

Research Article



Certain Endemic and Ethnobotanically Important Plants of Thiashola, Manjoor, Nilgiris South Division, Western Ghats

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ABSTRACT

Sholas, an evergreen forest and non-renewable natural resources are found intensively in the Nilgiris South Division and their adjacent areas. The ethnobotanical exploration study presents the folk medicinal uses of certain endemic plant species by tribes of the Thiashola in the Nilgiri district. From topographical point, this particular shola is undulating with enormous number of medicinal and other economic plant species exhibits the suitable macro and micro climatic conditions for their growth and perpetuation. Tribals of the dominant forest areas are playing an important role in ethnobotanical aspect in their day-to-day life. Species of *Agrostis peninsularis*, *Arisaema leschenaultii*, *Gaultheria fragrantissima*, *Helichrysum hookeriana*, *Pogostemon wightii*, *Strobilanthes foliosus*, *Tetragium nilagiricum* etc. are considered as endemic ones and very few are found to be rare and threatened (*Asparagus fysoni* and *Cayratia pedata* var. *glabra*). During the survey 31 herbaceous plant species have been recorded which are used in different aspect. In course of time these species may lose their ecological importance further and may become rare elements due to some intrinsic and extrinsic factors. However, long-term studies on their sociological behavior are required to confirm this fact. Hence, it is suggested that in addition to habitat protection, priorities must be given for these species so as to protect the genetic stock and species as well.

Keywords: Ethnobotany, Endemic, Herbaceous, Thiashola.

INTRODUCTION

Natural medicines have been used to enhance human and veterinary health since time immemorial and the success of modern medical science largely depends on drugs originally obtained from natural resources. In the past, traditional medicinal knowledge prevalent in the form of holy books, incantations, folklores, Materia Medica and other historical literature defined the preliminary guidelines for the authorization of plant derived natural medicines. The conventional medical practices adopted for identification and authentication of natural remedies eventually framed the botanico-chemical approach to Pharmacognosy during the early 19th century.¹ The world health organization estimates that about 80% of the population of most developing countries relies on herbal medicines for their primary health care needs.^{2,3} The age-old tribal knowledge of plants is an important aspect of ethnobotanical research. The tribal tracts are the store house of information and knowledge on the last century, ethnobotany has evolved into scientific discipline that focuses on the people-plant relationship in a multidisciplinary manner, incorporating not only collection and documentation of indigenous uses but also ecology, economy, Pharmacognosy, public health and other disciplines.^{4,5} Study of literature in hand suggests that little attention has been paid on the ethnobotant of Thiashola.

The Indian subcontinent is remarkable for its exceptional level of biological diversity at broad habitat level and within these habitats at species level. Due to rich diversity

of biotic resources, India is ranked one of the 12 mega diversity countries in the tropics.⁶ The mountains along the west coast of peninsular India, the Western Ghats, constitute one of the unique biological regions contain high degree of endemism and is very rich in its medicinal wealth. The forests and hills of this region is a treasure house, nearly of about 2000 species of higher plants are endemic to Western Ghats.^{7,8} The Western Ghats region is being uncontrollably invaded by urban development and human settlements; life of such valuable medicinal wealth is at stake. And with the patronage of herbal medicines and their products increasing, there is an urgent need to conserve the endemic diversity in the medicinal plants before it is wiped out from nature.⁹ Therefore, collection and cultivation of such species and the conservation of their genetic traits by genetic engineering and tissue culture techniques is the present day call for conservationists. Hence, the present investigation was undertaken to document the ecological status, medicinal and economic uses of herbaceous plants in Thiashola, Manjoor, Nilgiris South Division, Western Ghats.

MATERIALS AND METHODS

Sholas, an evergreen forest and non-renewable natural resources are found intensively in the Nilgiris South Division and adjacent areas of Kerala in the upper reaches of Silent Valley, Attapadi and New Amarambalam. They are found in the mountain zones around 1600 m and above. Sholas are the places of high biodiversity, which includes many endemic, endangered and rare species of both flora and fauna. Because of the well organized



structure, the sholas provide eco-balance as well.^{10,11} The issue of endemism in Western Ghats has been discussed by many botanists from time to time.^{12,13} The Todas, a tribal community lives in the pockets of Western Ghats of Tamil Nadu are inhabitants of Thiashola. With the assistance of experienced and elderly tribes traditional knowledge the field survey was carried out in Thiashola, Manjoor, Nilgiris South Division, Western Ghats during 2009 and 2010 through informal interviews and the species used as folklore medicines and endemic species were enumerated (Table 1). The documented information's at the time of field survey was confirmed by cross checking with respondents and also with the already existing literature.

