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Identification and Cloning of Radiation-Inducible polypeptide and cDNA in Red Pepper Cells

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Objectives

To identify radiation inducible polypeptides through two dimensional electrophoresis and to isolate cDNA from pepper cells which were subjected to enhanced dose of γ -ray stress.

Materials and Methods

1. Plant material: Pepper seedlings and suspension cells
2. Methods: Protein electrophoresis by IEF and SDS two dimensional electrophoresis, cDNA library screening and Northern blotting.

Results and Discussion

Based on protein spot analysis using two dimensional electrophoresis, five proteins (or polypeptides) in hydrophilic fraction, five proteins in hydrophobic and two in membrane fraction were markedly modified by radiation treatment (Figure 1). Some proteins were appeared to be up- or down-regulated, some disappeared, others were identified as newly synthesized by radiation stress in the plant cells. This result suggest that plant cells respond to radiation stress by changing their protein patterns. One partial cDNA clone, namely RSC-04, showing about 1.8 kb transcript size in Northern blot (Figure 2).

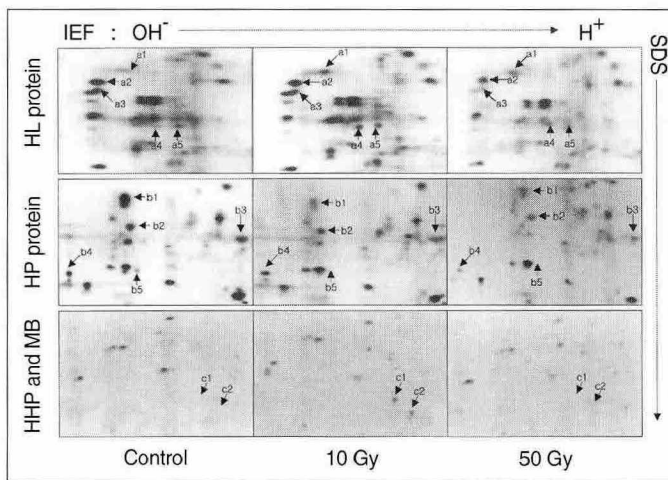


Figure 1. 2D-electrophoresis of pepper protein

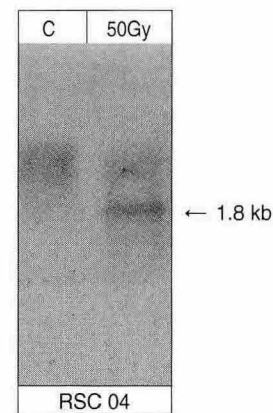


Figure 2. Northern blot of RSC-04