GMR Genetics and Molecular Research
Online Journal
ISSN:1676-5680

Improved production of transgenic *Dioscorea zingiberensis* (Dioscoreaceae) by *Agrobacterium tumefaciens*-mediated transformation

L. Shi[1], J.Q. Fan[2], C.G. Hu[2], J. Luo[1] and J.L. Yao[1]

[1]College of Life Science and Technology, Huazhong Agricultural University, Wuhan, Hubei, China
[2]College of Horticulture and Forestry Sciences, Huazhong Agricultural University, Wuhan, Hubei, China

Corresponding author: J.L. Yao
E-mail: yaojlmy@mail.hzau.edu.cn

Genet. Mol. Res. 11 (1): 244-253 (2012)
Received April 18, 2011
Accepted November 11, 2011
Published February 3, 2012
DOI http://dx.doi.org/10.4238/2012.February.3.4

ABSTRACT. The establishment of high-efficiency *Agrobacterium*-mediated transformation techniques could improve the production of *Dioscorea zingiberensis*, a medicinal species with a high diosgenin content. We co-cultivated embryogenic calli induced from mature seeds with *A. tumefaciens* strain EHA105. A binary vector, pCAMBIA1381, which contains the *gfp* and *hpt* genes under the control of the ubiquitin promoter and the CaMV 35S promoter, respectively, was used for transformation. Pre-culture, basic medium, acetosyringone, and bacterial density were evaluated to establish the most efficient protocol. The optimal conditions consisted of MS medium without $CaCl_2$ for pre- and co-cultivation, three days for pre-culture, addition of 200 µM AS, and an OD_{600} of 0.5. The transgenic plants grown under selection were confirmed by PCR analysis and Southern blot analysis. This protocol produced transgenic *D. zingiberensis* plants in seven months, with a transformation efficiency of 6%.

Key words: *Dioscorea zingiberensis*; *Agrobacterium tumefaciens*; GFP; Embryogenic calli; Transformation

