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Molecular changes of bush clover after seeds been flown on satellite

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Key words : *Lespedeza bicolor* , spaceflight ,RAPD

Introduction Bush clover (*Lespedeza bicolor*) is a kind of perennial legume shrubs . To explore the effect of space flight factors on its genetic materials , three mutations were used to analysis by RAPD .

Materials and methods Dry seeds was carried into space aboard recoverable satellite JianBing No .4 in 2003 . After ground observation , three mutations TF2 (pre-maturity) , TF3 (late-maturity) , and TT1 (giant) were selected for RAPD analysis . Sixty primers were screened in RAPD analysis to evaluate DNA variation .

Results 12 primers amplified 41 polymorphic bands between space flight plant and its ground control . Absence of common bands was observed in mutated plants compared with the ground control . Moreover , similar band pattern was observed in several plants with the same mutation phenotype .

Discussion These mutations may due to the breakage of chromosome fragments which was induced by complex traits of space flight , especially the cosmic radiation and microgravity .

Conclusion Space flight factors could induce inheritable mutagenic changes on bush clover seeds , and verified these changes in genetic material in the mutants .

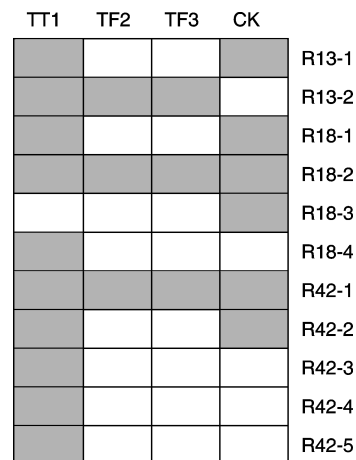


Figure 1 DNA fingerprinting of four mutations .

Table 1 Unique markers generated between based on RAPD markers spaceflight mutation and ground controls .

Unique marker	Length (bp)	mutation	CK
R13-2	800	Presence	Absence
R18-3	1400	Absence	Presence
R27-2	1100	Absence	Presence
R27-3	1000	Absence	Presence
R38-3	800	Absence	Presence
R38-4	600	Absence	Presence
R54-1	1400	Absence	Presence
R57-1	1600	Absence	Presence
R57-2	1400	Absence	Presence

Note : Bands of mutation is the common bands of TT1 , TF2 and TF3 . CK bulked with ground controls . Shaded blocks represent the presence of RAPD markers . The right first lane indicates the specific markers for the discrimination .

Reference

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