

日本で栽培したキナ *Cinchona ledgeriana* の 植物内生菌の構成とキナアルカロイド産生能

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Endophyte composition and *Cinchona* alkaloid production abilities of *Cinchona ledgeriana* cultivated in Japan

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ABSTRACT: New eight endophytic filamentous fungi were isolated from the young stems of *Cinchona ledgeriana* (Rubiaceae) cultivated in Japan. They were classified into four genera based on phylogenetic analysis of the nucleotide sequences of the internal transcribed spacers (ITS1 and ITS2), including the 5.8S ribosomal DNA region. Of the eight fungi isolated, there were five genera *Cladosporium*, one *Meira* sp., one *Diaporthe* sp. and one *Penicillium* sp. Genus of *Cladosporium* and *Meira* were first isolated fungi from *Cinchona* plant. In a previous study, we applied the same process to the same plant cultivated in Indonesia. The endophyte compositions for the two cultivation regions were found to differ at the genera level. The ability of *Cinchona* endophytes cultivated in Japan to produce *Cinchona* alkaloids was also assessed. We found that three isolates have producing ability of *Cinchona* alkaloids. However, the amount produced was very small compared to that produced by the endophytes of Indonesian *Cinchona ledgeriana*. In addition, the total content amount of *Cinchona* alkaloids, especially quinine, produced by the extract of *Cinchona* cultivated in Japan was much smaller than that from Indonesia. These finding indicate that endophyte composition has an influence on the *Cinchona* alkaloid content amount in the *Cinchona ledgeriana* host.

抄録 日本で栽培したキナ *Cinchona ledgeriana* (アカネ科) の幼枝部から新たに8種の植物内生菌の分離同定を行い、5種の *Cladosporium* 属、1種の *Meira* 属、1種の *Diaporthe* 属、1種の *Penicillium* 属で構成されていることを明らかにした。以前報告した同様の条件で行ったインドネシアで栽培したキナの植物内生菌とは属レベルで異なる構成となった。今回得られた植物内生菌のうち3種の糸状菌がキナアルカロイド産生能を有することを明らかにした。しかし、これらのキナアルカロイド産生量は以前報告したインドネシアの植物内生菌と比較すると著しく低かった。そこで、双方の宿主植物のキナアルカロイド含量を測定したところ、キナアルカロイド産生能と同様、日本産のキナのキナアルカロイド含有量が著しく低いことが明らかになった。

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