



Medicinal practices of sacred natural sites: a socio-religious approach for successful implementation of primary healthcare services

Rajasri Ray and Avik Ray

Review

Abstract

Background: Sacred groves are model systems that have the potential to contribute to rural healthcare owing to their medicinal floral diversity and strong social acceptance.

Methods: We examined this idea employing ethnomedicinal plants and their application documented from sacred groves across India. A total of 65 published documents were shortlisted for the preparation of database and statistical analysis. Standard ethnobotanical indices and mapping were used to capture the current trend.

Results: A total of 1247 species from 152 families has been documented for use against eighteen categories of diseases common in tropical and sub-tropical landscapes. Though the reported species are clustered around a few widely distributed families, 71% of them are uniquely represented from any single biogeographic region. The use of multiple species in treating an ailment, high use value of the popular plants, and cross-community similarity in disease treatment reflects rich community wisdom to explore and apply available natural resources.

Conclusions: Building on the findings, integration of the tradition in primary healthcare policy especially in AYUSH (Ayurveda, Yoga, Naturopathy, Unani, Siddha and Homoeopathy) program has been recommended. This would embrace folk medicinal practices along with sustainable utilization of plant genetic resources in rapidly changing rural landscapes.

Correspondence

Rajasri Ray*, Avik Ray

Centre for studies in Ethnobiology, Biodiversity and Sustainability (CEiBa), Malda - 732103, West Bengal, India

*Corresponding Author: Rajasri Ray; rajasri@ceibatrust.org

Ethnobotany Research & Applications
20:34 (2020)

Key words: AYUSH; Ethnomedicine; Medicinal plant; Sacred grove; Spatial fidelity; Tropical diseases

Background

Human-nature interaction has been long entwined in the history of humanity. Apart from deriving natural resources, humans have a deep rooted tradition of venerating nature which is extensively observed across continents (Verschuuren 2010). The tradition has attracted attention of researchers and policy-makers for its impact on local ecological and socio-economic dynamics. Ethnomedicine that emanated from this tradition, deals health issues with nature-derived resources. It offers invaluable benefits to a large section of indigenous, remotely placed, and economically downtrodden people. The age-old system is deeply embedded in local traditions due to strong belief system, time-tested experience, inexpensive, and easily available raw materials; these essentially underlie their high sociocultural acceptance (Currie *et al.* 2018, Ogundele 2007, Pedersen and Baruffati 1985, Rai & Lalramnghinglova 2011, Zank & Hanazaki 2017). Although forests are key resource for medicinal plants (Bhattacharyya *et al.* 2009, Voeks 1996), the role of culturally protected patches or sacred groves

cannot be underestimated. Sacred groves are part of forests or forest patches protected by religious-cultural beliefs of local communities. They play an active role in providing critical ecosystem services such as water conservation, soil fertility, species conservation, medicinal plants etc. (Blicharska *et al.* 2013, Ray *et al.* 2014).

The grove-based medicinal practices reserve a great potential in primary healthcare improvement especially in rural contexts. It is crucial since successful implementation of primary healthcare program at grass-root level is a serious challenge for many developing and under-developed countries (Hollard & Sene 2016, Hone *et al.* 2018, Pandve & Pandve 2013). The mainstream biomedical healthcare often fails to reach geographically isolated and marginalized people despite a plethora of initiatives at national and international levels (e.g., National Health Program in India, Bangladesh, Sri Lanka and African countries, Alma-Ata declaration 1978). In India, several health missions have been introduced at different administrative levels to include people under the national health program. However, the strategy has been re-framed in recent years to make it more inclusive accepting alternative systems of medicine (i.e., codified traditional medicine) (Katoch *et al.* 2017, Rudra *et al.* 2017, Samal 2015) because of the prevalence of plurality in healthcare practices (Anonymous 2017, Minocha 1980, Sheehan 2009).

Traditional medicine, be it codified (e.g., Ayurveda, Unani, Siddha) or not (e.g., ethnomedicine) has a strong support base among rural and indigenous societies due to cost effectiveness, success rate, availability, and social compatibility. Ethnomedicine, compared to codified medical system, is relatively widespread and culturally embedded in the communities who are remotely located and predominantly dependent on natural resources (Albert & Porter 2015, Albert *et al.* 2015). Largely owing to the informal status of its treatment procedure and knowledge transmission, it has not been formally recognized as a part of the alternative healthcare system at government level, but the documentation is in full swing across the country. Maintaining this connection, sacred groves, tend to play a pivotal role in rural healthcare system (Anyinam 1999, Innocent 2016, Unnikrishnan 2010, Young 1983).

In India, studies on medicinal plants from sacred groves emphasize on plant diversity and use, application procedure, and an infrequent quantitative estimation of reliability and consensus of plant use (Khumbongmayum *et al.* 2005, Venkatesh & Mahammad 2015). Albeit local in character, the

volume of documentation clearly indicates its widespread acceptance, capacity in local resource management, and beliefs of local communities. However, there is a conspicuous lack in the country-wide assessment of resource diversity, cross-cultural practices, possibilities of knowledge sharing, uniqueness in plant use and diseases, etc (see Jain 2004 for ethnomedicinal perspective only) which impedes exploration and tapping of unrealized potential of sacred groves in rural health-care. In this backdrop, we sought answers to the following questions 1) how diverse are the medicinal plant resources in the sacred groves and their distribution pattern, 2) what are the prevalent diseases treated currently and remedial measures and 3) possibilities to identify few hotspots with greater assemblage of frequently used species to link them with rural healthcare network. The answers would not only enable generation of a primary level information pool to reinforce grove based healthcare, but can also be invoked in policy and execution.

Methods

Data Collection

Our dataset was built using available information extracted from the published studies. The primary criterion was to capture indigenous medicinal knowledge associated with the sacred groves. Here the term 'indigenous medicinal knowledge' means the use of medicinal plants by indigenous communities and are commonly known as 'ethnomedicine', 'folk medicine' or 'local health tradition (LHT)' (Holley & Cherla 1998, Mishra *et al.* 2018). The objective was to analyze ethnomedicinal information from the sacred groves, therefore reports on Ayurvedic usage of plants (even from sacred groves) have been objectively excluded. We have collected information on medicinal plants availability, their usage, plant parts use, and geographic location. Our search activities comprised internet-based search engines (Google, Web of Science), databases on scientific literature (e.g., Science Direct, Scopus), and international and national level ecology and conservation journals using keywords such as 'medicinal plants sacred grove', 'ethnomedicine India', "sacred medicinal plants", "Maharashtra sacred grove medicinal plants" and similar searches with other states, "traditional medicine sacred site". The second major criterion was to ensure a fair coverage of geographic expanse of the country and we were able to accumulate information from 18 out of 28 states and 9 union territories. Our primary search returned a total of 104 documents but many were discarded owing to a mention of ayurvedic usage and inadequate information, so the final list consisted of 65 studies (Table 1).