The collected specimens were pressed properly. Dried specimens were poisoned with 0.1% HgCl₂ following the

Table 1: The endemic species and medicinal uses of some indigenous plants among the Toda tribes of Thiashola, Majoor, Nilgiris, Western Ghats

Botanical Name	Vernacular Name	Family	Habit	Ecological Status	Medicinal Uses	Parts Used	Mode of Administration	Phenology
<i>Agrostis peninsularis</i> Hook. f.	Oosi pullu	Poaceae	Erect herb	Endemic	Fodder	Aerial parts	Fresh and dry aerial parts directly palatable	Flowering: August-September
<i>Agrostis pilosula</i> Trin.	Oosi pullu	Poaceae	Erect herb	Endemic	Fodder	Aerial parts	Fresh and dry aerial parts directly palatable	Flowering: August
<i>Anaphalis elliptica</i> DC.	Vellaragu	Asteraceae	Herb	Endemic	Fever, cuts	Whole plant	Powder	Flowering: April-November
<i>Arisaema leschenaultii</i> Blume.	Paambu chedi	Araceae	Cormous herb	Endemic	Antidote, veterinary importance and contraceptive	Leaves and spadix	Paste	Flowering: May-July
<i>Arisaema tortuosum</i> (Wall.) Schott.	Paambu chedi	Araceae	Cormous herb	Common	Antidote, veterinary importance, contraceptive and cancer curing	Tubers and spadix	Paste and Powder	Flowering: May-July
<i>Asparagus fysoni</i> J. F. Macbr.	Perumoolam	Asparagaceae	Erect herb	Endemic, rare and threatened	Tonic	Tubers	Powder	Flowering: June-November
<i>Carex baccans</i> Nees.	Crimson seeded sedge	Cyperaceae	Herb	Common	Anthelmintic	Aerial part, root	juice	-
<i>Cayratia pedata</i> (Lam.) Gagnep. var. <i>glabra</i> Gamble	Kattuppirandai	Vitaceae	Climber	Endemic, Endangered and rare	Antiseptic, cancer, ulcer and refrigerant	Whole plant	Powder	Flowering: May-October
<i>Cerastium glomeratum</i> Thuill.	sticky chickweed	Caryophyllaceae	Herb	Common	headaches	Whole plant	juice	Flowering: April-November
<i>Clinopodium umbrosum</i> (M. Bieb.) K. Koch.	Not available	Lamiaceae	Spreading herb	Common	Antiseptic	Leaves	Powder	Flowering: July-October
<i>Elatostemma lineolatum</i> Wight.	-	Urticaceae	Herb	Common	-	-	-	-
<i>Elatostemma sessile</i> J. R. Forst. & G. Forst.	Not available	Urticaceae	Herb	Common	Abdominal disorders	Leaves	Powder	Flowering: October-December

method of Jain and Rao.¹⁴ Field data with collection number, locality, short description, vernacular name and collector's name were transferred from the field note book to the right hand corner of the herbarium sheet for ready identification. The herbaria were deposited in Department of Botany, Vellalar College for Woman, Thindal, Erode. Photographs were also taken to supplement the herbarium.

The collected plants were identified with the help of the existing Floras¹⁵⁻¹⁷ and compared with type specimens available in the herbarium of Botanical Survey of India, Southern Circle, TNAU Campus, Coimbatore, Tamil Nadu and through recent floras and taxonomic revisions. The ethnobotanical data collected through interview were documented alphabetically with their family, binomial, vernacular names, parts used and medicinal uses.

Table 1: The endemic species and medicinal uses of some indigenous plants among the Toda tribes of Thiashola, Majoor, Nilgiris, Western Ghats (Continued.....)

