TREE WEALTH IN THE LIFE AND ECONOMY OF THE TRIBESPEOPLE OF ANDHRA PRADESH, INDIA

S. S. Rani, K. S. R. Murthy*, P. S. P. Goud & T. Pullaiah

Department of Botany, Sri Krishnadevaraya University, Anantapur - 515 003, Andhra Pradesh, India

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RANI, S. S., MURTHY, K. S. R., GOUD, P. S. P. & PULLAIAH, T. 2003. Tree wealth in the life and economy of the tribespeople of Andhra Pradesh, India. Trees and forests are among the most bountiful and versatile renewable resources gifted to mankind by nature. Tree wealth plays a vital role in the life and economy of many tribespeople of Andhra Pradesh, India. The plains and hill regions of the State are inhabited by a large number of tribespeople. They have learnt to utilise the tree products for various uses including for their food, fibre, medicine, timber, oil, gums, tannin, dyes and fuelwood, the details of which are presented in this paper.

Key words : Ethnobotany - tree products - renewable resources

RANI, S. S., MURTHY, K. S. R., GOUD, P. S. P. & PULLAIAH, T. 2003. Kekayaan pokok dalam kehidupan dan ekonomi suku kaum di Andhra Pradesh, India. Pokok dan hutan merupakan anugerah alam yang paling banyak serta pelbagai guna. Kekayaan pokok memainkan peranan penting dalam kehidupan dan ekonomi suku kaum Andhra Pradesh, India. Banyak suku kaum mendiami kawasan lembah dan bukit negeri ini. Mereka menggunakan hasil hutan untuk pelbagai gunaan termasuk untuk makanan, bahan gentian, ubat, balak, minyak, damar, tanin, pewarna dan kayu api. Semuanya dibincangkan dengan terperinci dalam artikel ini.

Introduction

Trees are a main constituent of forests, which are considered the most valuable natural resource and are of immense importance to both man and nation. Trees serve different purposes for different needs and are the sole source of shelter and fuel and object of worship to our ancestors. Tree wealth plays a vital role in the life and economy of tribespeople by providing food, medicine, fibre, timber, wood, fuelwood, oil, gum, resin, tannin and dyes. Besides meeting human needs trees aid in preventing soil erosion and are sources of raw materials for various industries. Most tribal communities are tradition-oriented and, therefore, hesitate to use modern medical and health facilities even though available, since they are used to their own herbal remedies. Ethnobotanically, the Indian subcontinent, in particular Andhra Pradesh, is under-explored and no comprehensive account of its folklore is available. The plant wealth of India and the State has been recorded by, for example, Nadkarni (1908, 1954), Jain and Tarafder (1970), Hemadri *et al.* (1987), Vedavathy *et al.* (1994) and Vijayakumar and Pullaiah (1997).

**Author for correspondence. E-mail: drksmurthy@yahoo.com*

Materials and methods

Study area

Location

The State of Andhra Pradesh lies between latitudes 12° 37'–19° 54' N and longitudes 76° 46'– 84° 46' E. It occupies the middle portion of the eastern half of the Indian peninsula with an area of 276 754 km^2 accounting for 8.4% of the entire country. The state has land boundaries with Orissa and Madhya Pradesh in the north, Maharashtra and Karnataka in the west, Tamil Nadu in the south, and a sea boundary with the Bay of Bengal in the east. Among all states of India, Andhra Pradesh has the longest coastline of 972 km (Figure 1). Geographically the State can be divided into three natural regions, namely, coastal plains, Eastern Ghats and western plateau, of which the Eastern Ghats shows much floristic diversity.

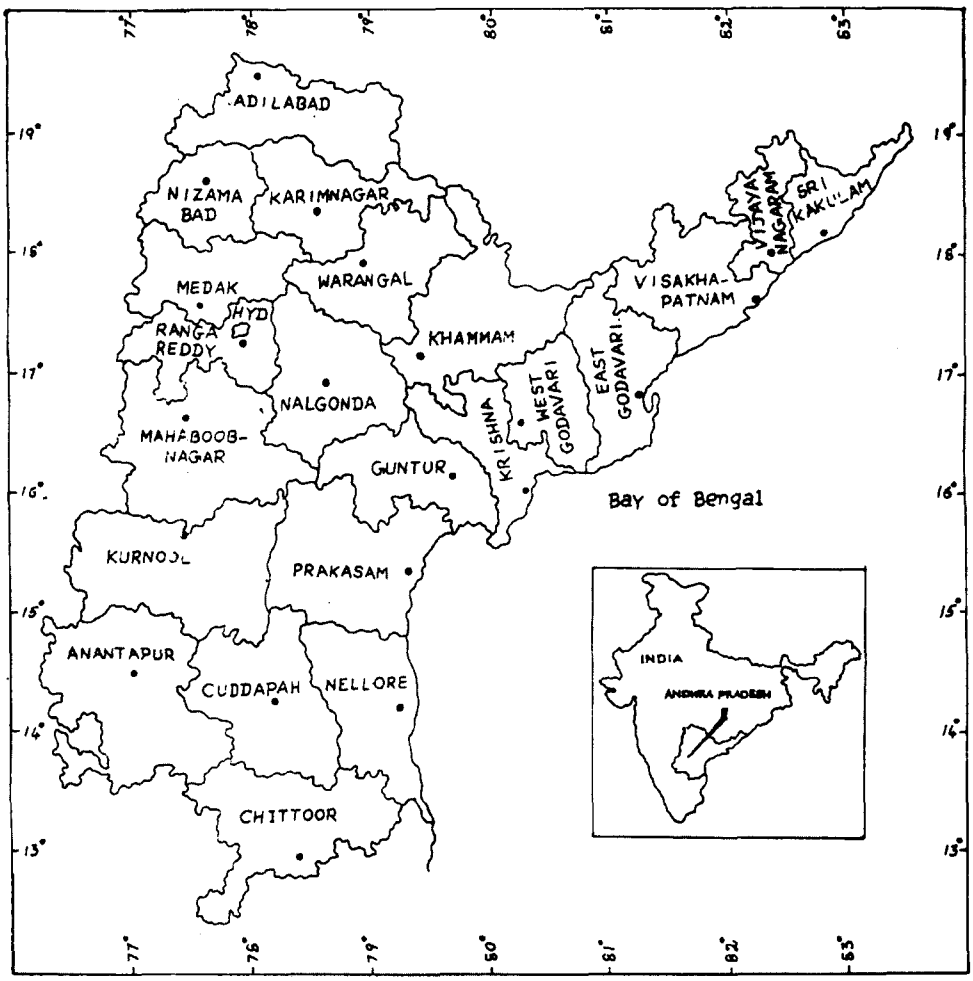

Figure 1 Study area of Andhra Pradesh in India

Forest and vegetation

Forests in Andhra Pradesh extend over an area of 65 000 km^2. The types of forests in Andhra Pradesh are given in Table 1.