Table 1. Studies used for the analysis

S.No.	Title	Author	Journal/Thesis/Project Report
1	Sacred plants and their Ethno-botanical importance in central India: A mini review	Sahu <i>et al.</i> (2013)	International Journal of Pharmacy & Life Science, 4(8): 2910-2914
2	Assessment of status and role of sacred groves in conservation of biodiversity at different levels in Madhya Pradesh	Shrivastava and Masih (2008-09)	Project report
3	Role of Sacred Plants in Religion and Health-care system of local people of Almora district of Uttarakhand State (India)	Sharma and Joshi (2010)	Academia Arena, 2(6): 19-22
4	Biodiversity conservation through a traditional beliefs system : a case study from Kumaon Himalaya, India	Singh <i>et al.</i> (2012)	International Journal of Conservation Science, 3(1):33-40
5	An ethnobotanical study of medicinal plants used in sacred groves of Kumaon Himalaya,Uttarakhand, India	Singh <i>et al.</i> (2014)	Journal of Ethnopharmacology, 154:98-108
6	Sacred Grove in conservation of plant biodiversity in Mahendergarh district of Haryana	Yadav <i>et al.</i> (2010)	Indian Journal of Traditional Knowledge, 9(4):693-700
7	Local deities in conservation -A conservation practice in Banju Nami Tok sacred grove in Tehri Garhwal ,Uttarkhand	Pala <i>et al.</i> (2012)	The Indian Forester, 138(8): 710-713
8	Patalbhuvneshwar: a new sacred grove from Kumaon Himalaya	Agnihotri <i>et al.</i> (2012)	Current Science, 102(6):830-831
9	Traditional knowledge and biodiversity conservation in the sacred groves of Meghalaya	Jeeva <i>et al.</i> (2006)	Indian Journal of Traditional Knowledge, 5(4) 563-568
10	Ethnomedicinal plants in the sacred groves of Manipur	Khumbongmayum <i>et al.</i> (2005)	Indian Journal of Traditional Knowledge, 4(1):21-32
11	Distribution and conservation status of sacred groves (SGs) in Garo Hills, Meghalaya	Mohanta <i>et al.</i> (2009)	The Indian Forester, 135(12):1627-1649
12	Sacred Groves :An analysis made in the cultural perspective within BTC Assam,India	Brahma <i>et al.</i> (2014)	Journal of Biological & Scientific Opinion, 2(5):320-323
13	Status of medicinal plants in the disturbed and the undisturbed sacred forests of Meghalaya, northeast India:population structure and regeneration efficacy of some important species	Laloo <i>et al.</i> (2006)	Current Science, 90(2):225-232
14	Geo environmental appraisal of sacred groves and its related traditional practices in West Bengal	Pal (2013)	Ph. D. Thesis. Department of Geography, Visva-Bharati, Santiniketan
15	Role of sacred groves in the conservation and management of medicinal plants	Behera <i>et al.</i> (2015)	Journal of Medicinal Plants Research, 9(29):792-798
16	Ethnomedicinal plant conservation through sacred groves	Bhakat and Sen (2008)	Tribes And Tribals, Special Volume (2):55-58
17	Differences in tree species diversity and soil nutrient status in a tropical sacred forest Ecosystem on Niyamgiri Hill Range, Eastern Ghats, India	Sahu <i>et al.</i> (2012)	Journal of Mountain Science, 9:492-500
18	An ethnobotanical study of medicinal plants used in sacred groves of Ambaji forest, Gujarat, India	Patel (2015)	International Journal of Advanced Technology in Engineering and Science, 3(1):285-295

19	Floristic and ethnobotany of sacred groves of Kheda District (Gujarat) and their significance in conserving biodiversity	Patel (2015)	Hemchandracharya North Gujrat University, Patan
20	Flora of sacred groves at Sriharikota Island, Andhra Pradesh, India	Kumar (2010)	Ethnobotanical Leaflets, 14:420-426
21	Some ethno medicinal plants of Parnasala sacred grove area Eastern Ghats of Khammam District, Telangana, India	Rao <i>et al.</i> (2015)	Journal of Pharmaceutical Sciences & Research, 7(4):210-218
22	Sacred groves of Parinche valley of Pune district of Maharashtra, India and their importance	Chandrakant <i>et al.</i> (2006)	Anthropology & Medicine, 13(1):55-76
23	Validation of indigenous knowledge of Yanadi tribe and local villagers of Veyilingalakona- A sacred grove of Andhra Pradesh, India.	Savithamma <i>et al.</i> (2014)	Journal of Pharmaceutical Science & Research, 6(11):382-388
24	Studies on the phytodiversity of a sacred grove and its traditional uses in Karaikal District, U.T. Puducherry	Sambandan and Dhatchanamoorthy (2012)	Journal of Phytology, 492):16-21
25	Role of sacred groves in consevation of ethno medicinal plants in Dapoli tehsil of Ratnagiri district, Maharashtra(India)	Ghalme and Deokule (2014)	The Indian Forester, 140(7):701-706
26	Medicinal plant resources of Rudrakod sacred grove in Nallamalais, Andhra Pradesh, India	Rao and Sunitha (2011)	Journal of Biodiversity, 2(2):75-89
27	Ethno-floristic survey in sacred groves, Pudukottai district, Tamil Nadu- India	Anbarashan <i>et al.</i> (2011)	Journal of Medicinal Plants Research, 5(3):439-443
28	Floristic composition and practices on the selected sacred groves of Pallapatty village (Reserved forest),Tamil Nadu	Ganesan <i>et al.</i> (2009)	Indian Journal of Traditional Knowledge, 8(2):154-162
29	Studies on the plant diversity of Muniandavar sacred groves of Thiruvaiyaru, Thanjavur, Tamil Nadu, India	Jayapal <i>et al.</i> (2014)	Hygeia journal for drugs and medicines, 6(12):48-62
30	Phytodiversity of ethnomedicinal plants in sacred groves and its traditional uses in Kabirdham district of Chhattisgarh	Rahangdale <i>et al.</i> (2014)	The Indian Forester, 140(1):86-92
31	Studies on the sacred groves of Kannur District	Deepamol P.C. (2011)	Ph. D Thesis. Kannur University
32	Ethnobotanical plants used by the tribes of R.D.F. Poshina forest range of Sabarkantha District, North Gujarat, India	Patel and Patel (2013)	International Journal of Scientific and Research Publications, 3(2):1-8
33	Medicinally valuable plants from sacred groves of Jabalpur forest division (Madhya Pradesh)	Duggal <i>et al.</i> (2017)	Asian Journal of Plant Science and Research, 7(2):37-44
34	Ethnobotanical studies on Japali Hanuman Theertham- A Sacred Grove of Tirumala hills, Andhra Pradesh, India.	Savithamma <i>et al.</i> (2014)	Journal of Pharmaceutical Sciences and Research, 6(2):83-88
35	Ethno-Medicinal plants in sacred groves in East Godavari District, Andhra Pradesh, India	Venkatesh and Mahammad (2015)	European Journal of Medicinal Plants, 9(4):1-29
36	Phytodiversity and conservation of Nithypooja Kona sacred grove of Nallamala Hill Range,Eastern Ghats,Andhra Pradesh	Basha <i>et al.</i> (2015)	International Journal of Environment, 4(2):271-288
37	Sacred and medicinal plant diversity of Vandiol sacred grove of Sabarkantha District(N.G)	Parmar and Patel 2013	Life Sciences Leaflets, 5:34-49
38	Ethnobotanical study of sacred groves of Poshina forest of Sabarkanth district,North Gujarat	Mehta and Jain (2011)	International Journal of Plant Sciences, 6(2):362-366
39	Role of traditional conservation practice: highlighting the importance of Shivbari sacred grove in biodiversity conservation	Jaryan <i>et al.</i> (2010)	Environmentalist, 30:101-110