Botanical Name	Vernacular Name	Family	Habit	Ecological Status	Medicinal Uses	Parts Used	Mode of Administration	Phenology
<i>Gamochatea cordata</i> (Willd.) M. Kerguelen.	Not available	Asteraceae	Erect herb	Common	Fever	Whole plant	Fumigation	Flowering: May-October
<i>Gaultheria fragrantissima</i> Wall.	Morppazham, Kolakkai	Ericaceae	Compact shrub	Endemic	Arthritis	Leaves	Oil	Flowering: Throughout the year
<i>Helichrysum hookeriana</i> Wight & Arn.	Peru vellaragu	Asteraceae	Stout herb	Endemic	Skin diseases	Flowers	Powder	Flowering: March and December
<i>Leucas aspera</i> Spr.	Thummichittu	Lamiaceae	herb	Common	Antioxidant, antimicrobial, rheumatism, psoriasis, cytotoxic, hepatoprotective	Leaves	Powder	Flowering: November-February
<i>Neonitis indica</i> (DC.) Lewis.	-	Rubiaceae	Short tree	Endemic	Anti-malarial	bark	juice	-
<i>Persicaria napalensis</i> (Meisn.) H. Gross.	Not available	Polygonaceae	Spreading herb	Common	Swelling	Leaves	Extract	Flowering: November-February
<i>Picris hieracioides</i> L.	Not available	Asteraceae	Rugose herb	Common	Edible	Tender leaves	Cooked	Flowering: May-October
<i>Pilea trinervia</i> Miq.	Kulankuruthu	Urticaceae	Dioecious, erect, herb	Common	Fodder	Aerial parts	Directly palatable	Flowering: October onwards
<i>Pilea wightii</i> Wedd.	Not available	Urticaceae	Dioecious, matty herb	Common	Fodder	Aerial parts	Directly palatable	Flowering: September-December
<i>Piper brachystachyum</i> Wall. ex. Hook. f.	Kattu kurumilagu	Piperaceae	Scandent shrub	Endemic	Tooth ache and dyspepsia	Stem and fruit	Brushing	Flowering: March-August
<i>Pogostemon wightii</i> Benth.	-	Lamiaceae	herb	Endemic	-	-	-	-
<i>Rubus ellipticus</i> Sm.	Karun sheetthi, Semmullu	Rosaceae	Straggler	Common	Edible	Fruits	Directly	Flowering: Throughout the year
<i>Rubus fairholmianus</i> Gardner	Yerumai sheetthi	Rosaceae	Straggler	Common	Edible	Fruits	Directly	Flowering: Throughout the year
<i>Rubus racemosus</i> Roxb.	Sheetthi, Vellai sheetthi	Rosaceae	Stragglng herb	Endemic	Edible	Fruits	Directly	Flowering: Throughout the year
<i>Strobilanthes foliosus</i> (Wight) T. Anderson.	Perum kurinji	Acanthaceae	Large herb	Endemic	Antiseptic	Leaves	Paste	Flowering: July-October
<i>Tetrastigma nilagiricum</i> (Miq.) B. V. Shetti.	Kattu thiratchai, Perumuruli	Vitaceae	Lianae	Endemic	Edible	Fruits and aerial parts	Directly	Flowering: March-July
<i>Toddalia asiatica</i> (L.) Lam. var. floribunda Gamble	Kindu mullu	Rutaceae	Armed stragglng shrub	Common	Fever and rheumatism	Roots and fruits	Powder	-
<i>Viola serpens</i> Wall. ex Ging.	Not available	Violaceae	Herb	Common	Antipyretic, cough and cold	Whole plant	Powder	-
<i>Zehneria mysorensis</i> Wight & Arn.	Kattu kovai	Cucurbitaceae	Monoeciou s vine	Common	Blood purifier	Fruits	Directly	Flowering: Throughout the year



Asparagus fysoni J. F. Macbr.



Anaphalis elliptica DC.



Arisaema leschenaultii Blume



Cayratia pedata (Lam.) Gagnep. var. *glabra* Gamble



Gaultheria fragrantissima Wall



Toddalia asiatica (L.) Lam. var. *floribunda* Gamble

Plate 1: Snap shots of some of the important endemic species in Thiashola, Manjur

RESULTS AND DISCUSSION

Data collected through ethnobotanical survey were enumerated alphabetically included endemic species with their vernacular names, family, habit, ecological status, medicinal uses, parts used, mode of administration and phenology. The tribal people of Thiashola were using 31 plant species belonging to 18 families. Among them, 14 herbaceous plants were endemic species. It grows particular region only. The most commonly represented families were Asteraceae (4 spp.), Urticaceae (4 spp.), Lamiaceae (3 spp.), Rosaceae (3 spp.), Arecaceae (2 spp.), Poaceae (2 spp.) and Vitaceae (2 spp.) (Figure 1). Other families represented single species. *Asparagus fysoni* and *Cayratia pedata* var. *glabra* were highly endemic, rare and endangered species in the study area. Ramakrishnan¹⁸ opined that the existence of high reproductive effort, wide ecological amplitude, different responses to soil nutrients and success in interspecific competition would ensure the higher frequencies of occurrence for the members of Asteraceae and Poaceae.

