E221 The mechanism of Internal regulation of nodule formation and growth in the legume(*Sesbania rostrata*)

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It is well kwon that the existing active nodules on the one side of roots inhibit nodule formation and nodule growth on the another side of roots. This study was conducted to understand the mechanism of internal regulation of nodule formation and nodule growth. The first nodules were induced on the stem or roots of *Sesbania rostrata* and then the second nodules were induced on the roots or stem, respectively. The number, mass, activity and nodule formation rate(No. of nodules/No. of infectable sites) were determined. The data showed that the developing or developed root nodules have inhibited or retarded the nodule formation on the stem. To elucidate the possible signal compounds released from nodules or the possible inhibitory compounds produced by stem or leaves in response to those signal compounds. The composition and amount of amino acids were analyzed. The amount of amino acid in the plant organs suggested that Asn and/or Asp could be mediaters to regulate nodule formation and growth.

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Effects of Carbon Sources and Reducing Reagents on Cellulose Production in Barley Suspension-Cultured Cells

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To clarify the low level of cellulose biosynthesis of *in vitro* cultured cells, the effects of several biochemical factors such as carbon sources (sucrose, maltose, UDP-glucose) and reducing reagents (ascorbic acid, glutathione, cysteine) on the cellulose production were investigated in suspension-cultured cells of normal and mutant barley strains with less cellulose-production. In the suspension-cultured cells, different concentrations of sucrose and maltose did not promote cellulose production. However, UDP-glucose (3 or 10 mM) supplement, as a direct precursor for cellulose, promoted 20-30% the production in some strains. The low concentrations (1 mM) of ascorbic acid and glutathione promoted 20 - 50% the production in one strain. These results suggest that low cellulose biosynthesis of the normal culture cells is due to a decreased level of the UDP-glucose as a precursor, and that the oxidative condition of external medium impedes cellulose synthesis in some manner.