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Cloning of Arginine Decarboxylase Genomic DNA from Carnation(*Dianthus caryophyllus* L. cv White Sim)

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Argine Decarboxylase(ADC) is one of the key enzymes in the synthesis of putrescine in plants and it has been well known that the ADC activity is regulated depending on the physiological conditions. For example, ADC activity increases during cell elogation and in various stress condition. However, the mechanism which regulates the ADC activity is poorly understood. To study the regulation of polyamine biosynthesis, we have isolated a cDNA clone(GenBank Acession NO U63832) which enodes ADC from carnation(*Dinathus caryophyllus* L. White sim) petal. From genomic Southern analysis, we have found that two ADC DNAs exist in carnation genome. For promoter analysis, we have cloned two ADC genomic DNAs from carnation. Two genes are called gCARADC5 and gCARADC8, respectively. There is no intron in transcribed regions of two genes. The separated genomic clone, gCARADC8, was approximately 7.2 kb in size. Nucleotide sequence has 97.7% identity and deduced amino acid sequence has 98.5% identity with the cDNA of CARADC. The 5'-leader region of gCARADC8 is 4207 nt, and TATA box (TATAAA) located -36 relative to the transcription initiation site. To identify potential transcription-factor-binding sites, this sequence was analyzed by Wisconsin Genetic Computer sequence analysis software. As a result of sequencing of gCARADC5, nucleotide sequence is identical with the cDNA of CARADC. The promoter region of gCARADC5 is under sequencing. If two genomic DNAs are fully sequenced, we expect to get the interesting result through the promoter analysis of ADC gene.

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Chromosomal Localization of rDNA sites by Fluorescence *in situ* Hybridization in *Allium tuberosum* and Its Regenerant through Tissue Culture

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Regenerated plants with karyotype comprising 2n=4x=30, obtained from flower bud-derived calli of *Allium tuberosum* were analyzed. To analyse the karyotype and repetitive DNA sequences in the wild species (2n=4x=32) and its regenerant, the positions of the 18S-5.8S-26S and 5S rDNA have been physically mapped on the chromosomes of both plants by bi-color fluorescence *in situ* hybridization. In the wild species of *A. tuberosum*, there are two sets of 5S rDNA sites, each on median chromosomes 6 and 7. One site is in the proximal position of the short arm in a chromosome 6, while the other site, which is consistently less prominent, is in a intercalary position of the long arm in a chromosome 7. There is one set of 18S-5.8S-26S rDNA site in the secondary constrictions flanking with all satellite and the terminal region of short arm in a submedian chromosome 8. The results suggest that the two lost chromosomes are the other chromosomes which don't have the 18S-5.8S-26S and 5S rDNA sites and chromosomes 6, 7, and 8 have not been lost during tissue culture. The possibility and the expectation of new crops to be developed from aneuploid plants with karyotype comprising 2n=30 is described.