The State's vast sandy strip of limited width is intercepted by extensive deltaic regions built by the rivers Godavari, Krishna and their tributaries, the rocky promotories of limited size projecting into the sea at Waltair and Pudimadaka, and the large saline and mud flat at Kakinada in the Coringa estuarine region and in the vicinity of Pulicat lake on way to Sriharikota island. The coastal vegetation of Andhra Pradesh can be divided into two subgroups, namely, strand vegetation and estuarine vegetation.

People

India has the second largest tribal population in the world, next to Africa. There are altogether 550 tribal communities of 227 ethnic groups in India. The tribal population in the country is 86.6 million constituting about 9.6% of the country's total population. In South India, Andhra Pradesh has the highest tribal concentration of population with 4.2 million, comprising 33 main tribes and

Table 1 Details of study area

District	Highest altitude (m)	Rainfall (mm)	Type of forests*	No. of species	Forest area (%)
East Godavari	1050	1057	1, 2, 3, 4	315	5.07
Guntur	1050	950	3, 5, 7	266	2.54
Krishna	680	1014	3, 7	245	1.04
Nellore	1033	1005	3, 5, 6	313	3.95
Prakasam	745	818	2, 3, 5	196	6.94
Srikakulam	1120	1187	2, 3, 5, 6	276	1.08
Visakhapatnam	1596	1199	1, 2, 3, 5, 6	387	6.92
Vizayanagaram	850	1141	2, 3, 5, 6,	156	1.87
West Godavari	757	1228	1, 2, 4, 5,	346	1.27
Anantapur	644	560	3, 7	202	3.09
Chittoor	980	932	2, 3, 5, 6	360	7.09
Cuddapah	896	700	3, 5, 6, 7	312	7.84
Kurnool	845	677	2, 3, 4, 5, 7	213	5.51
Adilabad	678	995	3, 5	176	11.32
Hyderabad	501	810	7	57	-
Karimnagar	550	1026	2, 3	125	4
Khammam	1005	1170	2, 3	305	13.52
Mahabubnagar	800	688	3, 5	224	4.75
Medak	600	928	3, 4	197	1.45
Nalgonda	538	727	3, 4	169	1.31
Nizamabad	663	1217	3, 4	215	2.84
Ranga Reddi	509	807	3, 4	174	1.15
Warangal	908	1055	3, 4	275	5.82

*1 = tropical semi-evergreen forests, 2 = tropical moist deciduous forests, 3 = dry deciduous forests, 4 = northern mixed dry deciduous forests, 5 = dry savannah forests, 6 = tropical dry evergreen forests and 7 = tropical scrub

60 other small tribes. Koyas form the largest tribal population in Andhra Pradesh followed by Yanadi, Chenchus, Sugalis, Yerukalas, Konda Reddys, Doras and Lambadis. All live in forest areas of Andhra Pradesh. They depend upon forest produce for their sustenance, but tribal traditions are fast disappearing due to urbanisation, rapid industrialisation and changes in sustenance economy.

Methodology

The study was conducted in 1993 until 1998. While working on the Flora Sylavatica for the State of Andhra Pradesh, we conducted an ethnobotanical survey among the tribespeople of Andhra Pradesh, with a view to gather information on the trees and tree products used by them in their daily life and health care. The data obtained from different localities and tribal villages were compared, analysed and are presented in this paper. The traditional uses of these plants were discussed with 10 local healers and experienced adults (about 45 to 60 years old). The individuals were approached in private, as they revealed more easily their traditional plant lore in such condition than in large groups. For each plant the following information was requested: local name, medicinal use, preparation and administration, and other economic importance of the given trees, e.g. food, timber, fibre, oil, gums, dyes and tannins. Only those plants that have at least five positive answers from different informants at different areas are included here. All the plant specimens collected were housed in the Herbarium of Sri Krishnadevaraya University (SKU), Anantapur, Andhra Pradesh.

Results

Our ethnobotanical investigation revealed that out of 429 species of tree taxa distributed in Andhra Pradesh a large number has been used for various purposes as shown in Table 2. Among them, 11 species were used for arrack and toddy, 98 species for edible purpose (leaves, flowers and fruits), 35 species for fibre and floss, 63 for fodder, 74 for fuelwood, 48 for gums and resins, 42 for oil (different sources like leaves, flowers, bark, wood), 25 for tannins (bark, fruit) and 103 for timber. Some species were utilised for more than one purpose. The tribespeople utilised 70 taxa for treating their common diseases and disorders and meeting their health care (Table 3).

Except for a few commodities, tribespeople depended on the biodiverse resources for their food, timber, medicine, fuel and other daily requirements. They not only used the products but also earned money by selling the products outside the villages, especially in the weekly markets. They collected non-timber forest products like gums, seeds, fruits, flowers and honey during different seasons. They eked out their livelihood by selling these forest collections to the Girijan Co-operative Corporation Limited.