40	Ethnobotanical studies of Sada Shiv sacred grove, district Kangra, Himachal Pradesh	Sharma <i>et al.</i> (2014)	Life Sciences Leaflets, 53:89-96
41	Sacred groves as ethnobotanical gene pools in tribal area of the western Himalaya, India	Thaplyal <i>et al.</i> (2012)	The Indian Forester, 138(1):70-78
42	Enumeration of angiosperm medicinal plants of Gavisiddalingeshwara sacred grove, Chintanpalli of Yadgir District, Karnataka	Modi and Mathad (2016)	Journal of Global Biosciences, 5(1):3539-3558
43	Medicinal plants in the selected sacred groves of Kodungallur, Thrissur district, Kerala	Deepa <i>et al.</i> (2016)	Journal of Medicinal Plants Studies, 4(3):149-155
44	Floristic composition and ethnobotanical practices of the sacred groves of Nemmara, Palakkad District, Kerala	Divya and Manonmani (2013)	International Journal of Pharmaceutical Sciences and Business Management, 1(1):9-17
45	Ethnobotanical documentation of a sacred Grove- Palakurumba temple, Olavanna in Kozhikode district, Kerala	Reshma and Indulekha (2016)	Journal of Medicinal Plants Studies, 4(4):296-298
46	An Ethnopharmacological survey on medicinal plants from sacred grove of Sree Puthiya Bhagavathi temple, Kalloori, Kannur (dist), Kerala	Poovathur and Joseph (2016)	International Journal of Advanced Science and Research, 1(8):24-35
47	Ethno-Medico-Botanical studies on Katei Baba sacred grove and nearby area of Adhalwadi from Akole taluka, Ahmednagar district (Maharashtra)	Waghchaure <i>et al.</i> (2011)	International Journal of Pharma and Bio Sciences, 2(3):393-398
48	Observation of medicinal importance of sacred plants of Chitrakoot region Satna (M.P.)	Bala and Singh (2015)	International Journal of Science and Research, 4(8):1783-1787
49	Inventory of ethnobotanicals and other systematic procedures for regional conservation of medicinal and sacred plants	Wagh and Jain (2015)	Environment Systems and Decisions, 35:143-156
50	An ethnomedicinal survey of medicinal plants from a sacred forest of western Odisha, India.	Pradhan <i>et al.</i> (2016)	International Journal of Phytomedicine, 8(3):325-332
51	Ethno-Medicinal plants in five sacred groves in Cuddalore district, Tamilnadu, India	Anbarashan and Anbarashan (2010)	Ethnobotanical Leaflets, 14:774-780
52	Medicinal plants conservation through sacred forest by ethnic tribals of Virudhunagar district, Tamil Nadu	Rajendran and Agarwal (2007)	Indian Journal of Traditional Knowledge, 6(2):328-333
53	Ethnomedicinal studies on important medicinal plants in two sacred groves at Pudukottai district Tamil Nadu	Vani <i>et al.</i> (2016)	Advances in Applied Science Research, 7(2):123-127
54	Medicinal plants and their uses :A study of twelve sacred groves in Cuddalore and Villupuram districts, Tamil Nadu, India	Karthik <i>et al.</i> (2016)	International Education and Research Journal, 2(5):95-102
55	Medicinal plants of sacred groves in Kanyakumari district southern Western Ghats	Sukumaran & Raj (2010)	Indian Journal of Traditional Knowledge, 9(2):294-299
56	Ethno botanical study of medicinal plants of Sri Pancha Narasimha Swamy and Sri Matsyagiri Narasimha Swamy	Rao (2015)	Journal of Medicinal Plants Studies, 3(3):37-42
57	Socio-cultural and ethnobotanical value of a sacred forest, Thal ke Dhar, Central Himalaya	Negi (2005)	Indian Journal of Traditional Knowledge, 4(2):190-198
58	Medicinal plant diversity in newly reported sacred grove of Pithoragarh District, Uttarakhand	Singh <i>et al.</i> (2011)	The Indian Forester, 137(8):1005-1008
59	Sacred groves: traditional plant conservation through deities	Bhakat and Sen (2016)	Plants the natural wonder: Challenges and Avenues, (eds.) Sumita Bandopadhyay,

