derived embryoids. Wheat, barley and triticale ovaries supported the development of embryoids, but the exact biochemical effect of ovaries remained secret till today. Different maltose content (6%, 9%, 12% and 15%) of induction media was compared in microspore culture, and the highest embryoid production was obtained in the media containing 9% maltose.

The histological features of microspore – derived structures (calli

and embryoid) were analysed and dominantly well-developed embryoids were identified in microspore cultures. On the regeneration medium, these structures developed roots and shoots, but the shoot formation was critical in the regeneration period. The regenerated doubled haploid plants have been integrated into Hungarian pepper hybrid breeding program.

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