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Vector construction and high frequency genetic transformation using *Agrobacterium tumefaciens* of *Codonopsis lanceolata*

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Objectives

We have tried to make transformation of *Codonopsis lanceolata* by copper chaperon gene derived from *codonopsis* for improving triterpen biosynthesis through *Agrobacterium tumefaciens* and successfully obtainedtransgenic *Codonopsis lanceolata* by tissue culture system.

Materials and Methods

1. Material

Plant - *Codonopsis lanceolata* cultured *in vitro*.

Agrobacterium strain - GV3101/pRD400-CCH.

Gene CCH (*Codonopsis lanceolata* copper chaperon).

2. Methods

Transgenic shoots were obtained directly from leaf explants of *Codonopsis lanceolata* cultured *in vitro* on the MS media containing phytohormone (2 mg/L Naphthaleneacetic acid, 2mg/L benzyladenine, kanamycin 100 mg/L and cefotaxim 250 mg/L)

Results and Discussion

In *Codonopsis lanceolata*, copper chaperon (*CCH*) induces the combination of the copper to the specific region of copperbinding protein with to prevent the accumulation of the free copper ion which is the possibility of getting up cellvirulence. Introduce of gene connected with disease and transformation system of *C. lanceolata*, *CCH* gene transformation of plant using *Agrobacterium*. *CCH* of 35S-35S-AMV-*CCH*-Tnos, has been constructed which were mobilized into *Agrobacterium tumefaciens* strain GV3101 disarmed Ti-plasmid. *CCH* gene were introduced into the binary vector pRD 400. The transgenic ginseg plants were propagated using repetitive secondary embryogenesis and introduced NPTII and *CCH* genes of the transgenic ginseng were successfully identified by the PCR and survival test on the medium. Rhizome explant excised from callus and shoot regeneration of *C. lanceolata* wee co-cultured with *Agrobacterium tumefaciens* strain GV3101. Transferred to MS medium containing 2mg/ℓ BA, 2mg/ℓ NAA, 100mg/ℓ kanamycin sulfate, 500mg/ℓ cefortaxime. Upon transfer to MS medium containing 0.1mg/ℓ NAA of the root developed into plantlets. The introduced NPTII and *CCH* geneof the transgenic plants were successfully identified by the PCR and With the tobacco transformationRT-PCR together and it reconfirms.

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