60	Sacred groves of West Midnapore district in West Bengal	Bhakat and Sen (2011)	Dipak Kumar Hens, Partha Sarathi De, Damodar Group, Burdwan, West Bengal, India. Pp 212-223. Recent Advances in Plant Science ,Diversity and Conservation(Proceeding of UGC National Seminar 2011), Pp 37-43
61	An inventory of medicinal plants of some sacred groves of Purulia district ,West Bengal	Bhakat and Pandit (2004)	The Indian Forester, 130(1):37-44
62	Biodiversity and ethnobotany of sacred groves In Bakura district,West Bengal	Basu R. (2009)	The Indian Forester, 135(6): 765-777
63	Role of sacred grove in conservation of medicinal plants	Bhakat and Pandit (2003)	The Indian Forester, 129(2):224-232
64	Plants of ethnobotanical importance in the sacred groves of Jaintia Hills of Meghalaya	Upadhya <i>et al.</i> (2005)	The Indian Forester, 131(6):812-828
65	Deogudi' sacred grove -A tribal concept of conservation of plants in Bastar district ,Chattisgarh	Rai and Tripathi (2008)	The Indian Forester, 134(12):1686-1695

Dataset preparation

We selected angiosperm members for detail analysis due to their dominant presence in all the studies, and verified the binomial with 'World Flora Online (www.worldfloraonline.org). For disease categorization and standard nomenclature, we have followed the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (World Health Organization 2004).

Statistical analysis

Summary statistics, such as taxonomic diversity, species used for treating different diseases, and plant part use were determined for the whole dataset. Disease prevalence was determined based on number of species use against specific organ system as per ICD-10 classification. We used relative frequency of citation (RFC) for shortlisting fifty most frequently used species. They were further analyzed through standard ethnobotanical indices [use value (UV), consensus value for plant parts (CPP) and fidelity level (FL)] for their distribution, use details, part use, and reliability against specific ailments to capture the major trends in ethnomedicinal practices. All indices were calculated using MS-Excel software.

Grove prioritization

To search for candidate members for implementation in rural healthcare, we attempted to identify grove or grove clusters as hotspots. The selection was made based on the assemblage of greater than fifty percent (50%) of the prioritized species. We recognized that frequently cited species may not

represent the true status of medicinal practices and information about the rare plants and their use could be lost. However, for broad regional and national level priority setting, one has to go for widely known species with higher acceptance across communities excluding lesser-known species which are localized in their use. Moreover, frequently cited species also indicate public consciousness towards their remedial power, traditional use, and substantial economic support through cultivation and business (Karki & Williams 1999). Complementing this notion further, we have generated cumulative species distribution as well as thematic maps on grove prioritization and fidelity value distribution.

Results

Taxonomic spectrum of the medicinal plant resources

A total of 1247 medicinal species included under 711 genera and 152 families was documented in our analysis (Appendix 1). Among these, herbs were dominant plant form (35%), followed by trees (31%), shrubs (18%) and climbers (14%). A small fraction of invasive, exotic and lower group plant members has found their way to the list. The species pool was not evenly distributed among the families; out of the 152 plant families, 50% of the total species were from 15 families whereas 39 families possessed 75% of total species (Fig 1). Among 1247 species, 897 (71%) were solely recorded from any single biogeographic region while the rest were shared between at least two regions. The Himalayas held maximum number of unique species (64%) followed by the north-

eastern region (62%) and the Deccan peninsula (58%) (Fig 2). When contribution of various families to species pool was examined, Fabaceae had the highest share (10.5%) followed by Compositae, Lamiaceae, and Rubiaceae (4.3% each).

Diseases and remedial measures

We conducted the analysis in two phases, i.e., with the whole dataset and the data pertaining to fifty prioritized species. Analyses to determine fidelity value and use value were conducted for prioritized species only.

Disease category

We recorded eighteen (18) categories of ailments from the full dataset following the nomenclature of ICD10. However, seven categories were more prevalent than others for fifty prioritized species (60-100%). The seven dominant categories were diseases related to digestive system (17%), infections and parasitic attacks (17%), skin and subcutaneous tissues (15%) and others (Fig 3).

Species diversity in disease

Taking account of the whole species pool, more than hundred species were employed against each disease category. To the higher end of the spectra, infections and parasitic attacks were treated with the highest number of species (366), followed by general health purposes (358 species), external injury and attacks (324 species) and respiratory problem (240 species). However, in each disease category, species distribution was skewed towards only handful of families. In general, 50% of the total species were represented by 11% -17% of the total families. The family contribution rose up to 44% when 75% of the total species was considered (Appendix 2).

Useful plant parts

We recorded an employment of variety of plant parts treating different diseases. In the whole data set, leaves (94%) were the most frequently used across all forms of plants followed by stems (55%) and roots (53%). The same trend was observed for fifty prioritized species, where CPP value showed leaf as a dominant ingredient (CPP 0.47) followed by root (CPP 0.39) and stem (CPP 0.29) (Fig 4). Plant part use also tended to vary with habit type, trees exhibited maximum number of part usage (6 ± 1.41) in comparison to climbers (4 ± 1.4), herbs (4 ± 1.3), and shrubs (5 ± 1.06) (Fig 5) as observed in prioritized species.

Fidelity values (FL)

The index varied widely from 9% to 100% for the prioritized species. A total of fifteen species out of fifty demonstrated > 50% FL value against specific treatments (Table 2). For instance, *Gymnema sylvestre* had highest fidelity value (FL = 100) for treating diabetes irrespective of reporting area. Similar results were also obtained for *Ocimum tenuifolium* (FL = 91, cough and cold), *Tridax procumbens* (FL = 80, cut and wounds), and *Syzygium cumini* (FL= 78.5, diabetes). In contrast, few other popular remedies scored less e.g. *Cissus quadrangularis* (FL=53.3, bone fracture), *Mangifera indica* (FL=53.3, diarrhoea), *Achyranthes aspera* (FL=52.1, animal bite), etc.

Use value (UV)

The use value for the selected species ranged from 0.03 to 0.78 indicating their diversity of use and availability across the study area (Table 3). Geographic distribution of species was moderately correlated with use value, i.e., widely distributed species generally had higher use-value indicating diverse use across communities and cultures (Kendall's tau = 0.425, p-value = 0.00003). Maximum use value was reported from *Gloriosa superba* (0.78) with 51 different types of use covering all recorded disease categories, while minimum value was shown by *Gymnema sylvestre* (0.03) with specific uses only in diabetes and fracture.

