



四个国家海岛棉品种资源的亲缘关系和遗传多态性研究

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Genetic Relationship and Diversity of the Germplasm in *Gossypium barbadense* L. from Four Different Countries Using SSR Markers

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摘要

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摘要 以海岛棉标准系3-79为对照, 陆地棉标准系TM-1为参考对照, 用SSR引物对来自前苏联、中国、美国和埃及等4个海岛棉主要生产国(地区)的20份海岛棉种质资源的基因组DNA进行SSR分析, 研究不同海岛棉生产国的海岛棉品种资源的遗传亲缘关系和遗传多样性。108对SSR引物共获得了175条多态性谱带, 平均每个引物扩增出1.62条多态性谱带。供试海岛棉品种之间的遗传相似系数为0.66~0.94, 平均值为0.81。根据UPGMA聚类分析, 以遗传相似系数阈值为0.77, 可将20份栽培棉花种质材料分为4大类: 第一类均为前苏联品种, 第二类均为中国品种, 第三类以美国品种为主, 第四类以埃及品种为主。遗传多样性分析结果表明, 前苏联海岛棉品种资源的遗传多样性最为丰富, 而埃及的海岛棉品种资源遗传距离最狭窄, 我国的海岛棉品种资源的遗传多样性居中。本研究表明, 供试材料遗传背景与其产地背景有一定关联性, SSR标记能较好地揭示供试棉花品种之间的遗传差异和亲缘关系。

关键词: 海岛棉 种质资源 SSR 遗传多样性

Abstract: Gemomic DNA of 20 germplasm of sea island cotton (*G. barbadense* L.) from four production countries (regions), namely former USSR, China, USA, and Egypt, were analyzed for their genetic relationship and genetic diversity, using the 3-78 (the standard line of *G. barbadense*) as check and TM-1 (the standard line of *G. hirsutum*) as reference check. The SSR molecular markers were employed and 108 pairs of polymorphic SSR primers were used in this experiment. Among the 108 pairs of polymorphic SSR primers, 175 polymorphic bands were produced, with averaging of 1.62 bands per primer. The genetic similarity coefficient among the tested germplasm was 0.66-0.94, with the average of 0.81. The UPGMA cluster analysis showed that four groups could be clearly clustered when genetic similarity coefficient was given as 0.77. The first group were those from former USSR, most germplasm in the second group came from USA, all of the germplasm in the third group came from China, and most in the last group were those from Egypt. The results showed that the genetic diversity of the sea-island cotton germplasm from USSR was extraordinary diversified among the four different countries, and that from Egypt was the least in genetic diversity. The sea-island cotton germplasm from China were placed in the middle, according to the results of genetic similarity coefficient in present experiment. Our results also showed that the genetic background of the sea-island cotton germplasm tested in this experiment was correlative with their producing regions, and the SSR marker could be used in revealing the genetic diversity and genetic relationship among the sea-island germplasm.

Keywords: sea-island cotton germplasm resources SSR genetic diversity

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