Genetic-relatedness of Tuba plants from Peninsular Malaysia and quantitative analysis of their rotenone

ABSTRACT

Background and Objective: Tuba plants is a small flowering shrub originating in the humid rainforest of Malaysia. Tuba plants is known to contain the chemical rotenone, which is have an insecticidal properties. The objectives of this study were conducted to identify the Tuba plants and quantify their rotenone contents. Materials and Methods: Nine tuba plants of different local names were collected from various locations in Peninsular Malaysia. Random Amplification of Polymorphic DNA (RAPD) and internal transcribed spacer (ITS) marker of 9 Tuba plant accessions were used to identify the species. Results: Both methods were equally adequate for Tuba plants species identification. Four different species were obtained from nine accessions and they were Derris elliptica, Paraderris elliptica, Fordia splendidissima and Paraderris piscatoria. These species are the new record in Peninsular Malaysia. All accessions contained rotenone with the concentration varying from 0.25-1.02 μg mL–1. The highest rotenone content, 1.02 μg mL–1 was from D. elliptica (Tuba merah). This indicated that the two techniques (RAPD and ITS) are equally appropriate for the analysis of genetic diversity in Tuba plants. Conclusion: The study will provide information for the conservation of Tuba plants and further improvement of rotenone contents.

Keyword: Tuba plants; Rotenone; Identification; Species; Genetic