Spatial distribution pattern

The 65 shortlisted studies recorded 840 sacred groves from eighteen states of India. However, they were heterogeneously distributed. Tamil Nadu, Uttarakhand, West Bengal, and Andhra Pradesh outnumbered others reporting an average of seven studies from each. Biogeographic zone-wise, the Deccan peninsular region is over-represented in our dataset since majority of the studies (43%) have been reported from this area. Considering enlisted groves, the number of studies do not exactly correspond to the grove numbers, as many surveyed multiple groves in a single study. Taking account of remedial measures, higher fidelity value (FL value) assigned to a species against specific diseases corresponded to their wider reporting area (Fig 6 a,b). We have also identified 12 groves or grove clusters as hotspots based on $\geq 50\%$ availability of highly cited species (Fig 7). These hotspots with greater number of popular species are recommended as primary candidate for connecting grove system with local healthcare.

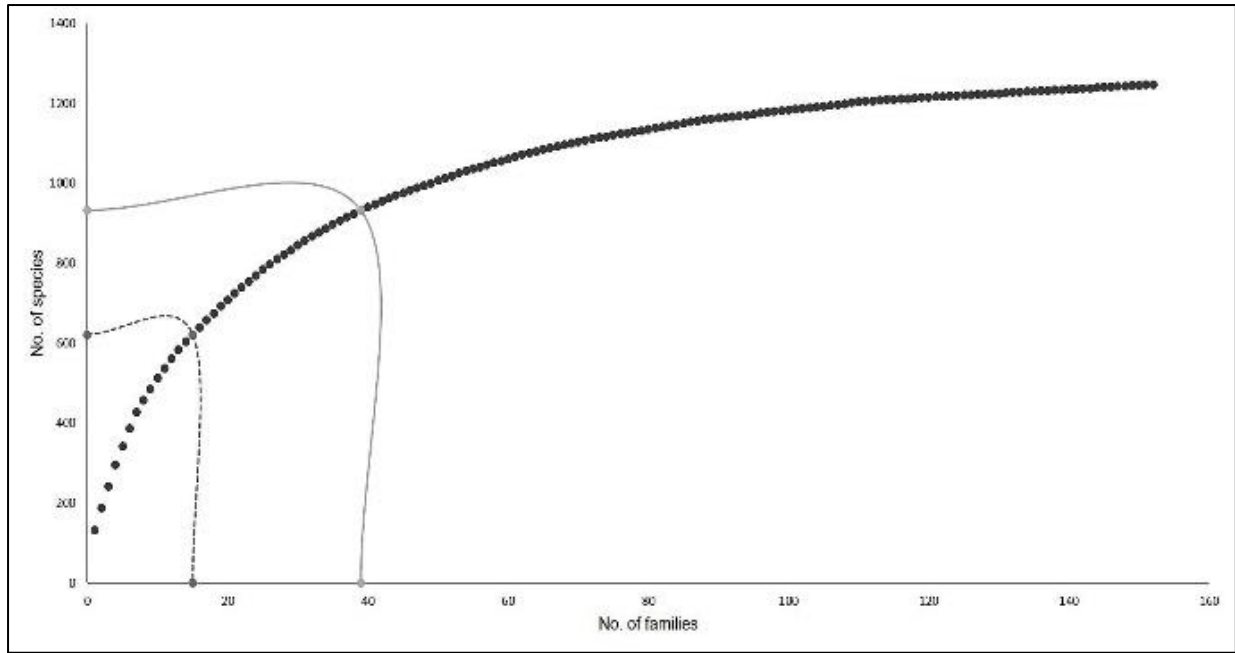


Figure 1. Cumulative graph of total species pool (1247 spp.) against 152 families. Dotted grey line represent 50% species cut-off, and continuous grey line represents 75% species cut-off.

