

Control the flowering time of Brassica : FLC, CO, and VRN1

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Objectives

FLC genes were isolated in *Brassica* species and expressed *B. campestris* var. Samjin, to observed flowering phenotype

Materials and Methods

1. Materials :

Plants - Chinese cabbage, radish and cabbage

Agrobacterium strain - LBA 4404

2. Methods :

FLC genes were isolated by RT-PCR from Chinese cabbage.

Transformation of Chinese cabbage was performed as described by Cho (2001), Kang (2001) and Kim (2002)

Results and Discussion

Flowering locus c (FLC) gene contains a MADS domain and represses flowering during vegetative growth.

We isolated six flowering locus c (FLC) genes from four varieties of Chinese cabbages (*Brassica campestris*), one of Cabbage (*Brassica oleracea*), and one of Radish (*Raphanus sativa*) by RT-PCR. The sequences of FLC genes were well conserved. During cold condition (4°C), FLC transcription level of Chinese cabbages was decreased gradually. To investigate the effect of constitutive over-expression of FLC gene on flowering time of Chinese cabbage, the FLC gene from *B. campestris* var. Maeryuk was transformed to *B. campestris* var. Samjin and expressed under the control of CaMV35S promoter. The flowering time of transgenic plants (T_0 and T_1) was monitored after cold treatment.

We are also trying to transform inbred lines of Chinese cabbage with other constructs, such as FLC gene fused with cold inducible promoters, RNAi structure of CO and VRN1 gene.