

摘要

南投赤箭屬於稀有台灣特有種的非光合作用蘭，非光合作用蘭一生皆需依賴其共生菌維生，目前尚未成功繁殖以及分離其共生菌。本研究主要分成兩部分，第一部分為觀察南投赤箭生長形態；第二部分為人工繁殖南投赤箭，利用無菌播種培養南投赤箭以及分離南投赤箭共生菌。

第一部分：實地到野外觀察南投赤箭的生長環境，觀察其詳細之生長情形。同時利用光學顯微鏡和掃描式電子顯微鏡來觀察南投赤箭的地下塊莖、根和種子細胞內的細微構造。第二部分：無菌播種培養南投赤箭種子，經過十週後，其種子生長到魚雷型胚階段，但其生長速度開始減慢。於是我們改變培養基成分，卻無明顯改善種子的生長速度。為了分離出南投赤箭的共生菌，我們將其地下部分切片培養分離，並把種子埋回原生地鈎菌，交叉比對兩種方法，挑選出較為可能的真菌。

Abstract

Gastrodia nantoensis is one kind of rare and endemic non-photosynthetic orchids in Taiwan. Non-photosynthetic orchids depend on their symbiotic fungi during whole life cycle, and people have not yet artificially cultivated and isolated their symbiotic fungi successfully. Here the research works contain three parts. The first part is morphological observation, the second part is seeding under sterile condition, and isolation of symbiotic fungi.

First, we observed the habitat of *Gastrodia nantoensis* to investigate their life cycle. In the mean time investigated the fine structure of their rhizomes, roots and seeds under light microscope and scanning electron microscope. Second, we sowed the sterile seeds on the artificial medium, After 10 weeks the embryos were held at torpedo-shaped stage, and they started to grow slowly. We tried to change the ingredients of artificial medium but in vain. We sectioned their underground parts to isolate the symbiotic fungi, and put their seeds under their habitat to retrieve symbiotic fungi as well. After comparing the two isolated methods, we sieved the candidates out.