UTILIZATION OF MALAYSIAN AROIDS FOR MEDICINAL PURPOSES

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ABSTRACT

The aroid family or also known as Araceae, is generally a tropical plant, however some of the species are distributed worldwide. This family is grouped into nine subfamilies, 106 genera and 3200 species. In Peninsular Malaysia, there are about 23 genera with 123 species, which have been recorded. The species are found in various habitats ranging from swamps, ponds, lakes, rivers, rice fields and forests. Most of the native and endemic species are recorded as shaded plants, which thrive well on the forest floors with high humidity readings. Some of the species are well adapted to wetland conditions. These types of habitats also encourage good growth of climbers and epiphytes, which adhere to the higher plants. It should be noted that some of the aroid species have been reported to have medicinal value and have been widely used as native medicine. The species are Acorus calamus; Anadendrum montanum var. montanum; Aglaonema simplex, A. pictum; Alocasia macrorrhiza; Amorphophallus prainii, Colocasia esculenta var. esculenta, C. gigantea; Cyrtosperma lasioides; Epipremnum giganteum, Epipremnum sp.; Homalomena coerulescens, H. sagittifolia var. sagittifolia, H. griffithii var. griffithii, H. purparescens; Lasia spinosa; Pistia stratiotes; Pothos scandens, P. latifolius; Raphidophora lobbii; Raphidophora minor, Schismatoglottis calyptrata var. calyptrata, S. wallichii var. wallichii, Scindapsus hederaceus; Typhonium trilobatum, T. flagelliforme and T. roxburghii.

INTRODUCTION

The aroids or locally named as keladi belong to family Araceae. This herbaceous monocotyledon plants are characterized by their inflorescences, which consist of a spadix and a bract called a spathe. The minute flower surrounded the spadix and the spathe cover the spadix before its mature. Two type of inflorescences occur in aroids family namely bisexual flowered spadix with simple undifferentiated spathe and unisexual flower spathe divided into a limb (blade) and convolute lower tube.Aroids are mainly tropical plants and are distributed world wide. Tropical Asia and Tropical America are the two major centres of species diversity, with the number of indigenous genera, 43 for Asia and 36 for America. This family can be grouped into nine subfamillies, 106 genera and 3200 species (Croat, 1979; 1994). The first taxonomic study of family Araceae in Peninsular Malaysia was done by Ridley (1925). About 23 genera with 123 species have been reported. Others studied are done by Henderson (1954), Jacobsen (1987), Hay (1996a; 1996b), Latiff *et. al.* (1995), Mashhor & Sulaiman (1997) and Sulaiman (1997).The utilization of Malaysian plants as a medicinal plants including aroids are reported by Gimlette & Burkill (1930), Burkill & Haniff (1930), Gimlette (1939), Burkill (1966) whereas Ghani (1983, 1984) have studied the aroids as sources of food and ornamental plants. Neoh (1992) and Teoh (1996) have discovered aroids that have potential as medicinal plants. In addition, Kress (1995) has reported several medicinal plants including aroids.

MATERIAL AND METHOD

The collection of aroids which have medicinal properties were based on studies reported by Gimlette & Burkill (1930), Burkill & Haniff (1930), Gimlette (1939), Burkill (1966), Ghani (1983, 1984) and Norhayati *et. al.* (1999). Several species of aroid were collected from various habitats including limestone hills in Perlis, wetlands areas in Pondok Tanjung Forest Reserve, rivers ecosystems in the forests of Belum and Temenggor Forest Reserve in Perak and forest in Penang

Botanic Garden, Penang. All the specimen were made herbarium and identified based on Ridley (1925), Henderson (1954), Nicolson (1969; 1981), Jacobsen (1987), Bown (1988), Sriboonma *et. al.* (1994), Hay (1996a; 1996b), Hetterscheid & Ittenbach (1996) and Mayo *et. al.* (1997).

