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Phytochemical studies on *Maeraua apetala* (Roth.) Jacobs

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Abstract

The qualitative and quantitative analyses of *Maeraua apetala* (Roth.) Jacobs (Capparaceae) was carried out the present study. Powdered leaf materials of chosen plants were extracted with petroleum ether, chloroform, methanol, benzene and distilled water. The preliminary phytochemical analysis of selected plant revealed the presence of steroids, sugar, phenolic groups and amino acids, tannin and absence of triterpene, alkaloids, flavones, saponin, anthroquinone and catachin. Hence, the present study is useful for towards establishing comparative pharmacognostic standards.

Keywords: phytochemical analyses, medicinal plants, *Maeraua apetala*

Introduction

The medicinal tree *Maeraua apetala* scattered in Tamil Nadu (Gamble and Fischer, 1915-1936; Hooker, 1872-1897; Matthew, 1981). Paste of root bark is applied for leucoderma and the extract given orally for the same by chenchus and lambadies (Reddy *et al.,* 2009). Tender leaves ground with spices and the paste made in to pills are given orally for nervous disorders and foot pains by chenchus (Anjaneyulu *et al.,* 1993; Diallo *et al.,* 2000).

Over the last 15 to 20 years the World Health Organization (WHO) health assembly has passed a number of resolutions in response to a resurgence of interest in the study and use of traditional medicine in health care (Aruna *et al.,* 1998). It has been estimated that as many as 75 to 90% of the world rural population rely on herbal traditional medicines for their primary health care even today (Eckner *et al.,* 1992). The demand for Ayurvedic herbal drugs and phytomedicine are increasing day by day globally (Gopalakrisnan and Johnson Solomon, 1992). It has been estimated that total phytomedicine sales in the countries of European Union in 1991 were of the order of US $600 crore of which almost half were sold in Germany alone. This market is growing at the rate of 15 to 20 % yearly not only in Eurobe but also in the United States. In the nineteenth century the term "Materia Madia" was used for the subject now called as "Pharmacongnosy". It was Seydler, a German who coined the term "Pharmacognosy" in 1815 used in the title of his work "Analecta pharmacognostica" (Hashmi and Khan, 1991; Erum Anis Mustafa *et al.,*1999; Esimone *et al.,* 1999). Pharmacognosy is derived from two greek words *viz.* pharmakon means a drugs and Gignosco means to acquire the knowledge. Pharmacognosy is the study of botanical and physical characters of the plant drug (Hashmi and Khan, 1991).

In the field of Indian medicine certain synonyms are used for more than one or two plant drugs. To remove or to reduce these controversies and confusion and also to help selection of genuine drugs by physicians and pharmaceutical experts there is a need to identify the variations on drug used in different parts of the country. Medicinal parts are the major sources of phytochemical product such as alkaloids, glycosides, steroids, volatile oils, tannins, phenolic compounds etc (Jacquemond Collet *et al.,* 2001). Hence, the present study was to investigate the preliminary phytochemistry and physiochemical parameters of the medicinal plant *Maeraua apetala.*

Materials and Methods

Plant materials

Mature and healthy plant leaves were collected by hand picking method from in and around Thathanuthu, Tirunelveli district, Tamil Nadu. Plant materials were washed thoroughly with tap water and finally with distilled water. They were shade-dried and partially powdered using

domestic blender. About 15 grams of the powdered sample of each species was separately extracted with petroleum ether, chloroform, methanol, benzene and distilled water. These extracts were concentrated and used for further studies.

Preliminary phytochemical analysis

Preliminary phytochemical screening was performed by the method of Brindha *et al.* (1981).

Physiochemical parameters

The percentage of loss of weights on drying, total ash, acid insoluble ash, sulphated ash and water soluble ash were estimated by employing standard methods of analysis as described in Pharmacopoeia of India (1966).

Determination of total ash: Two grams of dried plant powder was taken in a previously weighted silica crucible and ignited carefully not to exceeding dull red heat until the ash was free from carbon. The crucible was cooled and weighed. The percentage of ash with reference to the air-dried plants was calculated.

Determination of acid insoluble ash

A known quantity of the ash was boiled with 25 ml of dilute HCL. The insoluble matter was collected in a previously weighed sintered crucible washed with hot water, dried and weighed. The percentage of acid insoluble ash with reference to the air-dried plant was calculated.

Determination of sulphated ash: Two grams dried plant powder was taken in a previously weighed silica crucible and moisture with H_2SO_4. It was ignited gently with additional quantity of H_2SO_4, cooled and weighted. The percentage of sulphated ash was calculated with reference to the air-dried drug.

Determination of water soluble ash

Two grams of air –dried plant powder was boiled with 25 ml of water. The insoluble matter was collected in a previously weight sintered crucible washed with hot water. The insoluble ash with reference to the air dried as calculated.

Result and discussion

Phytochemical analysis

Results of preliminary phytochemical screening of *M. apetala* was given in Table 1. Steroids, sugar, phenolic groups and amino acids were present and triterpene, alkaloids, flavones, saponin, anthroquinone and catachin were absent in all the solvent extracts.

Physiochemical parameters

Physiochemical parameter like the quantity of total ash, acid insoluble ash, sulphated ash and water soluble ash of selected medicinal plants were given in Table 2.

Table -1: Preliminary phytochemical analysis of powder extracts of *M. apetala*

Phytochemicals	Petroleum ether	Chloroform	Methanol	Benzene	Distilled water
Steroid	+	+	-	+	-
Triterpene	-	-	-	-	-
Sugar	+	+	+	+	+
Alkaloid	-	-	-	-	-
Phenolic Group	+	+	+	+	+
Flavone	-	--	-	-	-
Saponin	-	-	-	-	-
Tannin	-	-	+	-	+
Anthroquinone	-	-	-	-	-
Aminoacid	+	+	+	+	+
Catachin	-	-	-	-	-

The *M. apetala* is medicinally and pharmaceuticaly important. The tender leaves ground with spices and the paste made in to pills are given orally for nervous disorders and foot pains by chenchus. Preliminary phytochemical screening has been performed for the detection of steroids, triterpenoids, alkaloids, sugars, phenoliccompounds, flavonoids, catechins, saponins, tannins and aminoacids. The preliminary phytochemical attempt has revealed the availability of the above compounds and hence further investigation and purifications

would help us to utilize the therapeutical value of this species. The multidisciplinary approach to the study of *M. apetala* does help in understanding their identification, taxonomical determination and medicinal importance in depth. The adulterants in drugs obtain from *M. apetala* can be identified by this investigation

Table -3: Physiochemical parameters of *M. apetala*

Parameters	*M. apetala* leaf (%)
Total ash	20.5
Acid insoluble ash	15.2
Sulphated ash	34
Water soluble ash	9

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