

Phylogenetic relatedness of several agarwood-producing taxa (Thymelaeaceae) from Indonesia

ABSTRACT

Indonesia is home to several tree taxa that are harvested for agarwood. This highly valuable oleoresin ironically was the cause for some species to become vulnerable due to gluttonous human activity. However, information on the genetic diversity of these endangered trees is limited. In this study, 28 specimens representing eight species from two genera, *Aquilaria* and *Gyrinops*, were collected from ex-situ and in-situ populations in Indonesia. Phylogenetic analysis conducted on DNA sequences of the nuclear ribosomal internal transcribed spacer (ITS) and the trnL-trnF intergenic spacer regions, revealed that *Aquilaria* and *Gyrinops* are paraphyletic when *Aquilaria cumingiana* is excluded. The phylogenetic analysis for ITS and trnL-trnF showed capability to categorise agarwoodproducing species based on their regions: East Indonesia and West Indonesia, using Wallace's Line as the divider. In addition, we discuss challenges in species identification and taxonomy of agarwood-producing genera, and their conservation efforts in Indonesia.

Keyword: *Aquilaria*; *Gyrinops*; Genetic diversity; Internal transcribed spacer (ITS); trnL-trnF