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RESEARCH ARTICLE

Curative Climbers of Maruthamalai Hills in the Southern Western Ghats of Tamil Nadu, India

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Abstract: The present study was conducted in Maruthamalai Hills (426.72 m MSL), which is located in the Coimbatore district, Southern Western Ghats of Tamil Nadu, India to explore the diversity of climbers and their curativeness. The study is primarily based on field surveys conducted throughout the hills, where dwellers provided information on plant species used as medicine, plant parts used to prepare the remedies and ailments to which the remedies were prescribed. A total of 55- plant species belonging to 45- genera comprises 20- families of medicinally important climbers were identified to be used by ethnic people to cure various ailments such as diabetes, dysentery, fever, headache, rheumatism, snakebite, cough, etc. It is evident from the study that, the ethnic people still values traditional medicines as a way of meeting their medical needs. This extensive knowledge among them can be tapped for bioprospecting, scientific scrutiny validation and utilization for posterity.

Keywords: Ailments; Curative climbers; Maruthamalai hills; Southern Western Ghats; Traditional Knowledge.

Introduction

Climbers are a typical constituent of rain forests. The distribution and abundance of climbing plants in forest varies greatly with the geographic locality of forests. Forest locality and type appears to influence the distribution of climbers (Grubb 1987). There is some evidence that vines are increasing in dominance in both tropical (Phillips et al. 2002; Wright et al. 2004; Swaine and Grace 2007) and temperate forests (Allen et al. 2007). Some authors consider that this pattern could be related to climate change (Malhi and Wright 2004).

Climbers not only form important structural components but also play important ecological role in forest dynamics, diversity and nutrient recycling (Gentry and Dodson 1984; Schnitzer and Bongers 2002). Liana species constitute a very important group of non-timber forest products, as it becoming clear over the last decade (Abbiw 1990; Malaisse 1997; Van Andel 2000). In addition to being a conspicuous structural component of the rain forest, lianas play a important role as food plants for insects (Gentry 1985) and monkeys (Emmons and Gentry 1983) especially when other food sources are scarce (Sabatier 1985).

Lianas are also used by local people in many different ways. They may be especially important in remote areas where regular modern western medicines and various other products are not easily available and accessible (Arnold and Ruiz Perez 2001). Abbiw (1990) listed many uses for lianas and all kinds of other plants. Tra Bi (1997) and Tra Bi et al. (2002) studied the uses of lianas by the local population in Scio and Haut Sassandra forests of Cote'd Ivoire.

India is one of the 12- mega biodiversity centers with three hot spots of biodiversity *viz*., Western Ghats, Western Himalayas and eastern Himalayas. It is also endowed with a rich wealth of medicinal plants and is widely used by all sections of people either directly as folk medicines or indirectly in the pharmaceutical preparations. In the Western Ghats 80% of the medicinal plants in the world are available. Majority of the medicinal plants in India are higher plants with tress (33%), shrubs (20%), herbs (32%), climbers and others (3%). Nearly 60% of all dicotyledonous plant order has atleast one representative climber (Heywood 1993).

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In recent years some workers (Palanisamy 1993; Balasubramanian et al. 1997; Hamasavalli 2001; Nikkitha 1999; Karthikeyan 2003; Senthilkumar 2004; Senthilkumar et al. 2005; 2006) have reported various medicinal plants used by *Irular* tribes in Coimbatore. However, no work has been attempted so far to ascertain the curative climbers from the study area. The present study attempts to document data on traditional knowledge of the primitive ethnic tribe *Irulars* of Maruthamalai hills related to medicinal uses.

Study area

The study area Maruthamalai Hills consists of an environment of moist dry deciduous type of forest at an altitude of 426.72 m MSL, 11.04' E of longitude and 76.93' N latitude. The area has a predominant red soil impregnated with organic matter, granite, bed rock is overlaid with shallow, sandy loam, and glacial soils are moderate to well drained. Temperature begins increasing after March and April is the hottest month with a near daily maximum temperature of 38.2º C. and minimum of 25 - 26 ºC.

