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ORIGINAL ARTICLE

Morphological Variations of *Amorphophallus* spp. Blume ex Decne. in Peninsular Malaysia

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ABSTRACT
Amorphophallus has attracted much attention as it contains glucomannan and also possess other medicinal properties. Prior to the collection of propagating materials and cultivation, identification and diversity information of the Amorphophallus species are essential as different species perform differently under cultivation. Sixty accessions of Amorphophallus spp., with 10 accessions representing six locations, were used to assess morphological of vegetative characters variations. Thirty-four morphological characters of each accession were observed and recorded. Cluster and principal coordinate analysis using Gower's similarity coefficient classified the accessions into two groups. The first group included all 10 accessions. The second group consisted of 50 accessions. The component analysis (PCA) results revealed the diversity among 60 Amorphophallus spp. accessions with the first three principal components contributed 66.34% of the total variability. The PCA show that there were variations in morphological characteristics among accessions of Amorphophallus spp. based on corm size, corm shape, cormel number per corm and petiole nature. The morphological analysis results suggest that two different species, A. paeoniifolius and A. prainii, were identified.
***Keywords**: genetic diversity, classification, principal component analysis, Gower's coefficient, elephant foot yam*

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INTRODUCTION

The *Amorphophallus* plant possesses medicinal properties and has long been used in traditional medicine [1,2]. Also, it has a significant ornamental value for horticultural materials and ecotourism [3,4]. Among the 200 *Amorphophallus* species of the Araceae family, *A. konjac* K. Koch, *A. albus* Liu & Wei and *A. muelleri* Bl. are planted commercially due to the high glucomannan content of their corms [5]. Glucomannan, a water-soluble polysaccharide, fermentable dietary fibre, has been used for obesity, diabetes, hypertension and high cholesterol problems [6,7]. In Peninsular Malaysia, *A. paeoniifolius* (Dennst.) Nicolson and *A. prainii* Hook f. are common while *A. muelleri* and *A. elegans* Ridl. are scarce [8]. *A. praiini*, *A.aphyllus* (Hook.) Hutch, *A. paeoniifolius* and *A. sylvaticus* (Roxb.) Kunth are traditionally used for snake bite, arrow poison and as an analgesic [9]. *A. paeoniifolius* is commercially grown in India. The corm, young shoot and flower are eaten and used in ayurvedic medicine. The corm's ash is prescribed to treat piles, haemorrhoids, gout, asthma, bronchitis and stomach indigestion while the petiole juice is used to cure diarrhoea [2]. The corm extract possess anti-tumour, antioxidant and cytotoxic properties and has synergistic depressant effect when used with diazepam [10]. Thus, to be introduced as a new crop, the genetic diversity of the *Amorphophallus* spp. needs to be studied.

Morphological variations study is crucial as it could provide the information for the plant genetic diversity in order to increase the efficiency of germplasm collection management, conservation and