E211 The changes in ethylene product during tomato (*Lycopersicon esculentum* Mill.) leaf senescence

Hye Young Lee* and June Seung Lee
Department of Biology, Ewha Womans University

As a developmental process, senescence is characterized by the facts that cells undergo distinct metabolic and structural changes such as decrease in chlorophyll contents, destruction of many kinds of proteins and RNAs, and increase in senescence related genes which occur prior to cell death. In this study, the changes of ethylene production during senescence of detached tomato leaf were investigated. The ethylene production rate reached to maxima in 1 day & 5 day after initiation of incubation for senescence treatment, and then subsequently declined. ACC content was lower in 0 and 1 day and higher in 5 and 6 days than other days after start of senescence treatment. Also found is that ACC synthase showed higher activities in 0 and 5 days after the start of incubation while ACC oxidase did in 1 day after the start of incubation. Based on these results, the rise of ethylene production rate is thought to be associated with increasing activity of ACC synthase, the rate-limiting enzyme of ethylene biosynthesis pathway and with increasing activity of ACC oxidase in 5 and 1 day after initiation of senescence treatment, respectively. The increase in ACC synthase activity found immediately after leaves are detached seems to be due to wound stress. These work will be helpful to characterize the mechanism for regulation of ethylene production in relation to tomato leaf senescence.

E212 Regulation of Ethylene Production in Mungbean Hypocotyl by Malformin

Soon Young Kim, Young Suk Kwon, and Sun Hwa Lim*
Department of Biology, Andong National University

Malformin is an active plant growth regulator isolated from the fungus *Aspergillus niger*. 1-aminocyclopropane-1-carboxlic acid (ACC)- and Indole 3-acetic acid (IAA)-induced ethylene production was measured in mungbean hypocotyl segments with malformin. Malformin (10^{-6} M) showed the maximum inhibition in IAA- and ACC-induced ethylene production. The in vivo activity of ACC oxidase was significantly inhibited by the treatment of 10^{-6} M malformin compared to 10^{-7} M and 10^{-8} M of malformin at 8 hr incubation. And the content of ACC in the hypocotyl segments increased in the treatment of 10^{-6} M malformin at 10 hr incubation. These results suggest that 10^{-6} M malformin might act on the conversion step of ACC to ethylene in the ethylene production pathway. This response is opposite to the fact that 10^{-6} M malformin stimulated the ethylene production in primary roots of maize.