

基于ITS序列石斛材料的鉴定及系统进化分析

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Phylogenetic Analysis and Identification of Dendrobium Species Based on Ribosomal DNA Internal Transcribed Spacer (ITS) Sequence

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摘要 以核糖体DNA内转录间隔区(Internal Transcribed Spacer, rDNA ITS区)作为DNA条形码对石斛种进行鉴定, 并进行系统进化分析。收集获得43个石斛样品, 其中35个为已知鲜样品, 8个为待确定种的干样品。从35个样品中获得在GenBank中未公布的海南石斛、华石斛以及秋石斛中的两个品种‘白花红心秋石斛’和‘紫红条纹秋石斛’ITS序列。ITS序列差异与形态特征的关系分析, 结果显示, ITS同源性的, 与形态的相似性成正相关。以舌唇兰属为外类群, 并从GenBank中获得其他20个石斛种的ITS序列, 对35个已知样品和8个待检测样品进行分析。结果显示, 35个已知样品分为5支, 其中大部分石斛种(24个)聚在一支。竹叶石斛和苏瓣石斛聚在一支; 华石斛、聚石斛和小黄花石斛聚在一支; 短棒石斛单独为一支; 竹枝石斛与‘白花红心秋石斛’和‘紫红条纹秋石斛’聚在一支; 海南石斛和木石斛聚在一支。根据ITS序列, 大多数样品分组与传统分组相同, 但按传统分组不在石斛组的重唇石斛、钩状石斛、鼓槌石斛和叉唇石斛分在了石斛组, 并确定了檀香石斛分在石斛组。确定了8个石斛干样品所属的种。

关键词: 石斛 ITS序列 系统进化 物种鉴定

Abstract: Dendrobium is valued for its ornamental and medicinal purposes. However, the taxonomy of this genus is still in a state of confusion, and it is more difficult to authenticate after processing. Based on the emerging field of molecular systematics as a powerful classification tool, a phylogenetic analysis was conducted using sequences of the Internal Transcribed Spacer of nuclear ribosomal DNA (rDNA ITS) as DNA barcodes for species identification and phylogenetic analysis of Dendrobium plants. In this study, the ITS1-5.8S-ITS2 sequence database of the 43 Dendrobium samples was constructed. Among them, thirty-five fresh specimens were known and the other 8 processed dry samples were undetermined. The results showed that four ITS sequences from Den. hainanense, Den. sinense and two Den. hybrida varieties of Den. Burana Charming and Den. Burana Stripe respectively were not promulgated in GenBank. Analyzing the relationship between ITS sequence discrepancies and the phenotypic characteristics revealed that the ITS homology was positively correlated to morphology traits. The phylogenetic trees were constructed based on the ITS sequences using *Platanthera dilatata* as an outgroup to root the tree. According to the analysis of phylogeny and cluster, the 35 Dendrobium known samples were divided into 5 clusters, and most of the samples (24 out of 35) were clustered together. Den. hancockii and Den. harveyanum were clustered together. Den. sinense Den. lindleyi and Den. jenkinsii were grouped to one branch. Den. capillipes was parted to a branch individually. Den. hainanense and Den. crumenatum were clustered together. The results displayed that the sections of most species divided by ITS were as the same as traditional classification. However, there were several species regrouped to different sections by ITS. And Den. salaccense was grouped to the same branch of Den. Burana Charming and Den. Burana Stripe, and the sections were not determined before. Moreover, the authentication of the eight unknown Dendrobium processed dry samples were also identified by rDNA ITS.

Keywords: Dendrobium, ITS sequence, phylogenetic analysis, species identification

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- [1] 陈敏燕;郭无瑕;刘小如;李洪清;梁山.金钗石斛 *SEP3-like*基因的克隆及其在春化过程中的表达分析[J]. 园艺学报, 2011,38(8): 1579-1588
- [2] 魏 潇;刘威生;刘 宁;章秋平;张玉萍;刘 硕;刘有春.果实软化相关PG基因的进化分析和基因组定位[J]. 园艺学报, 2011,38(09): 1791-1799
- [3] 潘丽晶;张妙彬;范干群;陈伟庭;曹友培.石斛兰 *dfr*基因的克隆、序列分析及原核表达[J]. 园艺学报, 2010,37(1): 129-134
- [4] 郑宝强;张莹;王雁;李振坚;朱向涛;律春燕.春石斛的多倍体诱导[J]. 园艺学报, 2009,36(9): 1381-1384
- [5] 李秀兰;安东.秋石斛同源四倍体诱导与鉴定[J]. 园艺学报, 2009,36(8): 1239-1242
- [6] 金青;马绍黎;蔡永萍;何金铃;林毅;皮瑞.霍山石斛类原球茎诱导及其发育过程研究[J]. 园艺学报, 2009,37(10): 1525-1530
- [7] 樊洪泓;李廷春;;李正鹏;林毅;蔡永萍.强光胁迫下外源NO对霍山石斛叶绿素荧光和抗氧化系统的影响[J]. 园艺学报, 2008,35(8): 1215-1220
- [8] 张妙彬;梁擎中;肖 浩;岑 鹏;范干群;潘丽晶.农杆菌介导石斛兰遗传转化的研究[J]. 园艺学报, 2008,35(4): 565-570
- [9] 曾 蓉;陈燕飞;严师节;黎定军;陈集双.侵染白菜的黄瓜花叶病毒分离物基因组的全序列分析[J]. 园艺学报, 2008,35(2): 213-220
- [10] 高志民;陈段芬;李雪平;蔡春菊;彭镇华.一个中国水仙MADS-box基因的克隆与分析 [J]. 园艺学报, 2008,35(2): 295-300
- [11] 白 音;包英华;王文权;姜丽丽;阎玉凝.国产石斛属植物亲缘关系的AFLP分析[J]. 园艺学报, 2007,34(6): 1569-1574
- [12] 杨志娟; 张 显 张孟锦 朱根发 王碧青.石斛属植物的研究进展[J]. 园艺学报, 2006,33(6): 1389-1396
- [13] 庄军平;黄胜琴;潘舒群;叶庆生.金钗石斛花芽cDNA表达文库的构建及鉴定[J]. 园艺学报, 2006,33(4): 895-897
- [14] 梁巧明;刘运权;叶庆生;刘伟.4种废料基质对蝴蝶兰和石斛兰生长作用初探[J]. 园艺学报, 2006,33(4): 890-890
- [15] 查学强;罗建平;石 玮;姜绍通.金属离子对霍山石斛类原球茎增殖及植株再生的影响[J]. 园艺学报, 2006,33(1): 179-181