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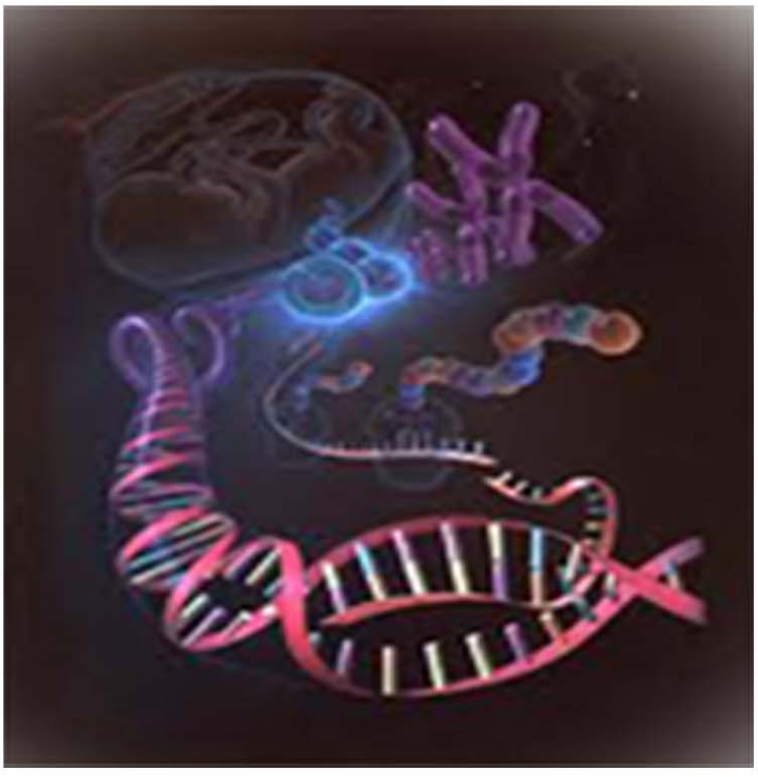

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Research Paper

CURATIVE CLIMBERS OF THADAGAI HILLS OF ANAMALAIS

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The present study was conducted in Thadagai hills of anamalais, Western Ghats to explore the diversity of climbers. The study is primarily based on field surveys conducted throughout the hills, where dwellers provided information on plant species used as medicine. A total of 55 plant species belonging to 45 genera comprising 20 families of medicinally important climbers were identified to be used by ethnic people to cure various ailments such as diabetes, fever, rheumatism, cough, etc. It is evident from the study that the ethnic people still values traditional medicines as a way of meeting their medicinal needs.

Keywords: Traditional medicine, Ethinic people, Climber, Ailments

INTRODUCTION

The earth is home to a rich and diverse array of living organisms, whose genetic diversity and relationships with one another and with their physical environment constitutes biodiversity (variability among living organisms from all sources and the ecological complexes of which they are part, which includes within species, between species and of ecosystems). This biodiversity is the natural biological capital of the earth, and its conservation and sustainable management presents important opportunities for all nations, especially India.

India is endowed with a variety of natural resources. All along the west coast the Western Ghats are sprawling. The entire Western Ghats is known for its biodiversity, richness and endemism of different species. This bioregion is highly species rich and under constant threat due to human pressure, and is considered one of the 18 biodiversity hot spots of the world. With its complex, heterogeneous landscapes and high levels of biodiversity, it forms an ideal ground for the testing and elaboration. The tropical climate complemented by heavy precipitation from southwest monsoon and favorable edaphic factors create an ideal condition for the luxuriant growth of plant life, which can be seen only in few parts of the world. The plant species known to be from the Western Ghats is about 4500 species out of which 35% are endemic. Levels of endemism in this area are high – nearly 2000 species of higher plants, 84 species of fishes, 87 species of amphibians, 89 species of reptiles,

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15 species of birds and 12 species of mammals are endemic to the Western Ghats (Daniel, 1997). Three major gradients in the distribution of this diversity, especially for flowering plants, have been recognized (Gadgil, 1996b).

Climbers are plants that germinate on the floor of the forest and grow, at least for part of their life, or when the forest closes up around them, by winding around, leaning on, or anchoring or adhering to other plants (Jongkind and Hawthorne, 2005) to attain great stature (Swaine *et al*., 2005). They occur in many plant families with only a few families such as Dioscoreaceae, Cucurbitaceae and Convolvulaceae consisting completely of climbing plants.

Climbers occur in all woody ecosystems of the world although a high abundance is considered to be characteristic of tropical and subtropical forests (Bongers *et al*., 2005). Specifically, in tropical rain forest, they comprise about 25-30% of species diversity (Schnitzer and Bongers, 2002). They occur in between crowns and many grow on several canopies (Caballé, 1998). In most tropical forests many more small climbers and relatively few large ones are present at forest edges and in forest fragments compared to forest interiors and large sized forests (Schnitzer and Bongers, 2002). Tendril climbers are more suitable to gaps and forest edges, where smaller diameter supports are more common, than in forest interiors (Putz and Holbrook, 1991).

