

# **Esterase Isozyme Patterns in Developing Plant Regeneration from Calli of *Citrus junos* Sieb..**

Hyun-Hwa Lee<sup>1)</sup>, Sook-Young Lee<sup>2)</sup>, Min-Hee Park<sup>1)</sup>,  
Hyun-Gyou Jang<sup>1)</sup> and Hong-Sub Kim<sup>1)</sup>

<sup>1)</sup>Department of Biological Science, College of Natural Science, Chosun University

<sup>2)</sup>Department of Rehabilitation, Dongshin University

The callus from the immature embryo of *Citrus junos* Sieb. callus was developed into the two callus type, embryogenic callus and nonembryogenic callus, which can be distinguished by visual examination depending on color and appearance.

The embryogenic and nonembryogenic callus, and the various stages of the somatic embryo were examined the changes of esterase activity, and their isozyme patterns as well.

The protein content and esterase activities was gradually increased on the developmental stages of embryo. Total protein pattern were different by the SDS-PAGE, and were appeared strong band of 23 KD in the torpedo stage. The pattern of the esterase isozyme was exhibited a difference between embryogenic callus and nonembryogenic callus. It was appeared pI 6.0, 8.0, 8.2 in the embryogenic callus. Also the new band of pI 4.75 was appeared in the cotyledon.

These results suggest that the changes of esterase activities and isozyme patterns are important factor in the differentiation and development of citrus.