RESULT AND DISCUSSION

A total of 25 species in 16 genera were recorded from family Araceae (Table 1). The species were Acorus calamus, Amorphophallus prainii, Anadendrum montanum var. montanum, Aglaonema simplex, Aglaonema pictum, Alocasia macrorrhiza, Colocasia esculenta var. esculenta, Colocasia gigantea, Crytosperma lasioides, Epipremnum giganteum, Epipremnum sp., Homalomena griffithii var. griffithii, Homalomena purpurascens, Homalomena sagittifolia var. sagittifolia, Lasia spinosa, Pistia stratiotes, Pothos scandens, Pothos latifolius, Raphidophora lobbii, Raphidophora minor, Schismatoglottis calyptrata var. calyptrata, Scindapsus hederaceus, Typhonium flagelliforme, Typhonium roxburghii and Typhonium trilobatum.Five types of habits were recorded. Pistia was the only genus which floats on water surfaces. Other genera like Acorus, Aglaonema, Cyrtosperma, Colocasia and Lasia were found along the river corridors while Amorphophallus and Typhonium were found in open places. Genera such as Anadendrum, Epipremnum, Pothos, Raphidophora and Scindapsus occurred mostly as climbers. In addition, Alocasia, Homalomena and Schismatoglottis grew as terrestrial plants under forest canopy.The usage of aroids in this study is for internal and external application. The leaves are pounded or heated and used as a paste, rubbed or applied to the infected areas for skin diseases whereas the whole plants is cooked and the decoction is used as a medication bath to reduce body temperature, stomachache and after chilbirth.For internal application, the whole parts are boiled with water for a few hours and the decoction is consumed. Among the ailments treated through this method are rheumatism, stomachache and cancer. It should be noted that three species of aroids namely *Typhonium flagelliforme*, *Epipremnum* sp. and *Lasia spinosa* were used to treat cancer. Furthermore, some species are used as dart poison, flavouring and making curries.

CONCLUSION

Generally, the number of medicinal plant utilised by local communities are on the decline. Perhaps, research on the family Araceae will enhance the uses of local aroids for medicinal purposes. In addition, there is a need to be carried out to acquire as much information as possible before the plants become extinct.

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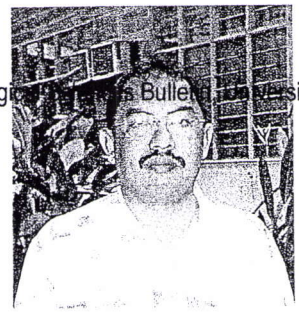
Appendix

Table 1: Uses of Aroids.

SPECIES	USES
Acorus calamus	Fever, rheumatic and skin disease
Amorphophallus prainii	Dart poison
Anadendrum montanum var. montanum	Fever and after childbirth.
Aglaonema simplex	Fever and dropsy
Aglaonema pictum	Tonic for children or antihelminthic
Alocasia macrorrhiza	Cough and toothache
Colocasia esculenta var. esculenta	Snake-bites, as prophylactic after childbirth
Colocasia gigantea	Fruits as flavouring
Cyrtosperma lasioides	Late menstruation
Epipremnum giganteum	Dart poison
Epipremnum sp.	Cancer (sinus)
Homalomena griffithii var. griffithii	Expedite childbirth and lumbago
Homalomena purpurascens	Hoarseness
Homalomena sagittifolia var. sagittifolia	Fever, distended stomach
Lasia spinosa	Curries, childbirth, cancer and stomachache
Pistia stratiotes	Diuretic
Pothos scandens	Blister, convulsions, small-pox and asthma
Pothos latifolius	Asthma
Raphidophora lobbii	Curries
Raphidophora minor	Childbirth
Schismatoglottis calyptra var. calyptrata	Root and leaves eaten
Scindapsus hederaceus	Rheumatism
Typhonium flagelliforme	Cancer
Typhonium roxburghii	Skin disease
Typhonium trilobatum	Skin disease

Studies on the Family Araceae (Aroid) Plants



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Aroids are monocotyledonous herbs that are be found in all habitats. The habitats of this family of plants range from floating forms *(Pistia stratiotes)*, submerged in water *(Cryptocotyne)*, in open areas *(Colocasia esculenta)*, climbers *(Pothos)*, as epiphytes *(Scindapsus beccani)*, in wetlands *(Lasia and Crytosperma)* as well as in primary forests *(Arisaema)*.

Studies on this herb are important with the realization that its diversity is strictly confined to Peninsular Malaysia and Borneo. In fact, most endemic and rare aroid species are only found in southern Peninsular Malaysia, Sabah and Sarawak, and no where else in the world.

An aroid garden, the first of its kind in Malaysia, has been set up at the School of Biological Sciences. Here, life germplasm collections of the herb are planted for biological studies, propagation purposes as well as it being used as a herbarium. This is important because aroids act not only as additional food sources, they also are attractions as aquarium and ornamental plants, often used in indoor decorations. The recent discovery of aroids as a cure for cancer and its use in traditional medicine, has created much public interest that has brought the herb into the limelight.

Today, the aroid group at the School has established joint co-operations and collaborations with various organizations, which among others, include the Penang Botanical Gardens, Sabah Park, Royal Botanical Gardens, at Kew, England, and the Sydney Royal botanical Gardens. In the near future, well-known scientists with expertise in the area, like Dr. Peter Boyce from Kew gardens and Dr. Alistair Hay from Sydney will be invited to visit the aroid garden and to have discussions and collaborations with the aroid group in the School.