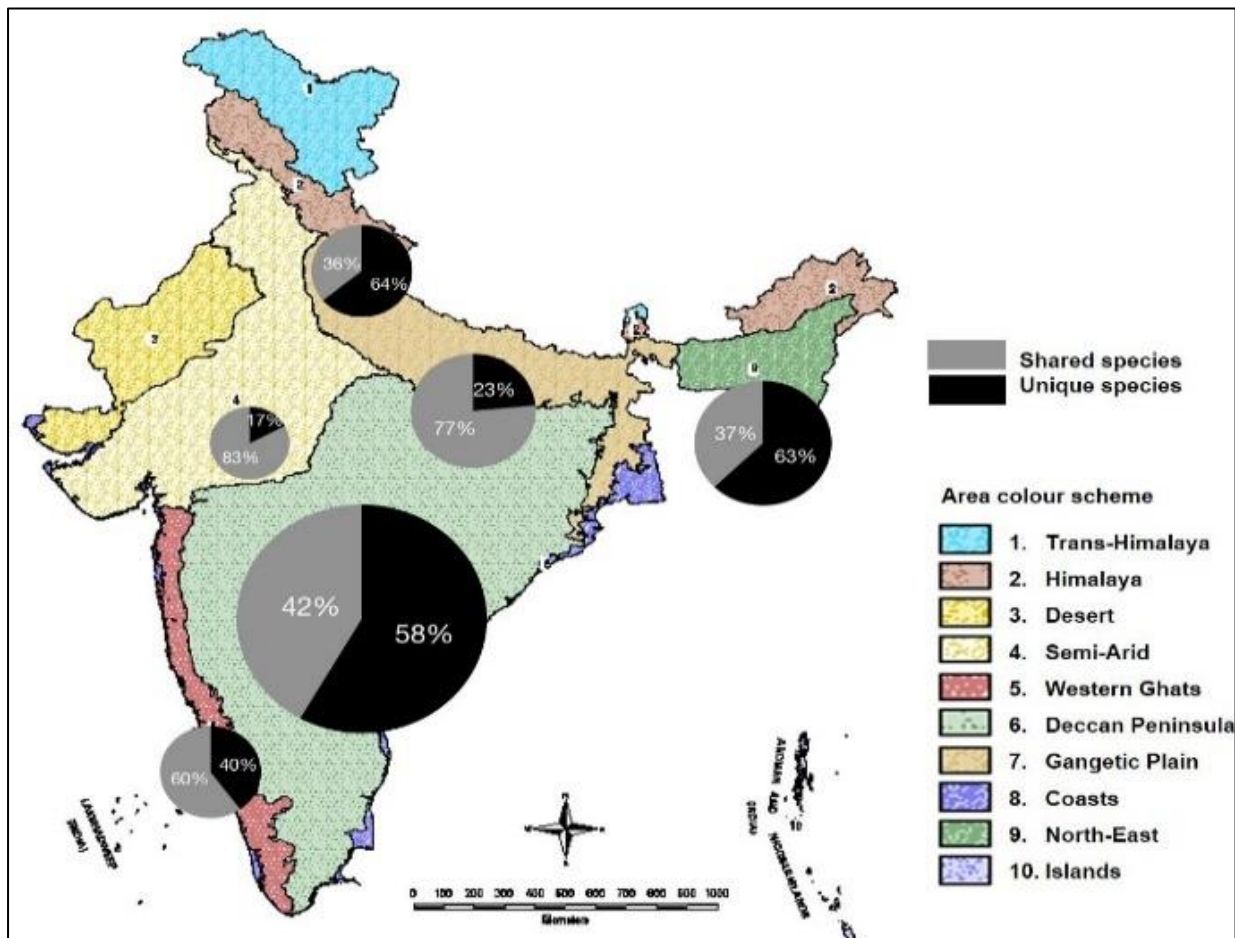


Figure 2. Patterns of sacred grove species distribution in different biogeographic regions of India. Percentage of unique and shared species in different regions is presented in pie chart. (Map courtesy: Wildlife institute of India, 2000)

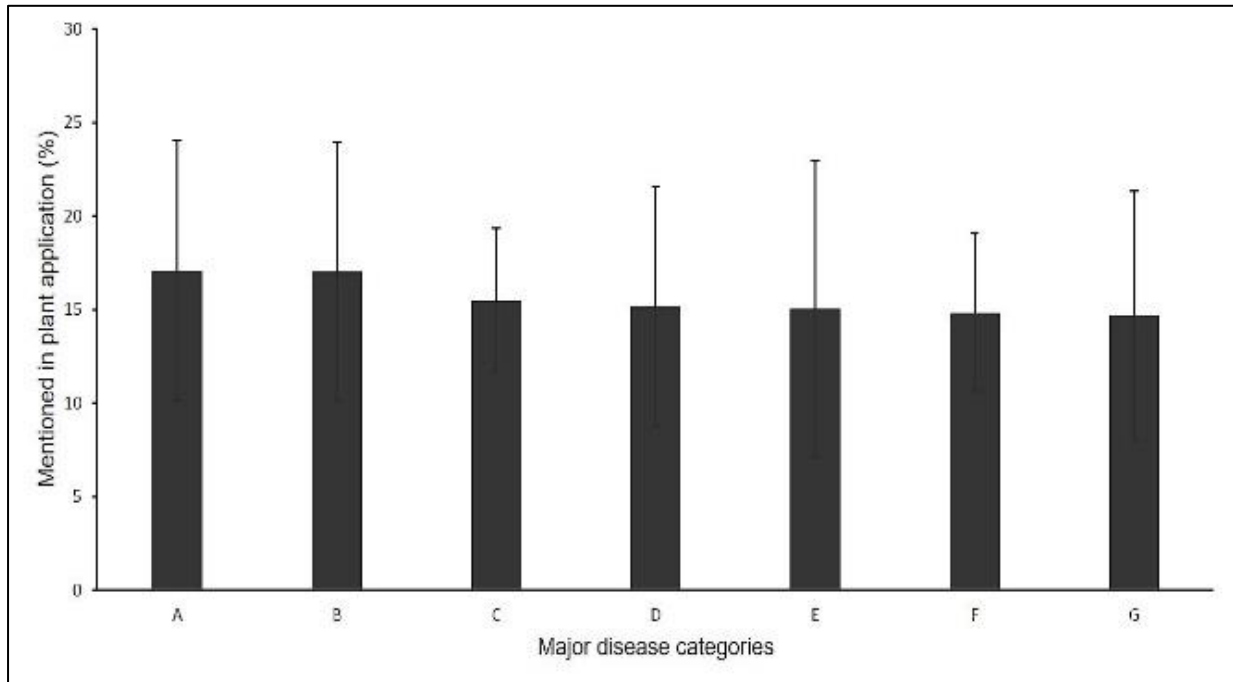


Figure 3. Prevalent disease categories from sacred grove based medicine practices. A = digestive system; B = infectious and parasitic diseases; C = skin and sub-cutaneous tissues; D = unspecified or general health problem; E = injury, poisoning and other external causes; F = respiratory system and G = genito-urinary system

