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Anther Culture of Transgenic Pepper (*Capsicum annuum* L.)

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Objectives

This study was carried out in order to fast produce homozygous transgenic pepper lines using anther culture system.

Materials and methods

1. Materials:

Plant - Wild type pepper cv. Knockwang, and transgenic lines with PepEST and Defensin genes

2. Methods:

Pollen developmental stages: mid- or late uninucleate microspores

Medium composition and culture condition: Anthers (callus induction) on MS, 2,4-D (0.1 mg/L), kinetin (0.1 mg/L), or MS, NAA (4 mg/L), BA (1 mg/L) (28°C dark, 4-6 weeks); Plant regeneration: MS (26°C 16-hr light).

Results and Discussion

In this study, wild type (nontransgenic) pepper cv. Knockwang and its transgenic lines transformed with PepEST and Defensin, which are fugal resistant genes. Anthers were plated on MS medium containing 2,4-D and kinetin or containing NAA and BA. Anther culture response was better in the combination of 2,4-D and kinetin, although the response was varied depending upon genotype. In wild type pepper, when the pretreatment conditions were compared, anther culture response was higher in anthers without pretreatment (average 55.2%) than in those pretreated at 4°C. Wild type pepper (65.5%) had a little bit higher anther response than transgenic lines (48.0%). Plants regenerated from anthers of transgenic lines had resistance to hygromycin B. Plants regenerated from anther culture are grown in a greenhouse.

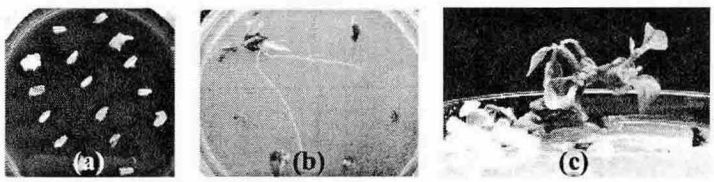

Fig. 1. Anther culture of transgenic pepper.

(a) callus induction from microspores; (b) plant regeneration from microspore-derived embryogenic callus; (c) plant before transferring into a pot.

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