Table 2 Classification of trees based on economic importance

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Acacia auriculiformis	Mimosaceae	Australian tumma		x				x				
Acacia catechu	Mimosaceae	Khadiramu, Sandra		x			x	x	x			
Acacia decurrens	Mimosaceae			x				x				x
Acacia farnesiana	Mimosaceae	Ansadra, Inupa tumma		x						x		
Acacia ferruginea	Mimosaceae	Inupa tumma							x			x
Acacia leucophloea	Mimosaceae	Tella thumma	x	x					x			
Acacia nilotica	Mimosaceae	Nalla thumma	x	x			x	x			x	x
Acacia planifrons	Mimosaceae	Godugu tumma		x			x	x				x
Adansonia digitata	Sterculiaceae	Brahma			x	x		x				x
Adenanthera pavonia	Mimosaceae	Bandigurivinda		x								
Aegle marmelos	Rutaceae	Meredu		x	x				x	x	x	x
Ailanthus excelsa	Simaroubaceae	Peddu manu						x	x			
Alangium salvifolium	Alangiaceae	Uduga, Urgu			x			x				x
Albizia amara	Mimosaceae	Narlingichikreni, Chigara					x	x				x
Albizia chinensis	Mimosaceae	Konda-chigara		x			x					
Albizia lebbeck	Mimosaceae	Pedda dirisinam		x			x	x	x	x		
Albizia odoratissima	Mimosaceae	Konda chigara		x	x		x		x			x
Albizia procera	Mimosaceae	Tella-chinta		x								x
Anacardium occidentale	Anacardiaceae	Jidi mamidi			x				x	x		
Annona reticulata	Annonaceae	Ramaphalamu			x							
Annona squamosa	Annonaceae	Sithaphalamu			x							
Anogeissus acuminata	Combretaceae	Pachimanu, Pedda manu							x			x
Anogeissus latifolia	Combretaceae	Chiru manu		x			x	x	x		x	x
Anthocephalus chinensis	Rubiaceae	Kadamba			x		x					x
Antidesma acidum	Euphorbiaceae	Pulleru, Gumudu			x					x		
Aphanamixis polystachya	Meliaceae			x								
Artocarpus heterophyllus	Moraceae	Panasa		x	x							
Artocarpus lakoocha	Moraceae	Nakkarenu, Kammuregu		x	x	x						x
Atalantia monophylla	Rutaceae	Adavi nimma								x		
Avicennia officinalis	Verbenaceae	Mada		x								
Azadirachta indica	Meliaceae	Vapa, Vepa		x			x		x	x		x

*1 = arrack and toddy, 2 = dyes, 3 = edible, 4 = fiber and floss, 5 = fodder, 6 = fuelwood, 7 = gums and resins, 8 = oil, 9 = tannins, 10 = timber

(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Barringtonia acutangula	Lecythidaceae	Kadapa		x								
Bauhinia malabarica	Caesalpiniaceae	Pulishinta			x	x	x					
Bauhinia purpurea	Caesalpiniaceae	Devakasia, Peddari		x	x	x	x		x			x
Bauhinia racemosa	Caesalpiniaceae	Are, Pachare				x		x				
Bauhinia semla	Caesalpiniaceae	Nirpa, Goddari				x			x	x		x
Bauhinia variegata	Caesalpiniaceae	Mandra		x	x	x		x			x	
Bischofia javanica	Bischofiaceae	Nalupu, Mushithi		x						x		x
Bixa orellana	Bixaceae	Jabaru kaya		x						x		
Bombax ceiba	Bombaceae	Mundh, Buruga			x	x	x	x		x		x
Borassus flabelifer	Arecaceae	Thati	x		x	x						
Boswellia ovalifoliolata	Burseraceae	Konda Sambrani							x			
Boswellia serrata	Burseraceae	Guggilam, Anduya						x	x	x		x
Bridelia airy-shawii	Euphorbiaceae	Kora mode			x		x					x
Bruguiera cylindrica	Rhizophoraceae	Vurada						x				
Bruguiera gymnorhiza	Rhizophoraceae	Thuddu panna		x				x				x
Buchannania axillaris	Anacardiaceae	Sarapappu, Karnel			x							
Buchanania lanzan	Anacardiaceae	Sarapappu, Mori			x			x				
Butea monosperma	Papilionaceae	Moduga chettu		x		x	x		x	x		
Caesalpinia coriaria	Caesalpiniaceae	Dividivi		x							x	
Callicarpa arborea	Verbenaceae	Gandagummadi										x
Calophyllum inophyllum	Clusiaceae	Ponna, Namare							x	x		
Canthium dicoccum	Rubiaceae	Nalla balusu						x				x
Capparis decidua	Capparaceae	Kariramu			x							
Caryota urens	Palmae	Bee bee jadalu	x			x						
Caralia brachiata	Rhizophoraceae	Giguru chettu		x	x			x				x
Careya arborea	Lecythidaceae	Kumbhi, Dudippa		x	x	x			x		x	x
Cassia fistula	Caesalpiniaceae	Rela		x			x				x	x
Cassine glauca	Celastraceae	Neridi		x								
Casuarina equisetifolia	Casuarinaceae	Sarugudu		x				x				
Ceiba pentandra	Bombcaaceae	Kadami, Tella buruga				x	x		x	x		
Chionanthus intermedia	Oleaceae	Satapala, Verri pogada					x					x
Chloroxylon swietenia	Flindersiaceae	Billudu, Billu		x				x				x

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(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Chukrasia tabularis	Meliaceae	Konda vepa		x								x
Citrus aurantifolia	Rutaceae	Nimma			x					x		
Citrus reticulata	Rutaceae	Kamala pandu			x					x		
Cleistanthus collinus	Euphorbiaceae	Kodishe		x								
Cochlospermum religiosum	Cochlospermaceae	Konda gogu				x	x		x			
Commiphora berryi	Burseraceae								x			
Commiphora caudata	Burseraceae	Kondaregu, Konda manidi							x			
Cordia dichotoma	Cordiaceae	Baukira		x	x			x				x
Cordia domestica	Cordiaceae	Irki, Narkkeri				x		x				
Cordia gharaf	Cordiaceae				x			x				
Cordia macleodii	Cordiaceae	Pedda batuku										x
Cordia monoica	Cordiaceae	Pacha botuku			x							
Crateva adansonii	Capparaceae				x							
Crateva magna	Bixaceae	Tella ulimidi			x							
Dalbergia lanceolaria	Papilionaceae	Patchari								x		x
Dalbergia latifolia	Papilionaceae	Jittegi		x			x			x	x	x
Dalbergia sissoo	Papilionaceae	Sissoo					x	x				x
Delonix regia	Caesalpiniaceae	Turayi, Errae		x				x				
Dichrostachys cinerea	Mimosaceae	Velthuru						x				
Dillenia aurea	Dilleniaceae				x			x				
Dillenia indica	Dilleniaceae	Kalinga	x		x			x				
Dillenia pentagyna	Dilleniaceae	Revadi chettu			x	x		x				
Diospyros chloroxylon	Ebenaceae	Ullinda			x			x				
Diospyros ebenum	Ebenaceae	Nallaubi, Tuki			x				x			x
Diospyros malabarica	Ebenaceae	Nitta tumiki		x				x	x		x	
Diospyros melanoxylon	Ebenaceae	Tuniki, Beedi aku		x	x			x			x	x
Diospyros montana	Ebenaceae	Jagadagendi						x				x
Diospyros ovalifolia	Ebenaceae	Kukka-tumki			x							x
Diospyros sylvatica	Ebenaceae	Gatha			x							x
Dolichandrone spathacea	Bignoniaceae					x						
Drypetes roxburghii	Euphorbiaceae	Putranjivika					x			x		x

