

(05-1-140)

Cytogenetic characterization of two medicinal plants, *Cnidium officinale* and *Ligusticum chuangxiong*

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Objectives

Two medicinal plants, *Cnidium officinale* and *Ligusticum chuangxiong*, cultivated in Korea, are very similar in morphology. This work was performed to identify and characterize two species cytogenetically.

Materials and Methods

1. Materials:

Plant - *Cnidium officinale* (Ill Chun Gung) and *Ligusticum chuangxiong* (To Chun Gung).

2. Methods:

FISH technique was applied to localize 5S and 45S rRNA genes on the chromosomes of two species. The ITS of ribosomal RNA gene was also sequenced.

Results and Discussion

In order to elucidate the interspecific relationships of the two species, molecular cytogenetic analysis was conducted. The somatic chromosome number of *C. officinale* was $2n=2x=22$ with karyotype formula of $k(2n)=2x=8m+2sm+1st$. *L. chuangxiong* had triploid chromosome number ($2n=3x=33$) with karyotype formula of $k(2n)=3x=8m+2sm+1st$. The 5S and 45S rDNA genes were physically mapped on the metaphase chromosomes using fluorescence in situ hybridization (FISH). Each two pairs of 5S and 45S rDNA genes were detected on the different homologous chromosomes in *L. chuangxiong* and each three pairs of these rDNA genes were also localized on the exact loci of the homologous chromosomes in *C. officinale*. ITS (Internal Transcribed Spacer) sequences of ribosomal RNA gene showed that only one base pair varied between *C. officinale* (738 bp) and *L. chuangxiong* (739 bp).

Acknowledgments: This work was supported by a grant from BioGreen 21 Program, Rural Development Administration, Republic of Korea.