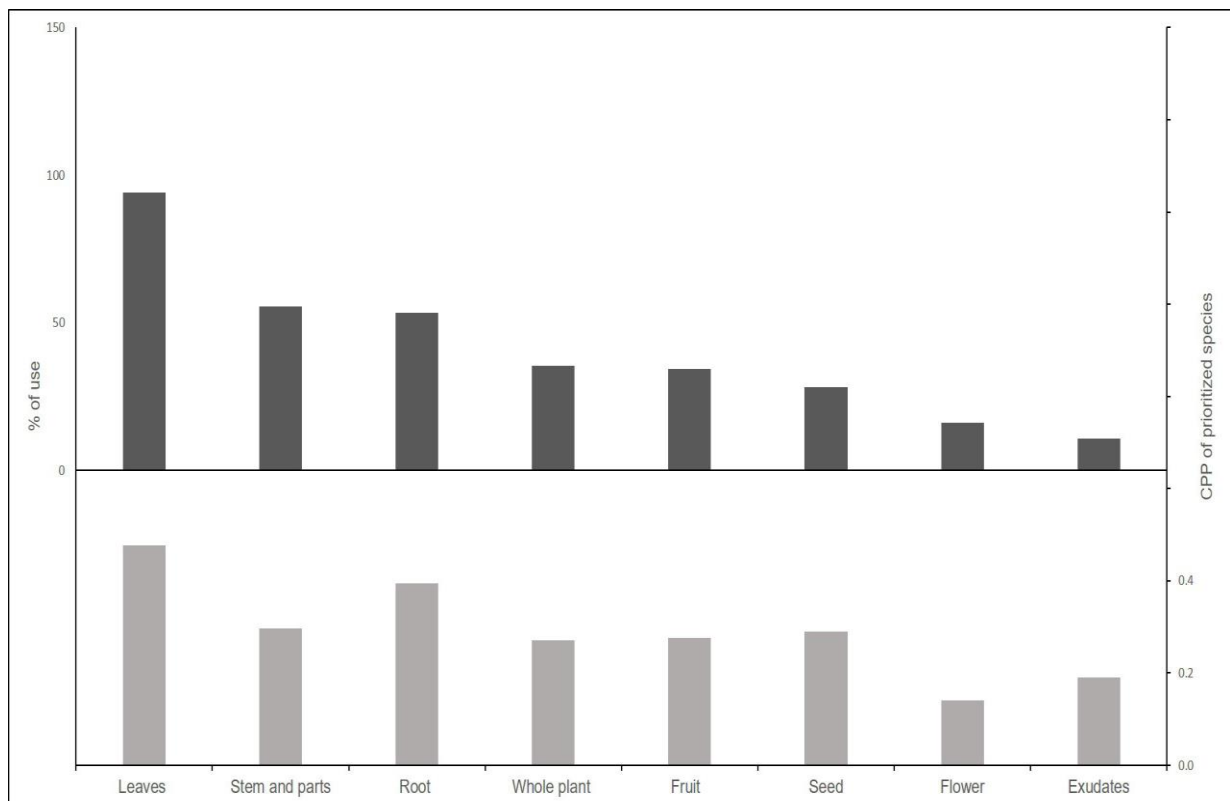


Fig 4. Preferred plant part use in medicine preparation. Upper panel shows findings from whole dataset (i.e. 1247 spp.) expressed in percentage (left axis); lower panel shows findings from fifty prioritised species expressed in CPP value (right axis).

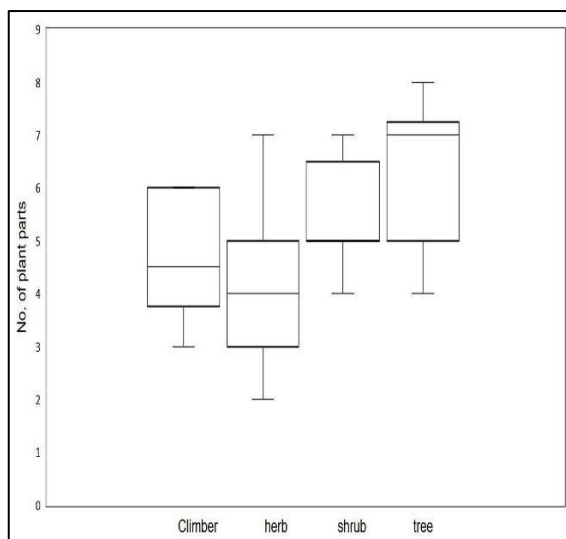
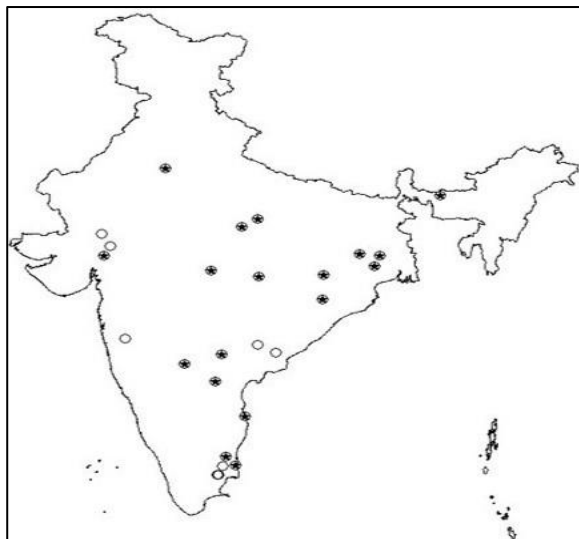
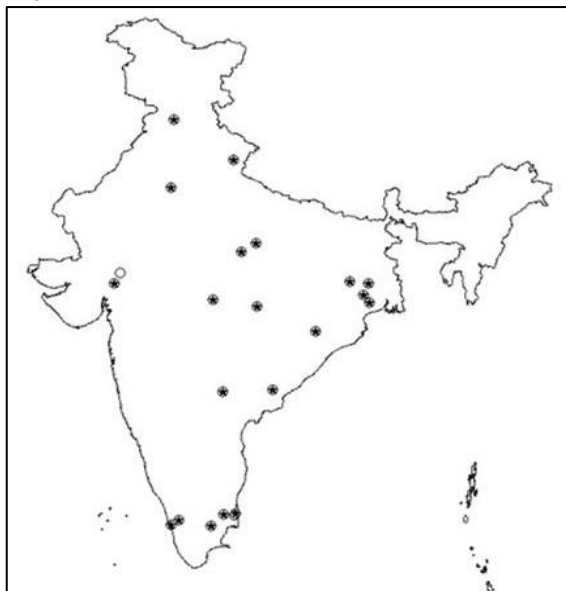


Figure 5. Pattern of plant part use for plant forms.

Figure 6b. Spatial Fidelity map for *Azadirachta indica*

Figures 6a & b. Spatial Fidelity map for selected species; 6a) *Ocimum tenuiflorum* (FD = 91 for cough and cold) and 6b) *Azadirachta indica* (FD = 69 for skin disease). Dots indicate species geographic distribution (from consulted papers) and black dots indicate reporting of the specific use of the species against the disease for which the FL value was calculated.

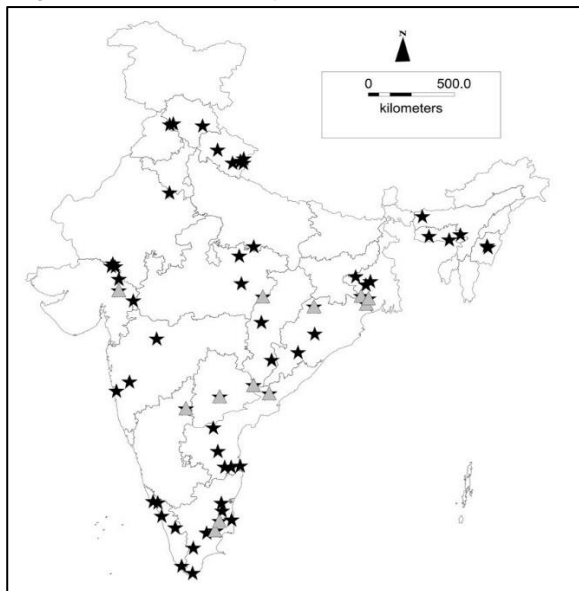


Figure 7. Distribution of studied grove / grove clusters across India. * = case studies and ▲ = prioritised groves / grove clusters.

