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低溫逆境對綠豆白化幼苗之生長、粒線體活性及其蛋白質合成之影響

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摘 要

本研究以對低溫敏感的植物——綠豆 (*Vigna radiata* L.) 爲材料。在黑暗中萌芽 32 小時的綠豆幼苗，經 4°C 處理不同時間後，分析其生長、粒線體活性及蛋白質合成能力等；其結果顯示下列各種現象皆受到抑制：㈠幼苗的生長，㈡粒線體的 succinate dehydrogenease 活性；㈢幼苗的蛋白質合成能力。但低溫處理會導致幼苗在室溫下呼吸速率增快，且幼苗的組織也受到傷害，因此組織內溶質的漏出物增加。在 4°C 低溫處理下所合成的 ^{35}S- 蛋白質，經 SDS-膠體電泳分析及 fluorography 後，其中有 13 種蛋白質帶 (protein band) 是低溫誘導出的蛋白質 (chilling induced proteins)；其分子量是 110，88，78，69，58，48，38，27，22，19，14，12.5 及 10.5 KD，其中 88，69，58，48，38，14，12.5 及 10.5 KD 是主要的低溫誘導蛋白質。這些蛋白質完全與綠豆的熱休克蛋白質不同。