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(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Ehretia acuminata	Cordiaceae				x		x					x
Ehretia aspera	Cordiaceae	Pogadi						x				
Ehretia laevis	Cordiaceae	Pagidi chettu			x		x	x				
Elaeocarpus lanceifolius	Elaeocarpaceae				x	x						
Erythrina suberosa	Papilionaceae	Mullu moduga			x	x	x			x		x
Erythroxylum monogynum	Erythroxylaceae	Pegadamu chettu		x	x			x				x
Eugenia bracteata	Myrtaceae	Asivita			x							
Ficus auriculata	Moraceae	Ravi					x					
Ficus benghalensis	Moraceae	Marri		x	x		x					
Ficus hispida	Moraceae	Kaki			x		x					
Ficus microcarpa	Moraceae	Konda juvi					x	x				
Ficus racemosa	Moraceae	Atti		x			x					
Ficus religiosa	Moraceae	Raavi		x	x		x					
Ficus rumphi	Moraceae				x		x	x				
Firmiana colorata	Sterculiaceae	Kharka, Maraka				x						
Flacourtia ramontchi	Flacoutiaceae	Kanru, Pulivelaga			x							x
Garcinia spicata	Clusiaceae	Pidaetha		x	x							x
Garcinia xanthochymus	Clusiaceae	Ivarumidi		x	x				x			x
Gardenia gummifera	Rubiaceae	Bikki			x				x			
Garuga pinnata	Burseraceae	Garuga, Garga		x	x			x	x			x
Givotia moluccana	Euphorbiaceae	Konda ponaku								x		x
Glycosmis pentaphylla	Rutaceae				x							
Gmelina arborea	Verbenaceae	Gamar teak					x					x
Grewia asiatica	Tiliaceae	Nallajana	x		x	x						
Grewia damine	Tiliaceae	Adavijama			x							
Grewia eriocarpa	Tiliaceae					x		x				x
Grewia flavescens	Tiliaceae	Meda koava			x		x					
Grewia serrulata	Tiliaceae	Pegala				x	x					
Grewia tiliifolia	Tiliaceae	Tada chettu			x	x						
Haldinia cordifolia	Rubiaceae	Pasupu gamapa		x			x	x				x
Hardwickia binata	Caesalpiniaceae	Vepi, Nara yepi				x			x			x

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(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Helicteres isora	Sterculiaceae	Pedda shamala				x	x	x				
Heritiera littoralis	Sterculiaceae	Adavibadamu			x			x				
Hibiscus platanifolius	Malvaceae	Kondagogu				x						
Hibiscus tiliaceus	Malvaceae					x	x					
Holarrhena pubescens	Apocynaceae	Kolamukki		x								
Homalium ceylanicum	Flacorutiaceae	Manthralamuki										x
Hymenodictyon orixense	Rubiaceae	Dudippa		x			x					
Jatropha curcas	Euphorbiaceae	Adaviamudam		x					x	x		
Kydia calycina	Malvaceae	Konda podari		x		x	x					
Lagerstroemia parviflora	Lythraceae	Chennangi		x			x		x		x	x
Lannea coromandelica	Anacardiaceae	Gumpena		x					x		x	
Laportea crenulata	Urticaceae					x						
Lepisanthes tetraphylla	Sapindaceae	Kondakunkud, Salikunkudu						x				
Leucaena latisiliqua	Mimosaceae	Subabul					x	x				
Limonia acidissima	Rutaceae	Velaga			x				x			x
Litsea glutinosa	Lauraceae				x		x					x
Litsea monopetala	Lauraceae							x		x		x
Lumnitzera racemosa	Rhizophoraceae	Kadavi						x				
Maba buxifolia	Ebenaceae	Uti			x							x
Madhuca indica	Sapotaceae	Ippa		x						x		x
Macaranga peltata	Euphorbiaceae	Boddi, Konda tamara			x				x			
Madhuca longifolia	Sapotaceae	Pedda ippa			x			x		x	x	x
Mallotus philippensis	Euphorbiaceae	Kumkuma chettu		x			x	x		x		
Mammea surgia	Clusiaceae	Suraponna		x	x			x	x			
Mangifera indica	Anacardiaceae	Mamidi	x	x	x							x
Manilkara hexandra	Sapotaceae	Manchipada		x	x							x
Manilkara roxburghiana	Sapotaceae											x
Melia azedarach	Meliaceae	Turaka vepa					x	x		x		

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(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Melia dubia	Meliaceae	Munnithikaraka						x				
Michelia champaca	Magnoliaceae	Champakamu		x						x		
Miliusa tomentosa	Annonaceae	Budda duduga					x					x
Mimusops elengi	Sapotaceae	Pogada, Bogada		x	x		x			x		
Mitragyna parvifolia	Rubiaceae	Batta ganapa				x	x					x
Morinda angustifolia	Rubiaceae			x								
Morinda pubescens	Rubiaceae			x								
Moringa pterigosperma	Moringaceae	Munaga		x	x					x		
Mutingia calabura	Elaeocarpaceae				x	x						
Nothopegia heyneana	Anacardiaceae			x	x				x			
Nyctanthus arbor-tritis	Oleaceae	Paritjathamu		x								
Oroxylum indicum	Bignoniaceae	Mokka vepa		x							x	
Ougeinia oojeinensis	Papilionaceae	Tella moduga					x	x				x
Pavetta indica	Rubiaceae				x							
Phoenix sylvestris	Palmae	Pedda-ita	x	x	x							
Phyllanthus emblica	Euphorbiaceae	Pedda usirichettu		x	x						x	
Pithecellobium dulce	Mimosaceae	Sima chinta		x	x		x	x				x
Polyalthia cerasoides	Annonaceae	Gulti, Dudduga			x							x
Polyalthia longifolia	Annonaceae						x					
Pongamia pinnata	Papilionaceae	Ganuga, Kanuga		x				x		x		
Premna tomentosa	Verbenaceae	Narava			x					x		x
Prosopis chilensis	Mimosaceae	Mulla thumma		x			x	x	x			
Pterocarpus marsupium	Papilionaceae	Yerra yegisa		x			x		x			x
Pterocarpus santalinus	Papilionaceae	Chandanam		x					x			
Punica granatum	Punicaceae	Danimma		x	x							
Rhizophora apiculata	Rhizophoraceae	Uppu ponna		x								
Rhizophora mucronata	Combretaceae	Uppa ponna, Kandia	x		x			x			x	
Rhus mysorensis	Anacardiaceae	Kadapurugudu			x		x	x				

