E213

Inhibitory Effect of Polyamine on the Conversion of 1-Aminocyclo propane-1-Carboxylic Acid (ACC) to Ethylene in *Vigna radiata*

Min Seon Choi*, Soon Young Kim[1] and Seung-Eun Oh
Department of Biology, Kon-Kuk University
[1]Department of Biology, Andong National University

The conversion of exogenous ACC to ethylene in mung bean hypocotyl segments was stimulated by the enhancement of the influx of external Ca^{2+} and suppressed by the treatment of Ca^{2+}-chelator or Ca^{2+}-channel blocker. Polyamine inhibites the conversion of ACC to ethylene. For the address of the inhibition mechanism by polyamine, protoplasts were isolated from the hypocotyl segments and seperated two types by 4/8% Ficoll step gradients, such as cytoplasm rich (cr)- and vacuole rich (vr)-protoplast. The conversion rate of ACC to ethylene and the inhibition rate of the conversion of ACC by the treatment of spermine in vr-protoplst were higher than those in cr-protoplasts. However, by the treatment of high concentration of exogenous Ca^{2+}, the inhibition rate of the conversion of ACC by spermine in both types of protoplasts was reduced. From these results, we suggest that the inhibition of the conversion of ACC to ethylen colud be resulted from the reduction of cytosolic Ca^{2+} concentration by polyamine. Therefore, we test now whether Ca^{2+} released from the intracellular stores stimulates the conversion of ACC to ethylene in protoplast or not. And we try to determine the change of the cytosolic Ca^{2+} concentration after treatment of polyamine using two types of protoplasts.

E214

The Ethylene-induced Ascorbate Peroxidase Isozymes in Etiolated Soybean Callus at the Stationary Phase

Do Kyun Kim*, Sang Choon Lee and Seung-Eun Oh
Department of Biology, Kon-Kuk University

The production of ethylene in etiolated soybean callus induced form the seedling's root was promoted both at the early exponential phase (EEP) and at the prestationary phase (PSP). Both activities of Guaiacol peroxidase (GuPOX) and Ascorbate peroxidase (AsPOX) in soluble proteins from callus were increased after promotion of endogenous ethylene production. Especially, the activity of AsPOX was significantly increased at the stationary phase (SP) after secondary promotion of ethylene at the PSP. AsPOX activity at the SP was strongly inhibited by the treatment of 2,5-Norbornadiene (NBD), a known competitive inhibitor of ethylene action. However, the activity of GuPOX (the major family of plant peroxidase) at the same phase was not suppressed by the treatment of NBD. Two isozymes of AsPOX in etiolated soybean callus at the SP were seperated. The activity of one of isozymes was changed more dramatically compared wtih the other isozyme during the SP. However, activites of both isozymes were suppressed by the treatment of NBD. Now, we test the possibility that the phosphorylation/dephosphorylation of specific proteins might be participated in the process of AsPOX activation by ethyelen.