The average rainfall received in the Coimbatore district is 670 – 699 mm for the past 20 years. After a warm, humid September, the regular monsoon starts from October lasting till early November. Out of the total rainfall 25% is received during south west monsoon 49% during October – November and remaining 21% during September. Although this rainfall is not enough to sustain the city for the entire year, small rivers like the Siruvani and Atthikadavu fulfil the city's water needs.

Materials and Methods

The present study was carried out through intensive and extensive field visits during July 2010 – May 2011 to collect information on traditional uses of climbers used in the preparation of crude herbal drugs by the tribal people living in the Maruthamalai Hills of Coimbatore district. The data were documented through interviews, discussion and field observation with folk practioners and knowledgeable people of the study area using standard methods adopted by Jain and Goel (1995).

During field survey, the plants have been collected in their flowering and fruiting stages as far as possible from the natural habitats. They were identified with the help of local floras (Gamble and Fischer 1915- 1936; Matthew 1983; Nair and Henry 1983; Henry et al. 1987; 1989; Chandrabose and Nair 1988). Further the identities were confirmed by referring authentic specimens in the Madras Herbarium (MH) of Botanical Survey of India, Southern Circle, Coimbatore and the voucher specimens deposited in the Herbarium of Department of Botany, Bharathiar University, Coimbatore, Tamil Nadu.

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, local name, part(s) used and their medicinal uses (Table 1). Asclepiadaceae, Convolvulaceae and Fabaceae (8 species each) are most dominant families, followed by Cuccurbitaceae (5 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).

Table 1: List of Curative Climbers in the Maruthamalai hills of Coimbatore, Tamil Nadu

S. No	Botanical name	Local name	Useful part	Medicinal Uses
1	*Abrus precatorius* L. (Fabaceae)	Kundumani	Seeds	Seeds are administered to nervous disorders.
2	*Acacia torta* Craib. (Mimosaceae)	Incha	Stem bark	Stem bark decoction is taken for cough and dysentery.
3	*Aganosma cymosa* G. Don. (Apocyanaceae)	Seellakkodi	Whole plant	Whole plant is used as anthelmintic and ophthalmic.
4	*Argyreia elliptica* (Roth) Choisy (Convolvulaceae)	Thaali vendaankodi	Leaves	Fresh leaf juice mixed with dried ginger is applied externally to cure eye injuries and infections of cattle.

