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ECOLOGY AND DNA FINGERPRINTING OF *CRYPTOCORYNE PALLIDINERVIA* ENGLER (ARACEAE) ACCESSIONS USING POLYMERASE CHAIN REACTION M13 UNIVERSAL PRIMER

I.B. IPOR¹, W.S. HO, C.S. TAWAN, M.S. SALMIZANA and M. NORAYATIMAH

*Faculty of Resource Science & Technology
University Malaysia Sarawak
94300 Kota Samarahan, Sarawak Malaysia
¹E-mail: ibipor@unimas.my*

ABSTRACT

The ecological study of *Cryptocoryne pallidinervia* Engler was conducted at three different locations vis. Sungai Keranji (Lundu), Sungai Batu (Triso, Sri Aman) and Lingga Peat Swamp Forest Reserve (Lingga, Sri Aman). The study comprised of morphological characteristics, growth pattern and biomass allocation of *C. pallidinervia*, forest structure and edaphic conditions of the location of *C. pallidinervia* were carried out. The total dry weight (g/m²), plant density, total leaves per m², total leaf area (cm²/m²), leaf area ratio (cm²/g), specific leaf area (cm²/g), leaf weight ratio (g/g), petiole weight ratio (g/g) and root weight ratio (g/g) varied between localities. Genomic DNA of 18 accessions was amplified with the M13 universal primer (5'-TTATGAAACGACGGCCAGT-3'). A total of 18 distinctive PCR patterns were obtained which composed of 3 to 20 bands with the size ranging from 500bp to 3kb. The PCR profile was further analyzed to establish genetic diversity between through the construction of dendrogram. Cluster analysis of genetic relatedness had divided the *C. pallidinervia* accessions into four different major clusters. All big leaf accessions were grouped together whereas the small leaf accessions can be found in all clusters. Besides that, Bintulu accessions were highly differentiated among the others since they grouped together in different clusters. This indicates that the PCR method with M13 universal primer is a rapid and reliable method to study genetic relatedness of *C. pallidinervia* accessions from different locations.

Key words: Araceae, morphological characters, DNA fingerprinting

INTRODUCTION

Cryptocoryne (Araceae) has for many years been given attention because of their value as aquarium plants (Rataj and Horeman, 1977). They are common fresh water aquatic plant. According to Mansor (1991), Bastmeijer (2005) and de Wit (1990), most of the species of *Cryptocoryne* are exploited for the aquarium industry in the international aquarium market. Fourteen species of *Cryptocoryne* have been recognized from Borneo and one of them being *Cryptocoryne pallidinervia* Engler. It is a plant of lowland forests where it grows in slow running rivers and streams and seasonally inundated forest pools under extremely acid conditions with around pH4 or so. This species is endemic to Borneo that is in the peat swamp forests of Sarawak and West Kalimantan.

To date, in Sarawak, it can be found in Kampung Keranji in Lundu, Lingga Peat Swamp Forest Reserve and Sungai Batu, Kampung Teriso in Sri Aman, Sungai Ayang, Dalat in Mukah, and near Kemena Waterfall in Bintulu (Figure 1). *C. pallidinervia* is characterized by the cordate, more or less bullate leaves as illustrated in Figure 2. The spathe has a long tube and the limb is red with protuberances. Its collar zone is yellowish with small red spots that become smaller towards the throat. The spadix has the male and female flowers with very short naked part of spadix, situated adjacent to each other. The kettle is black purple inside. The present study is to determine the ecology and genetic relatedness among accessions of *C. pallidinervia* from five different locations in Sarawak.

Sneath, P.H.A. & Sokal, R.R. 1973. *Numerical Taxonomy*. San Francisco : W.H. Freeman & Co. 573 pp.

* To whom correspondence should be addressed.