GC-MS-SIM을 이용하여 정량하였다. ABA 함량은 salt 처리후 시간이 경과할수록 증가하는 경향을 보였으며, salt 처리 농도에 비례하여 증가속도가 빠른 것으로 나타났다 (400mM 처리의 경우 처리 후 1시간내에 2-3배 증가). JA 함량의 경우도 ABA와 비슷한 경향을 보여 처리 후 1시간 이내에 급격히 증가하는 경향을 보였다. ABA와 동일 전구체에서 생합성되는 GA 함량은 salt 처리 농도가 증가할수록 감소하는 것으로 조사되었다. 특히 3-hydroxylase의 활성정도를 추정할 수 있는 GA_1/GA_{20}의 비율은 salt농도가 증가함에 비례하여 감소하는 것으로 나타나 salt 스트레스하의 식물생장의 둔화는 식물체내의 일차 또는 이차물질의 교란뿐만 아니라 식물호르몬의 감소와도 밀접히 연관되어 있음을 보여주었다.

E212 Differential Expression of AtTPS Suggests a Regulatory Role of Trehalose

Kyung-Hoon Lee*, Jin-Young Yang, Sung-Soo Jun, and Young-Nam Hong
School of Biological Sciences, Seoul National University, Seoul 151-742

Trehalose is a disaccharide of two glucose units. It is synthesized by sequential action of TPS (trehalose-6-phosphate synthase) and TPP (trehalose-6-phosphate phosphatase) and is degraded by trehalase. However, it is rarely found in higher plants and its role is unknown. We have shown that transgenic tobacco plants producing trehalose exhibited improved tolerance against dehydration and high temperature. But minute amounts of trehalose detected in these plants suggests that it is not likely to act as osmoprotectants. Recently, functional homologs of *TPS* and *TPP* were found in *Arabidopsis*. To look into the role of trehalose in *Arabidopsis* we generated transgenic *Arabidopsis* plants overexpressing *E. coli* TPS gene (*ots A*) or carrying -glucuronidase (*GUS*) as reporter gene to examine *AtTPS* expression by vacuum infiltration and in the process of making antisensor plants. Overexpressor plants manifested severe dwarfism and extended generation time as in transgenic tobacco in varying degree, but morphological alterations in leaf shape or branching patterns were not observed. Contrastingly, GUS plants looked normal. Histochemical analysis of GUS plants revealed that *AtTPS* is not constitutively expressed implying that trehalose is not a mere metabolic molecule. *AtTPS* is mainly expressed in stems and leaves on vascular bundle area, but is not expressed in the roots and flowers at all. It was also strongly expressed on stalk of silique. Furthermore, the expression of *AtTPS* was increasingly induced by drought or heat stress, but not by chilling stress.

E213 Phosphorylation of BRs in Suspension Cultured Cells of Phaeolus vulgaris

Tae-Wuk Kim* and Seong-Ki Kim
Department of Life Science, Chung-Ang University, Seoul, 156-756, Korea

We first investigated phosphorylation of castasterone(CS) and brassinolide (BL) in suspension cultured cells of *P. vulgaris* using cell-free system by addition of ATP and Mg^{2+} as a substrate and cofactor. Enzyme products of CS and BL were analyzed by GC-MS. Bismethaneboronate (BMB)-trimethylsilly(TMSi) of two polar CS metabolites gave a molecular ion at *m/z* 664 identical to BMB-TMSi of CS phosphate ester. Analysis of mass spectra revealed that phosphate is incorporated into a hydroxyl at C-22 or C-23 of CS. BMB-TMSi of a BL metabolite showed a molecular ion at *m/z* 680 which is identical to a BL phosphate ester. Mass fragmentation pattern indicated that phosphorylation also occurred at either C-22 or C-23 of BL. Studies of biological activity and determination of the position of BRs phosphates are under investigation.