5	*Aristolochia bracteolata* Lam. (Aristolochiaceae)	Aduthinnapalai	Whole parts	Whole plant juice is applied through nose to cure headache, cold and fever.
6	*Aristolochia indica* L. (Aristolochiaceae)	Isuramuli	Leaves & roots	Fresh roots and leaves are ground and mixed with water and given against snake bite.
7	*Aristolochia tagala* Cham (Aristolochiaceae)	-	Roots	Fresh root is grounded and applied externally against poison bites.
8	*Asparagus asiaticus* L. (Liliaceae)	-	Leaves	Paste of tender leaf is applied topically on swellings.
9	*Bauhinia vahlii* Wight & Arn. (Fabaceae)	Kattu mantharai	Leaves	Leaf extract is taken orally to cure dysentery.
10	*Capparis sepiaria* L. (Capparidaceae)	Karunjurai	Leaves and Roots	Leaf and root extract is used to cure skin diseases.
11	*Capparis zeylanica* L. (Capparidaceae)	Adonodai	Roots	Root paste is applied to snakebite, boils and swellings.
12	*Cardiospermum canescens* Wall. (Sapindaceae)	Periya mutakkathan	Leaves	Fresh leaf juice is taken internally to relieve joint pain.
13	*Cardiospermum halicacabum* L. (Sapindaceae)	Mutakkathan	Roots	Crushed roots are applied on legs to cure swellings.
14	*Ceropegia juncea* Roxb. (Asclepiadaceae)	Pulicham	Stem	Stem is crushed and the extract is taken along with milk to cure stomach ulcer.
15	*Cissampelos pareira* L. (Menispermaceae)	Appata	Leaves	Leaf decoction is given orally to cure fever.
16	*Cissus quadrangularis* L. (Vitaceae)	Pirandai	Stem	Tender stem extract is taken orally for stomach pain.
17	*Citrullus lanatus* (Thunb.) Mat. (Cucurbitaceae)	Thannirpalam	Fruits	Fruits are consumed and act as cooling agent.
18	*Clitoria ternatea* L. (Fabaeae)	Sanguppu	Roots	Root paste is taken orally cure snake bite.
19	*Coccinia grandis* (L.) Voight, (Cucurbitaceae)	Kovai	Fruits	Fruits consumed orally to control diabetes.
20	*Cocculus hirsutus* (L.) Diels. (Menispermaceae)	Kottukkodi	Roots	Roots direction is given to cure stomach problems.
21	*Corallocarpus epigaeus* Clarke. (Cucurbitaceae)	Akasha garudan	Roots	Dried root paste is applied externally for joint pains.
22	Cucumis trigonus *Roxb. (Cucurbitaceae)*	Kattummatti	Leaves	Powdered leaves mixed with honey is taken daily for stomachache.
23	*Cyclea peltata* (Lam.) Hook. f. (Menispermaceae)	Para	Roots	Root extract is given against snake bite.
24	*Dioscorea oppositifolia* L. (Dioscoreaceae)	Kavala - kodi	Tuber	The cooked tuber is taken internally for increasing body vigour.
25	*Diplocyclos palmatus* (L.) C. Jeffrey. (Cucurbitaceae)	Sivalingakkai	Whole plant	Whole plant juice is given orally for cough.
26	*Gloriosa superba* L. (Liliaceae)	Akkini-chilam	Roots	Fresh root extract is given to cure leprosy and piles.
27	*Grewia heterotricha* Mast. (Tiliaceae)	Periyaachu	Stem bark	Stem bark extract is given orally to cure cough.
28	*Gymnema sylvestre* (Retz.) R.Br. *ex* Sch. (Asclepiadaceae)	Sakkaraikodi	Leaves	Leaf decoction mixed with milk is taken internally to cure diabetes.
29	*Hemidesmus indicus* R. Br. (Asclepiadaceae)	Nannari	Roots	Decoction of roots is taken against snake bite.
30	Ichnocarpus frutescens *(L.) R. Br. (Apocynaceae)*	Uddarkodi	Roots	Root decoction is taken orally to treat diabetes.
31	*Ipomoea eriocarpa* R.Br. (Convolvulaceae)	Pulichavidu	Roots	Dried and powdered leaves are given orally with milk to treat rheumatism.
32	*Ipomoea mauritiana* Jacq. (Convolvulaceae)	Palmudamgi	Roots	Root powder is taken orally to control diabetes.
33	*Ipomoea obscura* (L.) K. Gawl. (Convolvulaceae)	Siruttalai	Leaves	Fresh leaf juice is given to treat stomach ulcer.
34	*Ipomoea pes-tigridis*. *L*. (Convolvulaceae)	Pulichakirai	Leaves	Powdered leaves are taken orally as an antidote to dog bites and boils.
35	*Ipomoea pes-caprae* (*L*.) R. Br. (Convolvulaceae)	Adambu, attukkal	Leaves	Leaf juice is taken orally and to treat rheumatism.