Climbers are an abundant and diverse life-form in most tropical forests and their presence is often a key physiognomic feature differentiating tropical from temperate forests (Reddy and Parhasarathy, 2003, Schnitzer and Bongers, 2002, Nabe-Nielsen, 2001, Perez-Salicrup *et al.,* 2001). Climbers rely on other plants for mechanical support, the amounts of supporting tissue in their axes have reduced to provide higher hydraulic conductivity in their stems and invest resources in growth of length while tree allocate resources to supportive tissue (Gillepsi, 2000).

Climbers contribute substantially to the floristic, structural and functional diversity of tropical forests (Benavides *et al.,* 2005), where they can compete with other vegetation. For example, they compete with trees for both above and below-ground resources, considerably decreasing the growth rates, retarding regeneration of tree seedlings and saplings, and increasing the number of trees damaged and killed in treefalls (Stevens, 1987, Schnitzer *et al.,* 2005, Pérez-Salicrup, 2001, Grauel Putz, 2004, Kainer *et al.,* 2006). Climbers can also have positive effects on forests, providing valuable food resources, habitat, and connections among tree canopies that are used as pathways by arboreal animals (Emmons and Gentry, 1987, Ødegaard, 2000). Climbers may also play a role at the ecosystem level by contributing to the carbon budget of tropical forests, representing as much as 10% of fresh above ground biomass (Putz, 1984).

Although some climbers merely lean on and spread over other plants, the majority have special shoots to find a means of support, i.e., shoots with twining stems; these include stem as well as branch twiners where, either the tip of the young stem is able to revolve so that the plant becomes securely wound round its supports or the leaf bearing branches twine around the supports. Hook climbers; these possess hooks that passively assist them in climbing or lean on the hosts without attachment. Rooting climbers or adventitious roots; attachment is by means of aerial roots and they cling to the surface over

which the plant grows. Tendril climbers; possess organs of varied morphology, sensitive to contact with a support to which they fix themselves actively, usually by curling round it rattans (climbing palms) possess curved spines, which help in attachment to supports (Padaki, 2000). These specialized shoots are often called searcher shoots because they search for supporting structures (Putz and Holbrook, 1991). Having a long stem increases the probability that a searcher shoot will encounter a suitable support (Cai *et al.,* 2007, Selaya *et al.,* 2007, Selaya and Anten, 2008). Most of these climbing types can be found in any tropical forest but some strategies appear to be better than others (DeWalt *et al.,* 2000). Since Putz's work (1984), climbers have been of major concern in tropical ecology and biodiversity conservation.

Lianas, the woody vines are an important, but understudied growth-form, common to most forests throughout the world, particularly in the tropics (Schnitzer and Bongers, 2002). The past few decades have brought increasing awareness of the importance of lianas to species diversity (Gentry and Dodson, 1987; Schnitzer and Carson, 2001; Burnham, 2002). Lianas constitute 25 % of the woody stem density and species diversity in tropical forests (Gentry, 1991). They are often a large component of the canopy in tropical forests, often one-third or more of the entire leaf area, though only a small component of the basal area and biomass (Schnitzer and Bongers, 2002).

MATERIALS AND METHODS

The present study was carried out through intensive and extensive field visit during September 2011- August 2012 to collect information on traditional uses of climbers used in the preparation of crude herbal drugs by the tribal people living in the Thadagai Hills of Anamalai Hills. The data were documented through interviews, discussion and field observations with folk practitioners and knowledgeable people of the study area using standard methods adopted by Jain and Goel (1995). During the field survey, the plants have been collected in their flowering and fruiting stages as far as possible from the local floras. The voucher specimens are deposited in the Herbarium of Department of Botany, Kongunadu Arts and Science College, Coimbatore, Tamil Nadu.

STUDY AREA

The Anaimalai Hills is a range of mountains in the Western Ghats in Tamil Nadu and Kerala states of South India. These hills are located between 10° 13' and 10° 31' N. and 76° 52' and 77° 23' E., central point: 10° 222N 77°07.52E. They form a southern portion of the Western Ghats. Anaimalai Hills are south of where the Western Ghats are broken by the Palghat Gap, which in turn is south of the Nilgiri Hills. They border the state of Kerala on the Southwest and the Cardamom Hills to the southeast. To the east are the Palni Hills. The study area Thadagai Hills are seen in the foothills of Anamalai hills (humid; 680 m above msl; moist semievergreen forest).

