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Agrobacterium-mediated transformation of Welsh onion(*Allium fistulosum* L.) using embryogenic callus

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Objectives

The aim of this study was to develop an efficient transformation system of welsh onion.

Materials and Methods

1. Material :

- Plant : 'KeumJang(Open-pollinated Variety)'
- *Agrobacterium tumefaciens* strain : LBA4404/pCAMBIA3301

2. Methods : Embryogenic callus induction → Transformation → Regeneration → Transgenic plant selection(GUS assay, Herbicide resistance)

Results and Discussion

We developed the plant regeneration system using immature embryo of welsh onion. The embryogenic callus were induced from immature embryo of welsh onion in MS medium containing 0.45uM of 2,4-D and 0.44uM of BAP. The induced embryogenic callus were co-cultured with *Agrobacterium tumefaciens* harboring pCAMBIA3301. Multiple shoot were induced in selection medium(MS medium containing BA). To achieve higher acclimatization of regenerated plantlet, different concentration of NAA and gelling agent were analyzed. The putative transgenic welsh onions were analyzed by GUS gene expression and herbicide resistance. [This work was supported by grant from BioGreen 21 Program, Rural Development Administration, Republic of Korea]

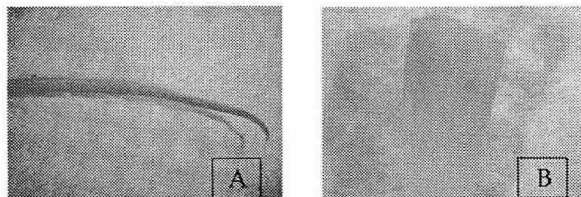


Fig 1. GUS gene expression in non-transgenic (A) and putative transgenic(B) welsh onion

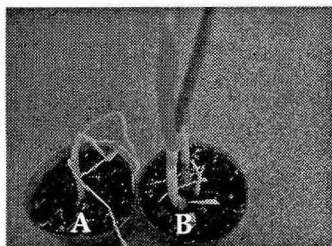


Fig 2. The selection of putative transgenic welsh onion using herbicide spray(0.3% of Basta). Non-transgenic plants(A), Putative transgenic plants(B)