36	*Ipomoea staphylina* Roem. & Sch. (Convolvulaceae)	Oonakodi	Latex	Latex is applied externally to heal foot cracks.
37	*Jasminum grandiflorum* L. (Oleaceae)	Picci mullai	Leaves	Leaves boiled with water and the extract is used to cure headache.
38	*Kedrostis foetidissima* Cogn. (Cucurbitaceae)		Roots	Root paste is taken internally to treat stomach problems.
39	*Leptadenia reticulata* Wight & Arn. (Asclepidiaceae)	Palakudai	Whole plant	Decoction of whole plant is used as restorative and febrifuge.
40	*Mucuna pruriens* (L.) DC. (Fabaceae)	Poonaikalli	Fruits	Dried pod powder is given to remove intestinal worms.
41	*Passiflora foetida* L. (Passifloraceae)	Siruppunaikkalli	Leaves	Leaf paste is applied topically on the forehead to cure headache.
42	*Pergularia daemia* (Forsk.) Chiov. (Asclepidiaceae)	Balaparuthi	Leaves	Leaf juice is given orally to cure asthma and its decoction is used to treat insect bites.
43	*Pseudarthria viscida* (L.)Wight & Arn. (Fabaceae)	Pitani	Whole Plant	Whole plant decoction is taken internally to treat fever, asthma and diabetes.
44	*Rhynchosia densiflora* (Roth) DC. (Fabaceae)	-	Root	Dried root powder mixed with honey is taken orally for dysentery.
45	*Rivea hypocrateriformis* Choisy. (Convolvulaceae)	Budhikirai	Stem & leaves	Leaf and stem extract is taken internally to relieve cough and headache.
46	*Sarcostemma brunonianum* Wight & Arn. (Asclepiadaceae)	Somam	Latex	Latex is applied on the wound of snake bite.
47	*Secamone emetica* R.Br. (Asclepiadaceae)	Angaravalli	Leaves	Leaf juice given along with milk to treat joint pains.
48	*Thunbergia fragrans* Roxb. (Acanthaceae)	Intiraputpi	Roots & leaves	Roots and leaves are used to treat rheumatism and cough.
49	*Tinospora cordifolia* (Thunb.) Miers (Menispermaceae)	Amudom	Whole plant	Whole plant juice is taken orally to treat rheumatism and urinary diseases.
50	*Toddalia asiatica* (L.) Lam. (Rutaceae)	Milagaranai	Leaves	Leaf powder is taken orally for indigestion and cough.
51	*Tragia involucrata* L. (Euphorbiaceae)	Kan cori	Root	Root is crushed and the extract is taken orally to get relief constipation.
52	*Tylophora indica* Burm. f. (Asclepiadaceae)	Kaakittam	Leaves	Fresh leaves are eaten daily to cure asthma.
53	*Vigna radiata* (L.) Wilczok. (Fabaceae)	Pachapayaru	Roots	Fresh root juice is taken internally for improving digestion and constipation.
54	*Vigna trilobata* (L.) Verd. (Fabaceae)	Nari payaru	Leaves	Leaf extract mixed in boiled water is given for fever.
55	*Ximenia americana* L. (Olacaceae)	Kalai	Fruit	Fresh fruit juice is taken to treat rheumatism.

The most commonly used medicinal climbers *viz*., *Abrus precatorius*. L., *Aristolochia indica* L., *Cissus quadrangularis* L., *Coccinia indica* (L.) Voight, Hort., *Gloriosa superba* L., *Gymnema sylvestre* (Retz.) R.Br. ex Sch., *Hemidesmus indicus* R.Br., *Tinospora cordifolia* (Thunb.) Miers and *Tylophora indica* (Burm. f), which play an important role in the primary healthcare system of tribal community *Irulars* who residing in the study area. They are using these plants to cure diseases related to skin diseases, cough, fever, headache, diabetes, rheumatism, asthma, dysentery and poison bites (Figure 2).