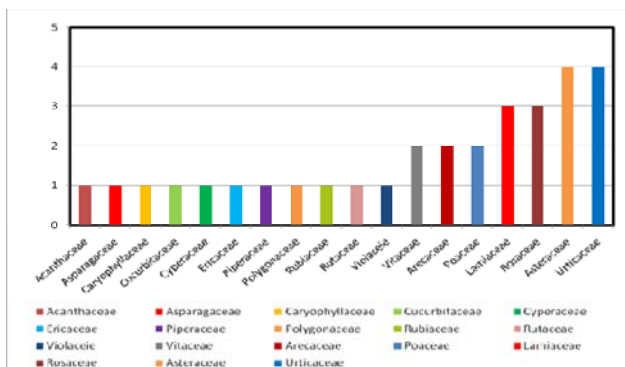


Figure 1: Family wise percentage of endemic species in Thiashola

The plant parts used widely to treat human and livestock health problems included root, stem, leaves and others. The most commonly used plant parts for herbal preparations in the area were leaves (24%), fruits (24%), aerial parts (14%), whole plant (14%) and roots (3%) (Figure 2). More than 20 disease types were recorded as human health problems. The most reported medicinal uses were for Antidote, contraceptive, antiseptic, cancer, fever, skin diseases, arthritis, rheumatism, antipyretic, cough and cold and refrigerant. The presence of such a large number of medicinal plant species indicates that the area has a very high diversity of medicinal plant species and is a site for various indigenous knowledge.

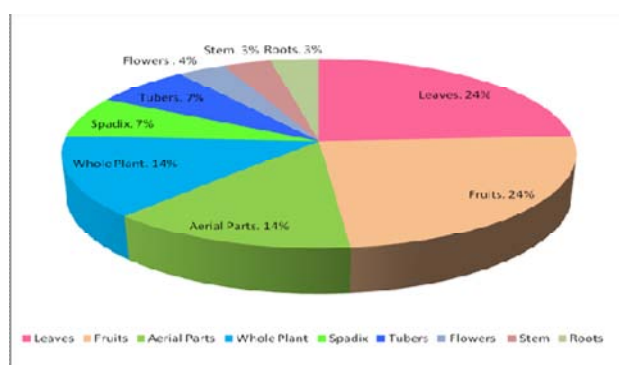


Figure 2: Pie diagram showing the useful parts wise percentage of ethnomedicinal plants of Thiashola

The medicinal plants have various methods of preparation and application for different types of ailments and they have various preparation forms like, decoction, powder, paste and juice. Herbal medicines prescribed by tribal healers are either preparation based on single plant part or a combination of several plant parts cures diseases rapidly. Generally, fresh part of the

plant is used for the preparation of medicine. When fresh plant parts are unavailable, dried parts are also used. The traditional beliefs in the area also have their own conservation aspects. *Anaphalis elliptica*, *Cayratia pedata*, *Cayratia pedata* var. *glabra* and *Rubus fairholmianus* were present with low densities in the study shola. The poor reproductive potential with less seed output, higher demand, shorter viability, improper dormancy, lower regeneration and weaker competitive ability may lead the species with low density in the communities. *Agrostis peninsularis*, *Agrostis pilosula*, *Anaphalis elliptica*, *Cayratia pedata* var. *glabra*, *Clinopodium umbrosum* and *Persicaria napalensis* with higher economic uses have poor ecological perpetuation in the habitat of study shola (Plate 1). In course of time these species may lose their ecological importance further and may become rare elements due to some intrinsic and extrinsic factors. Similar observation was also noted and recorded by Paulsamy¹⁹ and Volga.²⁰

However, long-term studies on their sociological behavior are required to confirm this fact.²¹ Hence, it is suggested that in addition to habitat protection, priorities must be given for these species so as to protect the genetic stock and species as well. The information gathered from the tribes of Thiashola is useful for further research in the field of ethnobotany, taxonomy and pharmacology.

CONCLUSION

The enormous number of medicinal and other economic plant species available in the shola vegetations exhibits the suitable macro and micro climatic conditions for their growth and perpetuation. Identification of potential sholas in the buffer zone of biosphere reserve for their cultivation in the conservation programme is important one. All the enumerated plant species in the present study are very commonly used for various ailments by the Toda tribes of this region. Comparison of the data collected with data already available in the literature shows that the tribals have a sound knowledge of the medicinal value of the plants in their area. Traditional medicine is still practiced in this area, it is now fast disappearing due to modern life style. The IUCN committee (2000) for threatened plants has identified 23 factors as possible threats to natural populations. In the present study area traditional destructive practice of commercial exploitation of wild plants for medicinal purpose is a major threat and it affects the existence of many endemic, endangered, rare and threatened plant species. Hence, proper documentation and preservation of traditional skills and *Ex situ* or *in situ* conservation strategies of medicinal plants is a immediate vital necessity.

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