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## Pharmacognostical study of *Phyllanthus reticulatus*: A tribal drug

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#### Abstract

Medicinal plants occupy a very important place throughout the world. There are multipotential plants like *Phyllanthus reticulatus* which has the capacity to cure many ailments. The tribal community Malasar of Nilgiri Biosphere are efficient healers and they use this plant to cure any ailments. Malasars are highly respectable tribe in this locality, owing to the traditional knowledge they possess about the medicinal values of specific medicinal plants grown in their ecosystem. In this research paper the pharmacognostical study of this plant is done. The medicinal properties of this plant may be due to many phytochemicals which are present in the plant. Case studies have been taken to analyse the efficiency of the plant. The interview and discussion with the traditional healers and their clients proved the medicinal value of *Phyllanthus reticulatus*. Hence suitable measures should be taken for ensuring need based use of this valuable species and to preserve the same in its natural habitat by making use of the traditional knowledge from the tribal healers.

**Keywords:** phyllanthus reticulatus, malasar, velliangiri hills, bleeding gums

#### Introduction

Medicinal plants occupy a very important place in the life of human beings throughout the world from time immemorial. They have become one of the components in our daily life. These medicinal plants are effectively used by the tribal community and they respect such plants as the elixir of life. Most of these plants are commercially important also. One among them is *Phyllanthus reticulatus*. This is a multipotential plant which has the capacity to cure many ailments. Medicinal properties of this plant include curing heatstroke, helminthiasis, oral infections, oral lesions in the mouth, tooth and tongue [1]. In traditional system of medicine different parts of *Phyllanthus reticulatus* are used for curing various ailments. Bark is used as astringent and diuretic. Leaves are antidiarrheal and roots are used for asthma. Fruit of the plant is used in inflammation. *Phyllanthus reticulatus* has been proved to show antidiabetic, antiviral, anticancer, antiplasmodial, hepatoprotective, antibacterial and anti-inflammatory activities. The plant contains tannic acid, terpenoids, flavonoids, phenolic compounds and steroids as main chemical constituents [2]. In this research paper medicinal uses of *Phyllanthus reticulatus* in curing different ailments by the tribal healers are discussed.

#### Materials and Methods

During periodic visits to the study area the indigenous people were found to use the study species *Phyllanthus reticulatus* in different forms. Interview with those people and opinion leaders revealed the traditional knowledge existing about the species in that community. The traditional practice among them to make use of this plant in maintaining their health was known after discussion with the peer groups. This formed the basis for conducting the pharmacognostical study of the selected species. Further the users of this medicinal plant were also interviewed to get their opinion about the effectiveness of the plant.

#### Study Area

The study area is the foot hills and the slopes of the holy mountain Velliangiri Hills which is a part of the world heritage site 'The Nilgiri Biosphere Reserve', located in Western Ghats in Tamil Nadu State where the tribal people Malasar inhabit. This mountain range which is popularly known as South Kailash is situated near Coimbatore. It forms a major range in this biosphere reserve, revered for its medicinal plants. It is located between 10.9888°N and 76.6873°E. The rich biodiversity and excellent knowledge of tribal people about medicinal plants provides an ideal condition to carry out the pharmacognostical study.

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**Malasars**

Malasars are the indigenous people with the habit of judicious management of their ecosystem. Malasars of Nilgiri Biosphere are respected tribes in this area. Physically they are strong. They speak Tamil. They consume wild yarms (*Dioscorea sp.*), honey, rice and millets. Bamboo seed boiled in honey is a delicacy. These tribes make their living by collecting non-timber forest produce such as honey, wild yarms, wild ginger, wild turmeric, seeds, wild fruits, balsamic resin (sambrani) etc.,. Sometimes they collect and sell *Elaeocarpus ganitrus* seeds (Rudraksham). They cultivate ragi(*Eleusine coracana*), samai (*Panicum Milliare*), avarai (*Lablab purpureus*) and castor (*Ricinus communis*). Malasars are efficient and skillful healers. They treat the sick people by

using different herbal plants which are available in their ecosystem

**Specimen collection**

The specimen was collected during the months of February and March, 2017. Care was taken during collection of the specimen since it was given orally by the tribal healers to the sick. After collection they were washed in water dissolved with rock salt then in running water. The selected plant parts were shade dried. They were powdered and preserved for further analysis. Fresh leaves were also preserved for crude extraction. The morphological features of the specimen is shown in Figure 1.



