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PHYTOCHEMICAL STUDY OF *NEPENTHES* SPECIES FROM SARAWAK AND SABAH

Jumaat H. Adam and Ramlan bin Omar

ABSTRACT

Leaf materials of thirty five dry herbarium specimens representing twenty species and one subspecies of *Nepenthes* from Sarawak and Sabah were screened for the presence of flavonoids. A total of twelve chromatographic spots containing phenolic acids, flavonols, fiavones and leucoanthocyanins were identified. Phenolic acid and ellagic acid were prevalence and present in fifteen and eighteen of the twenty species screened; the presence of phenolic acid and ellagic acid were found variable in six and two species respectively. Flavonols myricetin was absent in all the species studied; on the other hand quercetin was present in all species except *Nepenthes hirsuta* and kaempferol was recorded in all species except *Nepenthes gracilis*, *Nepenthes ampullaria* and *Nepenthes hursuta*. Falvones luteolin was detected in *Nepenthes kinabaluensis*, *Nepenthes lowii*, *Nepenthes curtisii zakriana*, *Nepenthes rajah*, *Nepenthes macrovulgaris, Nepenthes muluensis. Nepenthes reinwardtiana. Nepenthes tentaculata* and *Nepenthes villosa* but apigenin was totally absent from all the species screened. Cyanidin and malvidin were two commonest leucoanthocyanins, detected in fourteen and ten species of the twenty species studied respectively.

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INTRODUCTION

The use of chemical characters in taxonomy dates back as early as 1699, when J. Petiver published information on the link between medicinal (chemical) properties and certain morphological groupings of plants, and he used "Herbal Umbelliferae" together with the Labiatae and Cruciferae to illustrate the hypothesis that the morphologically similar plants produce constituent (chemicals) with the similar therapeutical effects (Fairbrothers *et al.*, 1975). Hoffmann (1846) as reported by Fairbrothers *et al.* (1975), believed that phytochemistry offered the opportunity to check proposed classification based solely on morphological characters.

The role of biochemical systematics in the study of hybridizing populations, and the analysis of past hybridization and introgression, has been demonstrated by Alston & Turner (1963), Smith & Levin (1963), Torres & Levin (1964), Garber & Strommaes (1965). The chemical work on hybridization was reviewed by Harborne & Turner (1984). Heywood (1976) indicated that the chromatographic pattern of flavonoids has proved extremely valuable in the analysis of hybridization, for example in *Baptisia* and *Asplenium.*

Chemical studies have been used in taxonomy to solve the problems posed by the specific and intraspecific taxa alike (Heywood, 1976; Harborne, 1973). Heywood stressed that "chemical studies may be of particular value to solve population problems below the species level, especially in situations where hybridization or introgression is occurring or suspected to occur".

The used of flavonoids in taxonomic research has been reported for several diverse taxa, and includes *Pinus* (Erdtman, 1963), Centrospermae (Mabry, 1966), *Malus* and *Pyrus* (Williams, 1966) and Leguminosae (Alston & Turner, 1963). Harborne (1973) indicated that flavonoids can be used as taxonomic markers because they possess structural variability,