the APX activity and ascorbate content have been found during germination as one of the antioxidative defences during normal plant development. Accordingly we examined the transcription level of cytosolic APX (cAPX) in hot pepper. The rate of synthesis of cAPX increased with increasing germination time up to 96 hours after germination. Various environmental stresses are known to cause oxidative stress within plant cells and the accumulation of hydrogen peroxide has been observed in response to chilling. Therefore we examined the effect of chilling on the expression of cAPX and the role of hydrogen peroxide as a putative oxidative stress signal in the induction of cAPX.

E220

Molecular Cloning and Characterization of RsGluR cDNA from Small Radish

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In animal brains, ionotropic glutamate receptors (iGluRs) function as glutamate-activated ion channels in rapid synaptic transmission. Recently it is proposed that GluRs in plants are involved in light signal transduction pathway in plants. Accordingly, we have isolated and characterized a cDNA encoding glutamate receptor (RsGluR) from Small Radish (*Raphanus sativus* L.). The open reading frame of the RsGluR cDNA consists of 2748 base pairs and encodes a poly peptide containg 916 amino acids. RsGluR protein is similar to the A.thaliana and animal iGluRs in that it contains the transmembrane domains (M1 to M4) and two putative extracellular ligand binding domains (GlnH1 and GlnH2). RT-PCR and Southern blot analysis showed that RsGluR gene are expressed in all organs of small radish, including cotyledons, hypocotyl, leaf and root. To investigation the possible function of RsGluR, seedlings were grown in the presence of DNQX (an antagonist of animal kainate, AMPA iGluRs). They showed impaired light control in chlorophyll and anthocyanin systhesis. No effect of DNQX could be observed in the dark. This experiment suggests that glutamate receptor is also involved in light signal transduction pathway of small radish.

E221

Arrangement of Microtubular Cytoskeleton by Stress Factors During Mesophyll Cell Isolation for Cell Culture

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식물세포의 배양과정에서 stress로 작용하는 요인들이 세포골격단백질의 형태변화에 미치는 영향을 실험하였다. Stress의 요인 가운데 osmolarity와 pH, 세포분리 효소에 의한 영향을 알아보았다. Osmolarity의 변화에 따른 영향에서 정상적으로 섬세한 microtubular cytoskeleton의 구조를 보이는 대조군에 비교하여, 0.2 Osmol 이상에서는 bundle을 형성하고 0.4 Osmol 이상에서는 파괴되기 시작하여 1 Osmol 이상에서는 완전히 파괴되었다. 세포분리 효소들에 의한 영향은 Macerozyme과 Pectolyase을 0.5% 용액에서 2시간 까지 처리한 경우에 엽육세포의 세포골격이 정상에 가까운 골격구조를 보였으며, 그 이상의 효소농도나 처리시간은 골격단백질의 파괴현상이 나타났다. pH의 영향은 pH 3 이하 pH 11 이상에서는 세포골격이 완전히 파괴되었으며, pH 7-9에서 정상적인 골격구조를 보였다. 이와 같은 결과는 세포배양과정에서 가장 주요한 요인들로 알려진 osmolarity, pH, enzyme의 처리시간 등의 요인들이 세포분리 과정에서 골격단백질의 변화를 야기 시킴으로서 배양에 영향을 미치는 것으로 추측된다.