D209 Identification and Characterization of Dehydration-Responsive Genes in Embryogenic Calli of Carrot (*Daucus carota*)

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The ability to produce morphologically and developmentally normal embryos and whole plants from undifferentiated somatic cells in culture, through the process of somatic embryogenesis, resides uniquely within the plant kingdom. Among effective methods of plant regeneration through somatic embryogenesis, it was reported that dehydration enhanced the process and recently, the moderately low humidity culture of carrot resulted in a 30 times higher frequency of somatic embryo formation than control group. From that fact, our study focused first on cloning of dehydration-responsive genes through performance of DDRT-PCR with total RNA isolated from embryogenic calli of carrot. The thirteen of dehydration-responsive genes were screened. Six genes(*dr4, dr8-1, dr8-2, dr9 ,dr12, and dr13)* were cloned and characterized by RT-PCR and sequence analysis. Interestingly, both expressions of *dr8-1* and *dr8-2* are dependent on dehydration and especially, *dr8-2* has a high sequence homology to ribosomal protein s19 from *solanum tuberosum*(potato), which showed 15-to 20-fold high differentially in the early stages of tuberization. Besides, there are many reports that the expression of ribosomal protein genes is highly regulated during plant development and in response to biotic and abiotic cues. Thereby, there is high possibility that the expression of *dr8-2* may related to developmental stages of somatic embryogensis.

D210 Plant Regeneration via Organogenesis of *Raphanus sativus* (Radish)

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Multiple shoots from *Raphanus sativus* (radish) were regenerated in MS medium with 3.0 mg/L kinetin (KIN) for 3 weeks. Four-day-old cotyledons with petiole as explants were more effective in shoot induction than hypocotyl explants, and light was more effective than darkness. In tissue culture of radish, explants generally formed calli, but were inhibited in the induction of shoots and roots in 2,4-dichlorophenoxyacetic acid (2,4-D), formed only roots in α-naphthaleneacetic acid (NAA), but both shoots and roots in indole-3-acetic acid (IAA), and slow growing elongated shoots in benzyladenine (BA). Therefore, IAA and KIN were very effective for regeneration of *R. sativus*. When regenerated shoots were transferred to MS medium, roots were formed within 4 weeks, and grew into normal plants.