RESULTS AND DISCUSSION

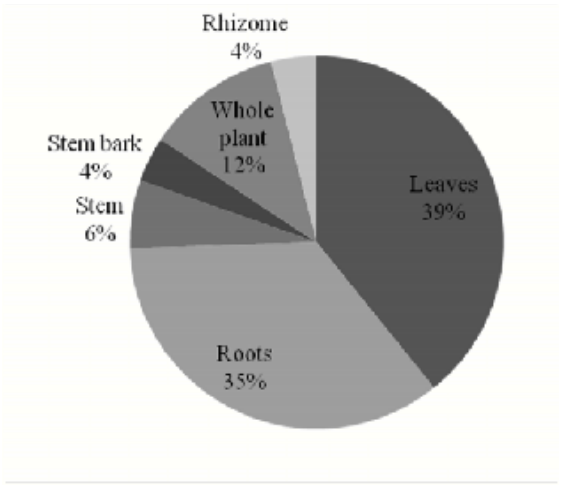
The present study resulted in the documentation of curative properties of 55 climbers belonging to 45 genera and distributed over 21 families. The plants are tabled with correct botanical names followed by family, parts used and their medicinal uses (Table 1). Asclepiadaceae, Convolvulaceae and Fabaceae (8 species each) are most dominant families, followed by Cucurbitaceae (5

Table 1: List of Curative Climbers

S. No.	Botanical Name	Useful Part	Medicinal Uses
1	*Abrus precatorius* L. (Fabaceae)	Seeds	Seeds are administered to nervous disorders
2	*Acacia torta* Craib. (Mimosaceae)	Stem bark	Stem bark decoction is taken for cough
3	Aganosma cymosa G. Don (Apocynaceae)	Whole part	Whole plant is used as anthelmintic
4	*Argyreia elliptica* (Roth) (Convolvulaceae)	Fresh leaves	eye injuries
5	*Aristolochia bracteolata* Lam. (Aristolochiaceae)	Whole part	snake bite
6	*Asparagus asiaticus* L (Liliaceae)	Leaves	Tender leaf is applied topically on swellings
7	*Bauhinia vah*lii Wight & Arn. (Fabaceae)	Leaves	Leaf extract is taken orally to cure dysentery.
8	*Capparis sepiaria* L. (Capparidaeace)	Leaves	To cure skin diseases
9	*Capparis zeylanica* L. (Capparidaeace)	Roots	Root paste is app lied to snakebite
10	*Cardiospermum canescens* Wall. (Sapindaceae)	Leaves	Joint pain.
11	*Cardiospermum halicabum* L. (Sapindaceae)	Leaves	Body pain
12	*Ceropegia juncea* Roxb. (Ascleipadaceae)	Whole part	Stomach ulcer.
13	*Cissampelos pareira* L. (Menispermaceae)	Leaves	cure fever.
14	*Cissus quadrangularis* L. (Vitaceae)	Stem	swellings
15	*Jasminum azoricum* L. (oliaceae)	Leaves	fever
16	*Sarccostemma intermedium* L. (Asclepidaceae)	Stem bark	Rheumatism
17	Tylophora indica L. (Asclepidaceae)	Whole part	Piles
18	*Ipomoea staphylia* L. (Convolvulaceae)	Leaves	stomach ulcer.
19	*Parsonsia alboflavescens* L.(Convovulaceae)	Roots	snake bite
20	*Cucumis trigonus* Roxb (Cucurbitaceae)	Fruit	stomach pain
21	*Cocculus hirsutus* L.(Diels).(Cucurbitaceae)	Roots	snake bite
22	*Dioscorea oppositifolia* L. (Dioscoreaceae)	Tuber	fertility
23	*Diplocyclos palmatus* L. (Cucurbitaceae)	Whole part	cough
24	*Gloriosa superba* L. (Liliaceae)	Whole part	piles
25	*Grewia heterotricha* Mast(Tilaceae)	Stem bark	cough
26	*Gymnema sylvestre* (Retz.) (Asclepidaceae)	Leaves	diabetes
27	*Hemidesmus indicus* R. Br. (Asclepidaceae)	Roots	snake bite
28	*Ichnocarpus frutescens* (L.) R. Br. (Apocynaceae)	Roots	diabetes
29	*Ipomoea eriocarpa* R.Br. (Convovulaceae)	Leaves	rhematism
30	*Passiflora foetida* L. (Passifloraceae)	Leaves	headache

species), Menispermaceae and Aristolochiaceae (3 species each) and Apocynaceae, Capparidaceae, Sapindaceae and Liliaceae (2 species). Rest of the families are represented by single species (Figure 1).

Figure 1: Different Parts Used for Different Ailments



CONCLUSION

Medicinal plants play a major role in the medical and healthcare needs of tribal people. This preliminary study focused on documenting most of the curative climbers used by the pulaiyer community in Thadagai hills, the Western Ghats of Tamil Nadu to facilitate conservation efforts. However, destruction of habitat through deforestation and over exploitation for commercial purposes and changes in cultural altitude threatens to constrain many of these species in to extinction.

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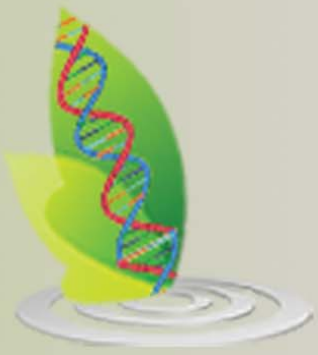

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