E240 Senescence of Stem Nodules of *Sesbania rostrata*

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The limited studies of senescence of nodules fixing dinitrogen has been carried on mainly with root nodules. Because the nodules with certain age were not easily discriminated from many nodules with different age developed on the rooting system of Legumes, it is very difficult to point out the initiation time of senescence. In the present study, the stem nodules of *Sesbania rostrata-Azorhizobium Caulinodans* ORS 571 system, which were induced once on certain time and consequently were same age and size, were used to fine the initiation time of senescence. The plant and stem nodules were harvested on 15 days after inoculation and then every 10 days. Nodule mass, the specific nitrogen fixing activity and leghemoglobin content of nodules which were known to be indicators of nodule senescence were determined. The results showed that the mass of host plant increased until 60 days after inoculation. However, the growth, specific nitrogen fixing activity and leghemoglobin content of stem nodule were decreased after 45 days. It is reasonable to consider that host plant will promote the initiation and growth of new nodules, if new infectible sites of stem surface is occupied by bacteria. The nodulation nitrogen fixing activity of newly developing nodules and the content of compound expected to be involved in internal regulation will be determined, after new nodules are induced on stem before and after the senescence of old nodules developed much earlier.

E241 Reciprocal Regulation of Sucropse phosphate synthase and Sucrose synthase Gene Expression from Tomato Roots by Salt Stress

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a cDNA clone (*LeSPS*) encoding *SPS* of tomato (*Lycopersicon esculentum* Mill.) was isolated from a root cDNA library to investigate the regulation of *SPS* gene under salt stress. *SPS* gene expression reached in maximal level at 0.3 M NaCl after 24 h exposure, and in addition, the level of *SPS* gene expression was also increased by mannitol at an isoosmolar concentration of salt. However, the accumulation of *SuSy* transcript in tomato root was strongly suppressed by salt stress and osmotic stress. More interesting is that the responses of *SPS* and *SuSy* gene to salt stress appears to be mimicked by treatment of the seedling with 5 mM EGTA. The treatment of EGTA alone induced strongly the *SPS* gene expression and supressed *SuSy* gene. Similar results have shown with these genes in the response to EDTA, suggesting that the chelating divalent cations in the plasma membrane may cause the alteration of gene expression in tomato root tissues. Addition of 5 mM of $CaCl_2$ effectively blocked the salt-induced accumulation of *SPS* transcripts, but did not affect the expression of *SuSy* gene. Likewise, the other divalent cation, Mg^{2+} suppressed the salt-induced *SPS* gene expression in tomato root tissues. From these results, it is postulated that the alteration of membrane stability by either salt or chelating agents of divalent cations could be the primary factor to exert modulating expression of *SPS* and *SuSy* gene.