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(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Samanea saman	Mimosaceae	Nidraganneru	x				x	x	x			
Santalum album	Santalaceae	Tella chandanam								x		x
Sapindus emarginatus	Sapindaceae	Kunkudu								x		
Schleichera oleosa	Sapindaceae	Puska, Kodali-pulusu		x						x		
Semecarpus anacardium	Anacardiaceae	Nalla jeedi		x	x				x	x		x
Sesbania grandiflora	Papilionaceae	Avisi			x	x	x					
Shorea robusta	Dipterocarpaceae	Saluva		x			x	x	x	x	x	x
Shorea roxburghii	Dipterocarpaceae	Jalari						x	x			x
Shorea tumbuggaia	Dipterocarpaceae	Thamba jalari							x			x
Sonneratia apetala	Sonneratiaceae	Kalinga										x
Soymida febrifuga	Meliaceae	Somi, Somigi		x								x
Spondias pinnata	Anacardiaceae	Adavi mamidi		x	x				x			
Sterculia foetida	Sterculiaceae	Jangli badam			x	x			x			x
Sterculia urens	Sterculiaceae	Kovila, Thapasi chettu							x			
Sterculia villosa	Sterculiaceae	Gugal, Kovila							x			
Stereospermum suaveolens	Bignoniaceae	Kalagoru					x	x	x	x		
Strychnos nux-vomica	Loganiaceae	Visha mushti		x								
Swietenia mahagoni	Meliaceae	Mahaa-gonichettu										x
Symplocos cochinchinensis	Symplocaceae			x				x				x
Syzygium alternifolium	Myrtaceae				x							
Syzygium cumini	Myrtaceae	Neredu		x	x			x			x	x
Syzygium operculatum	Myrtaceae				x							x
Syzygium samarangense	Myrtaceae				x							x
Tamarindus aphylla	Caesalpiniaceae	Chinta			x			x				x
Tamarix aphylla	Tamaricaceae	Erravasaru						x				x
Tamilnadia uliginosa	Rubiaceae	Adavi-manga	x	x	x							
Tectona grandis	Verbenaceae	Teku		x								x
Terminalia alata	Combretaceae	Inu maddi		x							x	x
Terminalia arjuna	Combretaceae	Tella maddi		x			x	x			x	
Terminalia bellirica	Combretaceae	Tadi, Thandra		x			x			x	x	
Terminalia catappa	Combretaceae	Badamchettu		x	x					x		x
Terminalia chebula	Combretaceae	Karakka ichettu									x	x

*1 = arrack and toddy, 2 = dyes, 3 = edible, 4 = fiber and floss, 5 = fodder, 6 = fuelwood, 7 = gums and resins, 8 = oil, 9 = tannins, 10 = timber

(continued)

Table 2 (continued)

Botanical name	Family	Local name	Use*									
			1	2	3	4	5	6	7	8	9	10
Terminalia coriacea	Combretaceae	Jani, Nalla maddi		x			x	x				x
Terminalia pallida	Combretaceae	Tella karaka									x	
Terminalia paniculata	Combretaceae	Neermari, Nerali						x			x	x
Thespesia populnea	Bombacaceae	Ganga ravi		x								
Toona ciliata	Meliaceae	Gali manu		x								x
Trema orientalis	Ulmaceae	Morali, Boygu chettu					x					
Vitex altissima	Verbenaceae	Nemali adugu						x				x
Vitex peduncularis	Verbenaceae											x
Vitex pinnatus	Verbenaceae											x
Vitex quinata	Verbenaceae											x
Walsura trifoliata	Meliaceae	Wallsuri, Erra valudu								x		
Wendlandia heynei	Rubiaceae					x						x
Wendlandia tinctoria	Rubiaceae			x								
Wrightia arborea	Apocynaceae	Palachettu		x								
Wrightia tinctoria	Apocynaceae	Akupala, Ankudu		x								
Xantolis tomentosa	Sapotaceae											x
Xylia xylocarpa	Mimosaceae	Konda tangedu		x	x			x			x	x
Xylocarpus granatum	Meliaceae											x
Ziziphus mauritiana	Rhamnaceae	Reni, Regu		x	x		x					
Ziziphus xylopyrus	Rhamnaceae	Gol, Gotti chettu		x	x							

1 = arrack and toddy, 2 = dyes, 3 = edible, 4 = fiber and floss, 5 = fodder, 6 = fuelwood, 7 = gums and resins, 8 = oil, 9 = tannins, 10 = timber

Table 3 Medicinally useful tree taxa and modes of administration

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Acacia catechu Mimosaceae	Kasu, Khadirama, Sandra	Kalasamudram ATP 13754	Heartwood extract given internally with local liquor made from *Madhuca longifolia* to control bleeding after childbirth in women.
Acacia farnesiana Mimosaceae	Kasturi, Kamputumma, Murki tumma	Domalapenta KNL 16826	Heartwood made into a fine paste applied on the skin to cure leprosy. Fruits of this plant are used to control coughs, 15 ml of decoction of stem bark taken orally, twice a day for three days to cure diarrhoea and dysentery. Paste of bark is used to treat cuts and wounds.
Acacia nilotica Mimosaceae	Nallathumma	Kumbum PKSM 15458	Stem bark made into powder taken internally twice daily to cure gonorrhoea. Leaves chewed to cure scurvy.
Albizia amara Mimosaceae	Narling, Chikreni, Chigara, Nalla sagi, Konda chikoni	Tirumala CTR 13735	Leaf with asphalt (silajittu in telugu), crude copper sulphate (mayilututtam in telugu) made into pills, one pill taken daily early in the morning to treat mental illness.
Albizia lebbeck Mimosaceae	Sigara, Chigar	Diguvametta KNL 18306	Stem bark powder used for diarrhoea. Leaf juice dropped into the eyes to cure night blindness.
Albizia odoratissima Mimosaceae	Konda chigara, Chinta yelagaku Chindugu, Bandie sindiga, Karuvaghe	Tirumala CTR 13707, Srisailam KNL 15521	The paste of leaves is applied in the eye to treat diseases. The decoction of the stem bark is used to relieve body pains. The leaf juice dropped into the eye to cure night blindness.
Alangium salvifolium	Udugu, Oodugu, Nalla udugu	Lower Ahobilam KNL 15295	Root paste taken internally and externally (bite spot) to cure snake-bite. Root juice is used to relieve fever.
Annona squamosa Annonaceae	Sithaphalamu, Sitapandu	Mannanur MBNR 16811	The root is a drastic purgative and is used in acute dysentery.
Anogeissus latifolia Rutaceae	Tirumanu, chiru Manu, Velama	Talakona CTR 13731	Stem bark made into paste taken internally and externally (bite spots) as an antidote to treat snake-bite. Stem bark paste taken internally after delivery to expel the placenta.
Aegle marmelos Rutaceae	Meredu, Bilvamu, Sripala	Rampa EG 19321, Galikonda VSKP 19636	Fruit pulp and stem bark decoction is taken internally with cumin seeds to treat stomach disorders. Fruit pulp mixed with honey or sugar is given for immediate relief of hiccups. The fruit is eaten for curing dysentery and diarrhoea.

(continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Ailanthus excelsa Simaroubaceae	Pedda manu, Pedda vepa	Lower Ahobilam KNL 15294	A total of 15 to 20 leaflets are boiled in 750 ml of water till it becomes 150 ml and taken 10 ml per time three times a day for three days to cure malaria. Fresh stem bark crushed, made into juice, taken internally for relief from stomachache and chronic fever.
Azadirachta indica Meliaceae	Vepa, Yapa, Vemu	North Dhone RR KNL 1309	Leaf juice taken externally and internally to cure skin disease. Leaf decoction taken with honey to cure diarrhoea and dysentery. Stem bark decoction is drank twice daily for seven days to cure malarial fever.
Anacardium occidentale Anacardiaceae	Jidimamidi, Mokka mamidi, Munta mamidi	Rampachodava ram EG 15249	Kernel is used as an aphrodisiac.
Bauhinia purpurea Caesalpiniaceae	Devakasi, Pedari, Kanchanam, Bodanta	Pangidi KNL 15215	The root extract is used for haemorrhoids and as a homeostatic agent. The stem bark is boiled in water. This water is used for bathing by mothers to restore health after childbirth.
Bridelia airy-shawii Euphorbiaceae	Kora moddi, Mulu maddi, Putta karka, Anemu, Koramanu, Koderu, Durva maddi, Pia maddi	Upper Ahobilam KNL 15209	Stem bark powder is given with water to relieve abdominal pains. Stem bark made into fine powder taken as vapour bath to restore health after childbirth.
Bombax ceiba Bombacaceae	Mundh, Buruga, Pinna burugu	Vanipenta KNL 15298	Bark juice, about six teaspoons taken three times a day to cure stomach-ache.
Boswellia serrata Burseraceae	Guggilam, Anduga, Dhapamu	Manchippa NZB 19359	The juice of this plant controls coughs. The paste of stem bark is given orally twice a day for one week to treat skin diseases. The bark of stem is used to treat diabetes. The gum is used to treat fever.
Buchanania axillaris Anacardiaceae	Sarapappu, Pedda mori, Morlisara, Pedda morali	Eturnagaram WGL 15533	The fruits are edible. Seeds warmed slightly and made into powder taken daily after taking food for easy digestion (dyspepsia).
Butea monosperma Fabaceae	Moduga chettu	Manchippa NZB 19334, Rollapenta KNL 14296	Yellow dye is prepared from flowers and seeds, used as purgative and vermifuge. Resin obtained from the bark taken internally to cure jaundice. Resin is given internally together with milk twice a day for ten days to treat bleeding.

(continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Capparis grandis Capparaceae	Regutti, Guti, Ragoa, Nallauppi, Duduppi, Remidi	Bogada PKSM 16106	The paste of leaf is used to cure skin diseases. Leaves crushed and juice applied to treat insect bite.
Careya arborea Barringtoniaceae	Kumbhi, Budda budwa, Gudadhermi, Dudippa, Guduva, Bhudadhermi	Upper Ahobilam KNL 15297	Stem bark mixed with salt made into a fine paste applied externally to cure skin diseases. Juice of leaves, about 15 ml thrice a day is given for about a week to treat fever.
Cochlospermum religiosum Cochlospermaceae	Konda buruga, Kondagogu, Adavi buruga, Adavi gogu, Kongu, Akshapithamu	Vanipenta KNL 15502, G. Madugula VSKP 15983	Leaves and flowers are macerated with water and given orally twice a day morning and evening in promoting menstruation. The stem bark decoction is added to the water and taken as a head bath every day for four days to cure jaundice.
Chloroxylon swietenia Flindersiaceae	Billudu, Billu	Kalasamudram ATP 13749, Kusimi SKLM 15902	The powdered bark is put in a thin cloth and soaked in breast milk, and applied in drops to eye injuries. The bark is used as an astringent.
Dichrostachys cinerea Mimosaceae	Velthuru, Nalla veneturu, Nela jammi, Yertur	Pinjerakonda EG 15413	Decoction of stem bark taken twice a day to relieve fever.
Diospyros chloroxylon Sapotaceae	Nela ulmiri, Ullinda, Ellinda, Thorika, Illinta	Pinjara Konda EG 15231, Eturnagaram WGL 18538	The paste of stem bark is taken orally thrice a day for two days to treat dyspepsia. Fruits used as diuretic and for constipation.
Diospyros melanoxylon Sapotaceae	Tumki, Tendu	Anantagiri RR 18508	Dried flowers crushed, made into juice and taken internally for urinary problems.
Dolichandrone falcata Bignoniaceae	Chittu niruddu, Chittoddi, Oddi	Diguvametta PKSM 16104	Root powder is mixed with castor oil and applied externally as an antidote for snake and other poisonous bites. Root with goat's urine made into paste taken to treat haemorrhoids.
Erythrina stricta Fabaceae	Mullu moduga	V. P. South GNT 17936	Stem bark decoction taken internally to cure dysentery.
Ficus hispida Moraceae	Kakimedi Boddumarri, Kukka boda, Brahma medi.	Tirumala CTR 12563	The juice of leaves is applied to treat boils. The fruit boiled in goat's milk is used in hepatic hindering. The fruit and root are used to cure diabetes.
Ficus religiosa Moraceae	Ravi, Ragi, raigu, Aswarthamu	Talakona CTR 12550	Stem bark decoction taken internally to cure dysentery. Stem ash with butter applied as an ointment to cure sores on feet.

(continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Erythroxylum monogynum Erythroxylaceae	Pagadamu chettu, Devadaru, Adavi goranta, Gatrinta, gaderi	Tirumala hills CTR 13768	The leaf paste is applied externally for curing wounds and 10 ml of juice is given twice a day for about a week to treat malarial fever.
Gardenia gummifera Rubiaceae	Bikki, Mandhi bikki, Chittu mitta, Chitmit	Bogada PKSM 16108, Penchalakona NLR 19350	Gum from the stem dissolved in water and given for constipation and also to kill intestinal worms (anthelmintic).
Gardenia resinifera Rubiaceae	Karinga, Chinnakaringa, Verri bikki,	Appapur MBNR 15542	Juice of leaves is taken internally to cure liver disorders. Gum from the stem dissolved in water and given to kill intestinal worms (anthelmintic).
Gyrocarpus americana Hernandiaceae	Tella poniki, Kummara poliki, Thanaku, Poliki	Kovur WG 15257	Stem bark made into paste taken externally to cure arthritis.
Givotia moluccana Euphorbiaceae	Konda ponaku, Tella poliki, Yella	Kalasamudram ATP 13752, Mannanur MBNR 15532	Seed made into fine powder, mixed with *Pongamia pinnata* seed oil and made into paste applied externally as an ointment for curing psoriasis.
Gmelina arborea Verbenaceae	Gamartek, Gummadi, Pasini	Simhachalam VSKP 15562	Root paste used internally and externally as an antidote to snake-bite.
Gmelina asiatica Verbenaceae	Kavva gummidu, Chirugummadu, Salla gummadu, Chiru nelli	Simhachalam VSKP 15567	Stem bark is made into paste and applied on the head to treat dandruff. Root juice is given internally in the treatment of gonorrhoea.
Helicteres isora Sterculiaceae	Pedda shamala, Gubathada, Chemali nara Thada, Potra	Talakona CTR 13784	Root decoction mixed with turmeric powder and applied externally to cure cuts and wounds, fruit paste applied externally to treat skin diseases.
Haldinia cordifolia Rubiaceae	Pasupu ganapa, Pasupu kadamba Bandar, Rudra ganapa, Pedda kamba	Eturunagaram WGL 18544, Rampur ADB 19313	Stem bark of the plant is ground into a paste with black pepper and sesame seeds given to women twice a day for three days to treat dysmenorrhoea. Stem bark paste is used to treat sores and galls.
Holarrhena pubescens Apocynaceae	Kolamuki, Palavareni	Tirumala CTR 13710, Donubai SKLM 15595, Eturunagaram WGL 18549	Stem bark powder taken orally with water to cure diarrhoea, dysentery and fever. The powder of stem bark is given orally along with pure honey to the child suffering from cold and coughs. Stem bark paste applied externally to skin diseases.
Hardwickia binata Caesalpiniaceae	Yepi, Nara yepi	Dorasani bavi KNL 15505	Decoction of fresh leaves used as purgative. Gum obtained from the bark mixed with coconut oil applied externally to cure gonorrhoea.

(continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Ixora pavetta Rubiaceae	Kollangi, Korivichettu, Putta pala	Donubai SKLM 15585, Chitvel CDP 16157	Resin applied in the eyes for easy delivery in women.
Lannea coromandelica Anacardiaceae	Gumpena, Oddi Dumpidi	Vanipenta KNL 15300, Navabkota ATP 18565	Leaves gently boiled and applied on wounds.
Lagerstroemia parviflora Lythraceae	Chennangi, Gullakarka	Pangidi KNL 15217, Mothugudem KMM 15243	Root bark made into decoction taken twice daily to reduce fever.
Melia azedarach Meliaceae	Turaka vepa, Kalivepa	Veldurthi KNL 1737	Leaves ground with turmeric and made into pills and taken orally for four days after menstruation before baths to treat menstrual disorders. Leaves of *Melia azedarach* and *Aristolochia bracteolata* taken equally and heated. The mixtures taken with hot water to cure haemorrhoids. Leaves with camphor or turmeric made into paste used to cure sores.
Mitragyna parvifolia Rubiaceae	Rudraksha-kamba, Battaganapa, Botrugu, Pacha pararari	Pothurajupenta KNL 15984, Narasapur MDK 16197	Stem bark mixed with leaf squeezed and inhaled to relieve coughs and cold. Squeezed fruits are applied on forehead to treat headache. Root bark made into paste taken internally and externally (bite spot) as antidote to snake-bite.
Madhuca indica Sapotaceae	Ippa, Ippi	Rollapenta KNL 15509 Seethampeta SKLM 15573	Juice of stem bark about three teaspoons twice a day is given for about a week to treat fever. Liquor made from flowers and fruits is given as tonic to relieve dengue fever.
Mallotus philippensis Verbenaceae	Kumkum chettu, Sindhuramu, Vasaurtha, Gandhamu, Chandiramu	Tirumala CTR 15262	The red powder obtained from the mature fruits is mixed with cow butter and taken internally during menstruation and an abortifacient. Stem bark made into a fine paste and applied externally to cure skin diseases.
Ochna obtusata Ochnaceae	Sunari, Tammi, Erra juvvi, Kukkamovi, errajammi	Simhachalam VSKP 15569	Stem bark made into paste taken externally (bite spot) and internally to treat snake-bite.
Oroxylum indicum Bignoniaceae	Mokka vepa, Dundilam, Nemali chettu, Pampine	Upper Alhobilam KNL 15288	Seeds are soaked in water for 12 hours and mixed with turmeric, made into a fine paste, given internally to relieve abdominal pains and burning sensation while passing urine.

(Continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Pongamia pinnata Fabaceae	Kanuga Korivichettu, Putta pala	Papampet EG 14251 Chitvel CDP 16157	Seed oil is warmed and applied externally for boils and wounds. Fruits made into necklace and worn around the neck to cure chronic coughs.
Pterocarpus marsupium Fabaceae	Yerra yegisa, Yegisa, Pedda yegi	Pothu rajupenta KNL 15219	Red coloured sap obtained from cut stem ends is stored in bottles and taken two spoons a day with water to treat nervous diseases and weakness.
Pterocarpus santalinus Fabaceae	Rakthachandanamu, Yerra chandanamu	Siddulaiah konda NLR 19377; Talakona CTR 13732	A paste of the wood is applied externally to give a cooling effect during inflammation and headache.
Premna tomentosa Verbenaceae	Nagura, Kokkiti narva, Kampu gummudu	Talakona CTR 13727 Kusimi SKLM 15905	The leaf extract is taken orally twice a day to treat diuretic problems. The leaf juice is used internally as well as externally to relieve abdominal pains.
Sterculia urens Rubiaceae	Konda tamara, Kovilachettu, Thapsi chettu, Tanuku, Yerra poliki	Etta ponku, Venipenta KNL 15503	Stem bark is powdered and made into small pills, two pills twice a day are given for a week in the treatment of rheumatic pains. Small quantity of gum taken internally for dyspepsia.
Soymida febrifuga Meliaceae	Somi, Somidi	Bairluti KNL 15516; Mamandur CTR 16179	Decoction of stem bark is given in chronic cases of diarrhoea and dysentery.
Sapindus emarginatus Sapindaceae	Kunkudu, Kukudu,	Srisailam KNL 15525	Seeds are taken for blood purification.
Schleichera oleosa Sapindaceae	Puska, Kodali pulusa, Madaka pulusu, Sagada puska, Mavita vitiki	Galikonda VSKP 15921	Stem bark paste applied externally to treat skin diseases.
Schrebera swietenioides Oleaceae	Mokkem, Makkam, Ishugu rashi, Mokkalapa	Srisailam KNL 15522	Stem bark and leaf paste applied on cracked lips. Leaf juice used to relieve toothache.
Semecarpus anacardium Anacardiaceae	Nalla jeedi, Simidi jeeri	Kakavada EG 15224 Rampur ADB 19319	Seed oil is used externally to relieve rheumatic pains. Seed oil is applied externally to cure cuts.
Strychnos nux-vomica Loganiaceae	Mushi, Mushini, Visha musti	Kalasamudram ATP 13756; Chintala PKSM 1600	Root is made into a fine paste and applied externally (bite spot) and internally taken to treat snake-bite (cobra bite).

(Continued)

Table 3 (continued)

Botanical name/ family	Local name (Telugu)	Locality/field no.	Condition treated and mode of administration
Strychnos potatorum Loganiaceae	Indugu, Indiba chettu, Chilaka mushthi, Chilla ginja, Katakamu	Diguvametta PKSM 16000	One seed rubbed into a fine paste with buttermilk and given internally for one week to cure chronic diarrhoea. Seed paste used to cure gonorrhoea, to treat scorpion and snake-bites and seed powder used for cleaning of muddy water.
Tamarindus indica Caesalpiniaceae	Chinta	Eturnagaram WGL 18548	Fresh stem bark decoction is used to cure diarrhoea. Decoction of the leaves used as a vermifuge.
Terminalia alata Combretaceae	Nalla maddi, Inu maddi, Maddi	Bodhuluru EG 15238; Mothugudem KMM 15246	Stem bark is chewed as an antidote to snake-bite for temporary treatment.
Terminalia arjuna Combretaceae	Tella maddi, Tittu maddi, Vag maddi	Bogada PKSM 16119; Talakona CTR 16138	Stem bark made into powder and taken with water as an emetic when poison is taken.
Terminalia bellirica Combretaceae	Tadi, Thandra, Bhutavasamu, Tani Vibnitakamu	Donubavi, SKLM 15591; Pkhal WGL 18522	Fruits and fruits of *Phyllanthus emblica* and *Terminalia chebula* are mixed and made into decoction, taken internally to cure leucorrhoea. Above fruits (locally known as triphala) mixed in equal parts made into fine powder taken internally twice a day for 15 days to treat haemorrhoids.
Terminalia chebula Combretaceae	Karakkai chettu, Nalla karaka	Kalasamudram ATP 13750; Galikonda VSKP 15922	Leaf galls (Karakantu in telugu) and asafoetida resin made into paste, and used for setting bone fracture.
Trema orientalis Ulmaceae	Morali, Boggu chettu, Priyalu, Aava, Konda jonna	Upper Ahobilam KNL 15205	Tips of aerial roots made into paste applied on penis to cure syphilis.
Wrightia arborea Apocynaceae	Tella pala, Tedla pala, Pala adavi venkudu, Pala	Upper Ahobilam KNL 14366; Kakavada EG 15225	Roots are made into powder and taken with water, one teaspoon to relieve fever. Stem bark made into powder and taken with water to cure rheumatism.
Wrightia tinctoria Apocynaceae	Akupala, Doddipala, Teddapala, Ankudu palakordsha	Simhachalam VSKP 15564	Leaf juice with milk applied externally to relieve itching (scabies). Stem bark is made into powder and taken with water for epilepsy. Crushed roots given to induce vomiting (emetic).

The following abbreviations are used for district names: ADB = Adilabad, ATP = Anantapur, CDP = Cuddapah, CTR = Chittor, EG = East Godavari, GNT = Guntur, KMM = Khammam, KNL = Kurnool, KRN = Krishna, MBNR = Mahabubnagar, MDK = Medak, NLR = Nellore, NZB = Nizamabad, PKSM = Prakasam, SKLM = Srikakulam, VSKP = Visakhapatnam, RR = Ranga Reddy, WG = West Godavari, WGL = Warangal

Discussion

In India tribespeople use about 9500 wild plants for different purposes (Pushpangadan 1994). About 7500 wild plants are used for medicinal purposes by different tribes in different areas, 3900 species are used as vegetables, 528 wild plants are used for making fibre and cordage, 400 plants species as fodder and 300 species as pesticides. The present study shows that the forests of Andhra Pradesh are rich in raw materials needed for establishing cottage industries. The trees met the needs of the people by providing a direct source of food and ensuring food security, providing fuelwood for cooking and providing essential and vital nutrients and medicine that help to maintain the health of the rural and tribal people. In addition, trees sustained food and agricultural production by helping to manage the soil and water systems and to control winds. The tribespeople also collected tree products and sold them in the local markets for their livelihood.

The biodiversity of the forests is not only important for preservation by way of a gene bank but also for their protection from further degradation and deterioration. Foremost in the conservation strategies should be avoidance of indiscriminate felling and forest fire, and emphasis on collection and preservation of the seed output as well as propagation of rare and endangered species. Wasteland should be utilised to raise commercial crops. The Forest Department should be strengthened and people should take active part in forestry activities. There is need for a strong political will to save the forests of Andhra Pradesh from disaster.

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