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研究论文

籼稻体细胞胚胎发生特异性蛋白质研究

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摘要 以籼稻Oryza sativa L.subsp. indica品种“广陆矮4号”幼穗和种子为外植体，在含有2，4-D2.0mg/L的MS培养基上，分别形成胚性和非胚性愈伤组织，建立体细胞胚胎发生实验系统。应用Native/SDS双向凝胶电泳分析，结果表明，非胚性愈伤组织分化培养前后均存在一种分子量为45kD的非胚性蛋白质N1，另一种非胚性蛋白质N2（54kD）仅在分化培养前的非胚性愈伤组织中含量丰富。胚性愈伤组织则在分化培养后，产生特异性胚胎蛋白质E1（51kD）和E2（68kD）。分化培养基中的蛋白质含合成抑制剂亚胺环已酮（CH）抑制E1和E2的产生，转录抑制剂放线菌素D（Act.D）仅抑制E2的出现。

关键词 籼稻,体细胞胚胎发生,双向凝胶电泳,非胚性蛋白质,胚胎蛋白质

分类号

Studies on Specific Proteins of Somatic Embryogenesis in Oryz Sativa L. subsp. Indica

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Abstract An experimental system of somatic embryogenesis in Oryza sativa L. subsp. indica was established, which involved embryogenic calli induced from rudimentary panicles and nonembryogenic ones from mature seeds of Guangluai No.4(cv.), respectively, on a MS basal medium with 2.0 mg/L 2,4-D. Profiles of soluable proteins from the calli by native/SDS 2D PAGE (two dimension polyacrylamide gel electrophoreses) indicated that a polypeptide of 45 kD (MW) specific in the non-embryonic ones before and after the calli transferred to a redifferentiation medium, and another non-embryonic protein (N2) of 54kD rich in before and poor in after the non-embryonic callus transferred to the medium; or that both embryo-specific proteins of 51 kD(E1) and 68 kD (E2) were only present in the embryogenic callus on the redifferentiation medium, but absent from on an induction or a subculture medium with 2,4-D. Cycloheximide (CH), an inhibitor from protein synthesis, suppressed both presences of the E1 and the E2, while actinomycin D (Act.D), an inhibitor from gene transcription, only suppressed the presence of the E2. It is thence suggested that the E1 from regulation on post-transcription of the E1 gene and the E2 from regulation on transcription of the E2 gene during the somatic embryogenesis.

Key words Oryza sativa L. subsp. indica Somatic embryogenesis Native/SDS 2D PAGE Non-embryonic protein Embryo-specific proteins

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