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植物诱变育种·农业生物技术

芝麻空间诱变后代的变异及其AFLP标记多态性分析

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摘要:

以"实践8号"搭载的豫芝8号与H98芝麻品种为材料,分析芝麻空间诱变SP_2与SP_3代植物学性状变异,并进行了分子水平检测。结果显示:(1)2个芝麻品种空间诱变SP_2与SP_SP_3后代植株在叶片、株高、株型、花器、蒴果、育性、初花期等均出现了较丰富的变异,品种间突变类型及突变频率均存在差异,但是仅观察到小果变异(豫芝8号变异后代)与植株高大变异(H98变异后代)2种类型的株系变异SP_2突变体在SP_3代能稳定遗传;(2)利用30对AFLP引物组合,对2个品种SP_2代与SP_3代变异来源进行分子检测,发现空间环境能使芝麻基因组多个位点发生变异,变异频率高,并且品种间在分子水平变异频率也存在差异;(3)不同的突变类型发生的突变位点不同,即使是同一突变类型内检测到的位点变异也存在较大差异,说明基因组DNA水平上的变异并不能全部显现出来;(4)2个品种间既在形态上检测到相同的突变类型,又在分子水平检测到相同的变异位点。

关键词: 芝麻 空间环境诱变 AFLP

SESAME MUTANT INDUCED BY SPACE FLIGHT TREATMENT AND ANALYSIS OF POLYMORPHSIM BY AFLP MOLECULAR MARKER

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Abstract:

Seeds of two sesame varieties (Yuzhi 8 and H98) were carried by "Shijian 8" satellite for space treatment. Variants is SP_2 and SP_1 were observed and the genetic diversity of mutation generation was analyzed using 30 pair of AFLP markers. The results showed that: (1) variants of leaf, plant height, plant characters, floral organs, capsule, fertility, pre-flowering date were observed in SP_2 and SP_3 of two varieties, variations frequency and variations type of two sesame varieties were significantly different, but only the small capsule variations and tall plant variations could be inherited from SP_2 to SP_3 generation; (2) AFLP analysis of primers randomly selected to analyze variant plants in SP_2 and SP_3 generation, showed that multiple sites in sesame genome were induced by space environment and mutation rate was high, while mutation rate was different in molecular level between two varieties; (3) variation sites were diverse between different variations types, and mutation sites were also diverse between different plants of same mutation type, this result indicated that variation of sesame genome DNA could not been expressed totally; (4) The same mutant of botany characteristics and the same locus mutation of molecular level were both detected.

Keywords: sesame space environment mutation AFLP

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