A replicating vector based on beet curly top virus for the expression of recombinant proteins

Kyung-Il Kim, Ho-Yong Chung, In-Sik Chung
Plant Metabolism Research Center, Kyung Hee University, Suwon, Korea 449-701
TEL: +82-31-201-2436, FAX: +82-31-202-9885

Abstrasct

Beet curly top virus (BCTV) belongs to geminivirus subgroup II. This virus infects a wide range of dicotyleonous plant hosts and has a monopartite genome. In this study, we examined the use of BCTV elements to enhance the expression of recomninant GFP in *Agrobacterium*-inoculated leaf-disks of *Nicotiana benthamiana*. Southern hybridization analysis showed that unit-length DNAs of replicated BCTV could be detected 3, 6 days after the cultivation of *Agrobacterium*-inoculated leaf-disks of *N. benthamiana*. Recombinant GFP was expressed with a molecular size ~29 kDa in *Agrobacterium*-inoculated leaf-disks using a BCTV replicon-assisted expression vector system. The expression level of recombinant GFP using the BCTV replicon-assisted system was much higher than using the control vector without BCTV replicon. Our findings show that BCTV replicon-assisted expression could be potentially useful in the production of recombinant proteins in a plant cell system. This work was supported by a grant form the Rural Development Adminitration through Bio-green 21 Project.

References

1. Chalfie M, Tu Y, Euskirchen G, Ward WW, and Prasher DC, Green fluorescent protein as a marker for gene expression (1994), *Science*, 263, 802-805.
2. Mor TS, Moon YS, Palmer KE, Mason HS, Geminivirus vector for high-level expression of foreign proteins in plant cells (2003), *Biotechnol. Bioeng.*, 81, 430-437.
3. Stenger DC, Revington GN, Stevenson MC, Bisaro DM, Replicational release of geminivirus genomes from tandemly repeated copies : Evidence for rolling-circle replication of a plant viral DNA (1991), *Proc. Natl. Acad. Sci.* USA, 88, 8029-8033.