It is evident from the study that, different plant parts of climbers were used as medicines, in which the leaves are most frequently used for the treatment of ailments followed by roots, whole plant, stem, rhizome and bark (Figure 3). The present study perceived that, mono-herbal therapy is used for more than one disease. For example, *Acacia torta* (cough and dysentery), *Aristolochia bracteolata* (headache and fever), *Capparis zeylanica* (snake bite and sweelings), *Pergularia daemia* (asthma and insect bites), *Pseudarthria viscida* (fever, asthma and diabetes), *Rivea hypocarteriformis* (cough and headache) and *Tinospora cordifolia* (rheumatism and urinary diseases). These remedies are taken internally or applied externally in the form of paste, decoction, powder and extract. Most of

the plants are used either mixed with other ingredients or used singly.

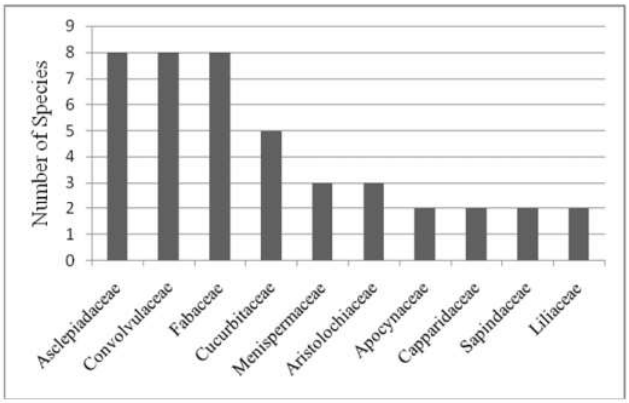

Figure 1: Analysis of dominant families with respect to number of species.

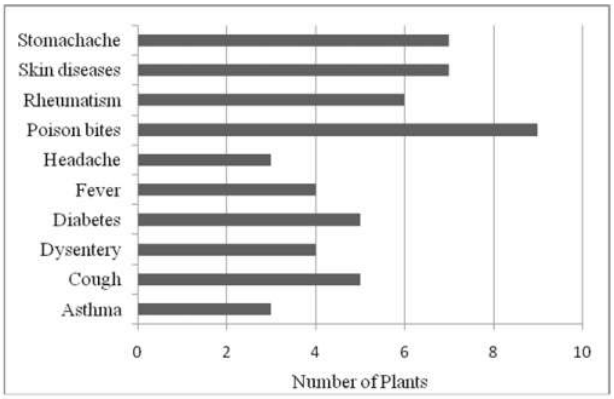

Figure 2: Number of plants used to treat various ailments.

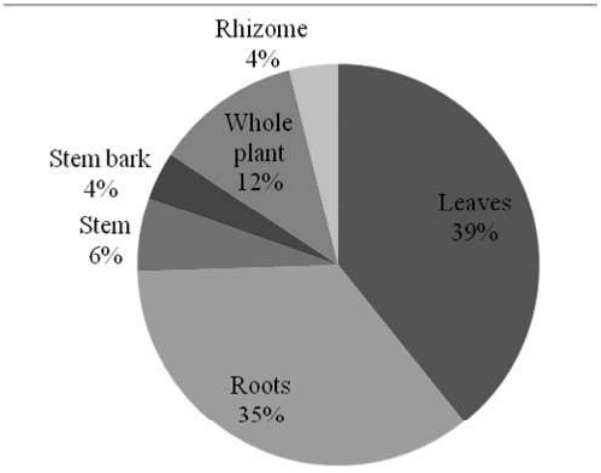

Figure 3: Different plant parts used for various ailments as herbal medicines.

The study reveals that most of the people in the study area cultivate some of the common medicinal plants in their home gardens either for medicinal use or for used as vegetables. In the view of greater importance of medicinal herbal plants, many of the progressive farmers are focused over to cultivate of these plants as they found it to be more profitable than traditional crops. It is essential to impart necessary training in mass to enhance the economic condition of tribal poor and progressive farmers.

Conclusion

Medical 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 *Irular* community in Maruthamalai hills, the Southern 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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