**Fig 1:** *Phyllanthus reticulatus* – straggling with other herbs

**Processing**

250 grams of fresh leaves were taken and ground to a paste. The paste was heated in a vessel to obtain the vapour which was subjected to cooling after distillation to get the distillate (crude form). The extract was used for further laboratory processes and phytochemical analysis.

**Result and Discussion**

Few clients of the tribal healers were selected as sample for case studies. Information about the clients such as their age, education level, health problems, duration of the treatment, the efficiency of the treatment and their opinion about *Phyllanthus reticulatus* as a medicine were collected during the interview. The details are presented in Table 1. The medicinal parts such as leaves, fruits, twigs and flowers are shown in Figure 2.



**Fig 2:** Plant with leaves, flowers and fruits

**Table 1:** Description of case studies

Case study	Health problem	Age	Duration of the ailment	Duration of the treatment	Parts used	Mode of administration	Outcome of the treatment
Case study 1	Mouth ulcer	34	7 months	40 days	Leaves	Chewing	Healed
Case study 2	Bleeding gums	32	9 months	2 months	Leaves and Twigs	Chewing	Reduced
Case study 3	Oral cavity cancer	37	1 ½ years	4 months	Whole plant	Decoction	Improved
Case study 4	Body tremors	54	2 years	7 months	Fresh leaves and fruits	juice	reduced
Case study 5	Anaemia	27	3 years	1 month	Whole plant	Decoction	Improved
Case study 6	Diabetic foot ulcer	59	2 years	6 months	Leaf	paste	Cured
Case study 7	Dysmenorrhoea	39	10 years	4 months	Root	Extract	Improved
Case study 8	Carpel tunnel syndrome	49	4 years	2 months	Leaf	Soup	Improved
Case study 9	Liver disorder	44	1 ½ years	2 months	Leaf, fruit, stem	decoction	Improved
Case study 10	Cracked tongue	48	3 ½ years	1 month	leaf	Chewing	Healed

**Mode of administration of *Phyllanthus reticulatus***

Discussion with the healers and their clients revealed that different parts of the plant like root, stem, bark, leaves and fruits were used to cure different ailments and diseases. The

details are given in Table 1.

**Phytochemical analysis**

Phytochemical analysis of the preserved dry leaf powder

indicates the presence of alkaloids [3], flavonoids and glycosides [4] which are present in the specimen are responsible for its medicinal properties.

Interview with the healers revealed the following medicinal properties of *Phyllanthus reticulatus*. Chewing of the leaves of the plant healed mouth ulcer. Chewing of fresh leaves as well as the twigs act as a remedy for bleeding gums. Decoction prepared from the whole plant was able to cure oral cavity cancer as well as anaemia. Intake of juice prepared from fresh leaves and fruits reduced body tremors. External application of either fresh leaf paste or paste prepared from dry leaf powder cured long lasting diabetic foot ulcer. Root extract of the plant improved the menstrual problems in females. Soup prepared from the leaves reduced the pain and improved the movement of hands in case of carpal tunnel syndrome. Oral intake of decoction prepared from the leaves, fruits and stem of the plant was able to improve liver disorder. Chewing of fresh leaves frequently healed cracks and dryness in the tongue.

### Conclusion

The interview and discussion with the traditional healers and their clients proved the medicinal value of *Phyllanthus reticulatus*. It could be understood that each and every part of the plant is playing great role in maintaining human health. Hence suitable measures should be taken for ensuring need based use of this valuable species and to preserve the same in its natural habitat by making use of the traditional knowledge from the tribal healers.

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