Abstract

The aims of this project were to discover rare and novel endophytic actinobacteria from six Thai medicinal plants which were collected from the Phujong-Nayoa National park, Ubon Ratchathani province, Thailand and study their antimicrobial activity. Leaves, stems and roots were collected and surface sterilized prior placed on three isolation media. There were one hundred and eighty four isolates obtained. There were isolated from *Angle marmelos* (12 isolates), *Aracgelisia flava* (Linn.) Merr. (36 isolates), *Clausena excavala* Burm. f. (23 isolates), *Phyllanthus emblica* (26 isolates), *Randia tomentosa* Hook. F. (42 isolates) and *Terminallia mucronata* (Craib and Hutchinson) (45 isolates). Most actinobacteria were isolated at 37ºC (131 isolates) and 53 isolates were isolated at 27ºC. All isolates were characterized by morphology accompanied with 16S rRNA gene sequence. Most isolates belonged to *Streptomyces* (98, 53.3%) and the rest were *Nocardia* (66, 35.9%), *Microbispora* (6, 3.3%), *Pseudonocardia* (6, 3.3%), *Micromonospora* (5, 2.7%), and *Rhodococcus* (3, 1.6%). All isolates were screened for antimicrobial activity against 4 bacteria by dual culture technique; *Bacillus cereus* ATCC 11778, *Staphylococus aureus* ATCC 25923, *Pseudomonas aeruginosa* ATCC 27853 and *Escherichia coli* ATCC 25922, one yeast; *Candida albicans* BCC 7390 and two fungi; *Curvularia lunata* BCC 15558 and *Fusarium incarnatum* BCC 4829. There were 10 (5.4%), 14 (7.6%), 13 (7.1%) , 24 (13%) , 15 (8.2%), 8 (4.3%) and 1 (0.5%) isolates showed strong inhibition against tested microorganisms, respectively. Based on polyphasic study, isolate TMS7^{T} was identified as novel species of genus *Micromonospora*, namely, *Micromonospora terminaliania* sp. nov. The elucidation of antibiotics structure from *Streptomyces* sp. TML10 revealed that it produced major known active compounds; naphthomycin A and B and four unknown bioactive compounds.

Keywords: Actinobacteria, Endophyte, Antimicrobial activity, Medicinal plant