E210 The interrelationship between polyamine and ethylene biosynthesis in transgenic tobacco and *Arabidopsis* leaves with SAMDC and ACC oxidase of carnation in sense and antisense

Jee Yoon Kim*[1], Sun Hi Lee[1], and Ky Young Park[2]
Dept. of biology, Yonsei Univ.[1], Dept. of biology, Sunchon National Univ.[2]

Two metabolic pathways that produce plant growth substances physiologically antagonistic to each other, specially in senescence, branched out from a common substrate, *S*-adenosylmethionine (SAM). During early development while ethylene produce in very low level, SAM is preferentially metabolized to produce polyamine. This branch-point is a control point for committing SAM for the production of polyamines or ethylene and is developmentally regulated. In order to establish a correlation between the polyamine and ethylene pathways, *Agrobacterium*-mediated transformation was used to produce transgenic tobacco and *Arabidopsis* plants with antisense expression and/or overexpression of carnation SAMDC (*CSDC9* and *CSDC16*) and 1-aminocyclopropane-1-carboxylic acid (ACC) oxidase (*pSR120*) under the control of the 35S CaMV promoter. In transgenic tobacco leaves with antisense expression of *SAMDC* gene it did not make any significant changes in the polyamine levels, in spite of the fact that SAMDC activity was almost completely blocked. However, the ethylene production was increased by more than two times with the treatment of auxin, IAA, in these transgenic tobacco leaves. Also, transgenic *Arabidopsis* plants expressing carnation ACC oxidase gene in sense and antisense showed no significant changes in polyamine contents. These results suggested that polyamine biosynthesis was tightly regulated in maintaining cellular levels, but ethylene biosynthetic pathways was regulated by a mode in a competition with polyamine pathways.

E211 Biological Activities of Urushiol Derivatives from the Sap of Lacquer Tree (*Rhus vernicfera* STOKES)

Myong-Jo Kim, Yong-Hwa Choi, Haeng-Soon Lee & Sang-Soo Kwak
Plant Biochemistry Research Unit, Korea Research Institute of Bioscience and Biotechnology, P.O. Box 115, Yusong, Taejon 305-600

We isolated four olefinic catechols, commonly referred to as urushiol, from the sap of Korean lacquer tree (*Rhus vernicfera* STOKES) as strong antioxidative and antifungal compounds by a bioassay guided fractionation. Four urushiol derivatives showed strong free radical scavenging activities on DPPH radical, in which 3-pentadecylcatechol exhibited the highest activity (IC_{50}: 1.2 $\mu g/m\ell$). They also marked a significant inhibitory activity on lipid peroxidation (IC_{50}: 2.1-3.5 $\mu g/m\ell$), which is approximately two times higher than that of α-tocopherol. They showed a strong antifungal activity, whereas they have no or low activity against the bacteria and yeasts. Among them, 3-pentadecylcatechol marked the highest activity on the spore germination of *Cladosporium herbarum* (MIC: 4 $\mu g/m\ell$).