

Proteomic analyses of high yield rice strain mutated by space flight

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Abstract: Seeds of pure rice strains were carried by recoverable satellite, JB-1, for a 15-day-flight in 1996. After continual selection and breeding, some mutant rice strains with various phenotypes have been generated. Among them, mutant strain 971-5 shows significantly increased grain yield compared to its control 971ck. In this experiment, we chose these two strains for proteomic analyses. Rice leaves were scissored at early and middle stage of tillering, and booting stage respectively, followed by Two-dimensional PAGE technique (2-DG). Images from 2-D gels were analyzed by using PDQuest software. Results showed that (1) all proteins of changed expression level are down-regulated in space mutated strain, 971-5, with only one exception; (2) proteomic mutation rates of 3 stages are 3.1%, 2.1%, and 3.1% respectively; (3) one protein showed altered pI and molecular weight. Taken together, our data indicate that space environment influences rice proteins quantitatively and qualitatively.

Key words: space flight, proteomics, high yield, rice