

## Analysis on protein fingerprint, RAPD and fruit quality of tomato mutants by ion beam implantation

**Authors:**

Duan HY,  
Wang CF,  
Yu YA, Li XW and  
Zhou YQ

**Institution:**

College of Life Science,  
Henan Normal University,  
Xinxiang 453007, China.

**Corresponding author:**

Duan HY.

**ABSTRACT:**

In this research, seeds of tomato were irradiated by ion beam or treated with ion beam and soybean DNA, and some tomato mutants with morphological variations were analyzed. Protein analysis in the leaves of mutants showed, changes of protein pattern in mutants were different as compared with the control, the main variation of protein pattern were darkening of bands, increase of protein bands were detected in mutant 12, mutant 14 and mutant 15 and lose of a band in mutant 15. Genomic DNA of mutants were analyzed by RAPD, and total number of amplification bands, number of differential bands and rate of differential bands were studied among mutants. Compared with the control, rate of differential bands was 100.0 % in mutant 9 and 15, also high in mutant 14 and 12, but was 20.0-50.0 % in other mutants except for mutant 3 and 11 without differential bands. In addition, content of vitamin C, soluble saccharide and protein were different, and fruit quality was multifarious in the fruit of mutants compared with the control; mutant 7 has better comprehensive nutritional quality of fruit, whereas mutant 12 and 14 stand second. The above results showed that effects of ion beam or soybean DNA on tomato genomic DNA would lead to the changes in gene expression, protein synthesis and fruit quality, moreover some tomato plants with better fruit quality or special characters were achieved, which would provide basis for the application of ion beam technology in tomato breeding.

**Keywords:**

Ion beam, Tomato, SDS-PAGE, RAPD, Fruit quality.