

Isolation and identification of bacterial endophytes from pharmaceutical agarwood-producing *Aquilaria* species

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ABSTRACT

Background Resins and gums are used in traditional medicine and do have potential applications in pharmacy and medicine. Agarwood is the fragrant resinous wood, which is an important commodity from *Aquilaria* species and has been used as a sedative, analgesic, and digestive in traditional medicine. Endophytic bacteria are potentially important in producing pharmaceutical compounds found in the plants. Hence, it was important to understand which types of endophytic bacteria are associated with pharmaceutical agarwood-producing *Aquilaria* species. Objective This study was undertaken to isolate and identify endophytic bacteria associated with agarwood-producing seven (7) *Aquilaria* species from Malaysia. Materials and Methods Botanical samples of seven *Aquilaria* species were collected, and endophytic bacteria were isolated from surface-sterilized-tissue samples. The 16S rRNA gene fragments were amplified using PCR method, and endophytic bacterial isolates (EBIs) were identified based on 16S rRNA gene sequence similarity based method. Results Culturable, 77 EBIs were analyzed, and results of 16S rRNA gene sequences analysis suggest that 18 different types of endophytic bacteria are associated with (seven) *Aquilaria* species. From 77 EBIs, majority (36.4%) of the isolates were of *Bacillus pumilus*. Conclusion These findings indicate that agarwood-producing *Aquilaria* species are harboring 18 different types of culturable endophytic bacteria.

KEYWORDS

16S rRNA . biodiversity . endophytes . Malaysia . medicine . natural products . ribosomal DNA . traditional medicine

REFERENCES