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红肉猕猴桃种质资源果实性状及AFLP 遗传多样性分析

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Genetic Diversity of Red-fleshed Kiwifruit Germplasm Based on Fruit Traits and AFLP Markers

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摘要 对中国红肉猕猴桃种质资源进行收集和调查, 并对其进行果实性状变异分析和AFLP 遗传多样性及遗传关系分析。结果表明, 红肉猕猴桃野生资源主要分布于湖南省、湖北省、河南省、江西省、四川省和陕西省等地, 共采集到52 份野生资源和2 份品种资源(包括软枣猕猴桃红肉类型、中华猕猴桃红肉类型和美味猕猴桃红肉类型)。红肉猕猴桃种质资源在果实性状和DNA 分子水平上都存在丰富的变异和较高的遗传多样性水平, 4 对AFLP 引物共扩增出259 个多态性位点, 多态性位点百分率为90.56%, Nei' s 基因多样性和Shannon' s 信息指数分别为0.318 和0.477; 资源间遗传相似性系数介于0.568 ~ 0.883

之间, 平均为0.714。聚类分析和主坐标分析将54 份资源划分为4 个组, 软枣猕猴桃红肉类型单独聚为一类; 中华猕猴桃和美味猕猴桃红肉类型亲缘关系较近且有按地理来源优先聚类的趋势。果实性状数据和AFLP 数据之间具有极显著的相关性, 二者可结合用于红肉猕猴桃资源评价和保护利用工作中。

关键词: 红肉猕猴桃 种质资源 果实性状 AFLP 遗传多样性

Abstract: The germplasm resources of red-fleshed kiwifruit in China were investigated, and the genetic diversity and genetic relationship of red-fleshed kiwifruit germplasm were evaluated by fruit traits and AFLP markers. Fifty-two wild accessions and two cultivars of red-fleshed kiwifruit germplasm belonged to three *Actinidia taxa* (*A. arguta*, *A. chinensis* and *A. deliciosa*) were collected, which were mainly distributed in Hunan, Hubei, Henan, Jiangxi, Sichuan and Shaanxi provinces. The collected accessions have rich genetic variation in both fruit traits and AFLP markers. AFLP analysis using four primer combinations gave a total of 259 polymorphic bands. The percentage of polymorphic bands was 90.56%, Nei' s genetic diversity was 0.318, and Shannon' s index was 0.477. Genetic similarity based on AFLP markers ranged from 0.568 to 0.883, with an average of 0.714. UPGMA cluster and Principal coordinate analysis separated 54 accessions into four major groups. Accessions of red-fleshed kiwifruit in *A. arguta* grouped together, accessions in *A. chinensis* and *A. deliciosa* had closely genetic relationship and would be clustered preferentially related to their geographical origin. A significant though moderate correlation was observed between AFLP and phenotypic data. Both AFLP markers and phenotypic traits could be used to characterize red-fleshed kiwifruit germplasm, and would be valuable for germplasm management and utilization.

Keywords: red-fleshed kiwifruit, germplasm resources, fruit traits, AFLP, genetic diversity

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