

# 不同喀斯特小生境中土壤丛枝菌根真菌的遗传多样性

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**摘要** 为探明西南喀斯特地区小生境土壤中丛枝菌根真菌(AMF)的遗传多样性特征, 利用巢式PCR和变性梯度凝胶电泳相结合的分子生物学方法, 对茂兰3种植被类型下的小生境(石缝、石沟、土面) AMF遗传多样性进行了研究。结果发现: 各类小生境都含有丰富的AMF遗传多样性, 灌木林土面的多样性指数和物种丰富度最高, 为4.06和68; 次生林石缝的最低, 为3.16和29, 所研究的9个小生境多样性指数和物种丰富度的平均值分别高达3.67和48, 高于同类研究在其他地区的结果, 这可能主要与喀斯特生态系统复杂的结构和较高的植物多样性有关; 聚类分析显示各类小生境间的AMF群落结构差异显著, 相似性指数最高仅为0.45, 说明小生境所带来的空间异质性对AMF的遗传多样性产生了显著影响; 基因测序显示球囊霉属(*Glomus*)极有可能是喀斯特地区AMF的优势菌属, 在以后筛选喀斯特地区的高效生态恢复菌种时可重点考虑球囊霉属的一些菌种。

**关键词:** 丛枝菌根真菌 遗传多样性 喀斯特 小生境 丰富度

**Abstract:** *Aims* Our objective was to explore the genetic diversity of arbuscular mycorrhizal fungi (AMF) in karst microhabitat.

*Methods* We used nested polymerase chain reaction and denaturing gradient gel electrophoresis to study the genetic characteristics of AMF sampled from microhabitats of three different vegetation types in Maolan National Nature Reserve of Guizhou Province.

*Important findings* The AMF genetic diversities in all three microhabitat types were rich. The highest values of biodiversity index (4.06) and species abundance (68) were found in the shrubland soil surface, and the lowest values (3.16 and 29, respectively) were found in the secondary forest rocky crevice. The average values of biodiversity index and species abundance of the 9 microhabitats studied were 3.67 and 48, respectively. These were much higher than those in some other areas; the possible reasons were the complex karst ecological system structure and high plant species diversity. The AMF genetic diversity of different microhabitat types showed significant differences. The highest similarity index was only 0.45, and this means the spatial heterogeneity of different microhabitat types had significant influence on AMF genetic diversity. *Glomus* was the dominant genus through the karst area and should be a candidate for screening high ecological restoration strains for karst areas.

**Keywords:** arbuscular mycorrhizal fungi, genetic diversity, karst, microhabitat, richness

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