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Plantlet Regeneration and Novel Protein Synthesis in a Long-term Cultured Callus of Rice in Response to Abscisic Acid

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Abstract:

Some physiological changes induced by abscisic acid (ABA) were investigated in a long-term cultured callus of rice, *Oryza sativa*, L. cultivar YUHKARA. The results were as follows : (1) The retardation of callus growth was evident, while dry matter content was apparently increased with the addition of abscisic acid (ABA). (2) Soluble protein content was increased both in fresh weight and dry matter bases. (3) The novel proteins (14, 18.5, 25, 45 kDa) were induced by ABA and disappeared after plantlet regeneration, while proteins of the same molecular weight existed in intact mature seed embryos and disappeared when the seeds were germinating. (4) Moreover, the electrophoretic patterns of total soluble proteins from callus being cultured with ABA, and from callus with regenerating plantlets, were very similar to those of total soluble proteins from mature seed embryos and germinating seed embryos in SDS polyacrylamide gel plates. (5) The practice that the callus precultured with addition of ABA, especially 10 mgL^{-1} ABA, followed by transferring to a regeneration medium gave us a high frequency of plantlet regeneration observed in the long-term culture of callus.

Keywords:Abscisic acid, Novel Proteins, *Oryza sativa*, Plant regeneration, Rice callus

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