

Abstract

Endophytic fungi from *Cassia fistula* or golden shower, a well known medicinal plant in Thailand and Asia, were isolated from trees growing in three geographical separate sites. These locations were Kanchanaburi, Nakhon Ratchasima and Bangkok and were selected to allow comparisons between their endophytic assemblages and to evaluate these data in relation to differences in plant diversity and density and local environment. Kanchanaburi which was the site closest to a natural forest situation provided the highest number of isolates with Bangkok, where the trees were isolated individuals, having the least.

Members of the Xylariaceae proved to be common and frequent isolates especially species of *Xylaria* and *Daldinia* but *Nemania* and *Hypoxylon* were also obtained. *Phomopsis* was also well represented and clearly was dominant at the Kanchanaburi site. Species of *Fusarium*, *Colletotrichum*, *Penicillium*, *Nigrospora*, *Coprinus* and *Psathyrella* were also identified but were occasional isolates.

Differences in endophytic assemblages between samples obtained early in the rainy season (July, 2001) with those sampled towards the end of the rainy season (December, 2001) were found to occur in the Nakhon Ratchasima samples with over twice as many isolates obtained from the December samples. This is likely to be a reflection on the longer exposure period to the potential inoculum of these leaves. A total of 956 endophytic isolates were obtained from the three sites with samples from Kanchanaburi (December 2000) and Bangkok and Nakhon Ratchasima in

July 2001 with a further samples from Nakhon Ratchasima in December, 2001. Isolations were also made from different anatomical regions of the leaf, leaf lamina, midrib and veins. There were no appreciable differences in either the number of isolates obtained or an association between leaf area and specific fungal species.

Identification of many xylariaceous endophytic isolates is well known to be problematic since *Xylaria* species rarely produce their anamorphic form in culture and virtually no members of the Xylariaceae develop their teleomorph in culture. Therefore molecular techniques were used to compare DNA sequences of the ITS region from a selection of endophytes with sequences obtained from teleomorphic material, or cultures derived from teleomorphs of identified and authenticated Xylariaceae. Comparisons were also made with data held in GenBank. This enabled the identity of a number of taxa to be made although more sequences from *Xylaria* species are required for future investigations. A number of non-xylariaceous taxa were also named as a result of DNA sequence comparisons.

Secondary metabolites from the xylariaceae were also investigated with metabolite profiles used to support identifications and, together with extracts from other endophytic species, their inhibitory effects on bacteria and fungi were tested.