Table 2. Fidelity level of selected species against specific ailments (value > 50%)

Species	Ailments treated	Fidelity value (%)
<i>Gymnema sylvestre</i>	Diabetes	100
<i>Ocimum tenuiflorum</i>	Cough and cold	90.90909
<i>Tridax procumbens</i>	Cut and wound	80
<i>Syzygium cumini</i>	Diabetes	78.57143
<i>Argemone mexicana</i>	Skin disease	76.92308
<i>Acalypha indica</i>	Skin disease	75

<i>Eclipta prostrata</i>	Hair related problem	71.42857
<i>Azadirachta indica</i>	Skin disease	69.23077
<i>Terminalia arjuna</i>	Heart problems	69.23077
<i>Boerhaavia diffusa</i>	Liver problem	66.66667
<i>Terminalia chebula</i>	Digestive problem	63.63636
<i>Aerva lanata</i>	Kidney/Renal Stone	54.54545
<i>Cissus quadrangularis</i>	Bone fracture	53.33333
<i>Mangifera indica</i>	Diarrhoea	53.33333
<i>Achyranthus aspera</i>	Animal bite (scorpion, snake, dog)	52.17391

Table 3. Use value (UV) and Relative frequency of citation (RFC) for fifty prioritised species

Species	Use value	Relative frequency of citation
<i>Abrus precatorius</i>	0.47692	0.35385
<i>Abutilon indicum</i>	0.35385	0.2
<i>Acalypha indica</i>	0.33846	0.21538
<i>Achyranthus aspera</i>	0.43077	0.36923
<i>Aegle marmelos</i>	0.63077	0.46154
<i>Aerva lanata</i>	0.2	0.18462
<i>Ageratum conyzoids</i>	0.33846	0.21538
<i>Alangium salviifolium</i>	0.35385	0.24615
<i>Albizia lebeck</i>	0.46154	0.18462
<i>Andrographis paniculata</i>	0.4	0.33846
<i>Annona squamosa</i>	0.35385	0.21538
<i>Argimone mexicana</i>	0.29231	0.21538
<i>Asparagus racemosus</i>	0.49231	0.29231
<i>Azadirachta indica</i>	0.67692	0.46154
<i>Boerhaavia diffusa</i>	0.43077	0.24615
<i>Bombax ceiba</i>	0.30769	0.2
<i>Butea monosperma</i>	0.55385	0.26154
<i>Calotropis gigantea</i>	0.43077	0.21538
<i>Cassia fistula</i>	0.41538	0.38462
<i>Centella asiatica</i>	0.46154	0.23077
<i>Cheilocostus speciosus</i>	0.23077	0.16923
<i>Cissampelos pariera</i>	0.23077	0.18462
<i>Cissus quadrangularis</i>	0.26154	0.23077
<i>Curculigo orchioides</i>	0.43077	0.26154
<i>Cynodon dactylon</i>	0.49231	0.36923
<i>Datura metel</i>	0.23077	0.18462
<i>Eclipta prostrata</i>	0.24615	0.16923
<i>Euphorbia hirta</i>	0.30769	0.30769
<i>Ficus benghalensis</i>	0.61538	0.36923
<i>Ficus religiosa</i>	0.69231	0.33846
<i>Gloriosa superba</i>	0.78462	0.27692
<i>Gymnema sylvestre</i>	0.03077	0.23077

<i>Hemidesmus indicus</i>	0.49231	0.4
<i>Holarrhena pubescens</i>	0.24615	0.2
<i>Ichnocarpus frutescens</i>	0.2	0.2
<i>Lantana camara</i>	0.24615	0.2
<i>Mangifera indica</i>	0.27692	0.24615
<i>Mimosa pudica</i>	0.35385	0.21538
<i>Ocimum tenuiflorum</i>	0.61538	0.35385
<i>Oxalis corniculata</i>	0.33846	0.2
<i>Phyllanthus emblica</i>	0.24615	0.24615
<i>Plumbago zeylanica</i>	0.21538	0.2
<i>Syzygium cumini</i>	0.33846	0.24615
<i>Tamarindus indica</i>	0.41538	0.29231
<i>Terminalia arjuna</i>	0.44615	0.24615
<i>Terminalia bellirica</i>	0.38462	0.21538
<i>Terminalia chebula</i>	0.43077	0.18462
<i>Tinospora sinensis</i>	0.55385	0.33846
<i>Tridax procumbens</i>	0.30769	0.26154
<i>Vitex negundo</i>	0.44615	0.35385

Discussion

Taxonomic characteristics and assessment with other studies

A total of 1247 medicinal species from 152 families illustrated the reliance of local people on a rich source of medicinal flora from the sacred groves. The high species diversity perhaps ensured their availability and sustainable usage for health benefits. Apart from angiosperms, moderate representation of lower group of plants (e.g., pteridophytes, lichens) highlighted the existing traditional knowledge-base on curative potential (Nayaka *et al.* 2010, Shirsat 2008). Similarly, use of invasive and exotic species in ethnomedicine (e.g., *Lantana camara*, *Chromola odorata*, *Sphagneticola* sp.) demonstrated human adaptive strategy to utilize alternate resources (Sandilyan & Klooster 2016), which implied the choice has been dynamic and contingent on local materials.

Considering ethnomedicinal plant resource, our study is fairly comparable with other findings, such as 8000 medicinal plants from 550 tribal communities revealed by All India Coordinated Research Project on Ethnobiology (AICRPE) (Pushpangadan *et al.* 2018); 782 species belonging to 132 families from the Eastern Ghats and the Deccan region (Karuppusamy & Pullaiah 2017), and 528 species of 112 families from the Indo-Gangetic plains (Chowdhury *et al.* 2017). Despite our study being restricted to sacred groves, availability of such a large number of species clearly underscores the

potential of the system as a reservoir of useful medicinal plants.

In terms of family level contribution, Fabaceae, Compositae, Lamiaceae, Rubiaceae, and Malvaceae have occupied the dominant position which corroborated other regional assessments of ethnomedicinal plants, e.g., the Eastern Ghats and the Indo-Gangetic plains (Chowdhury *et al.* 2017, Karuppusamy & Pullaiah 2017). Pertinently, nearly same suite of families overwhelms the floral assemblage in overall angiosperm diversity in India (Arisdason & Lakshminarasimhan 2017). It might be an indirect support for ecological apparency hypothesis, where apparent or abundant floral assemblages supposed to have greater contribution in livelihood maintenance (Albuquerque *et al.* 2015). Taxonomic inclination of this assembled ethnomedicinal pharmacopeia towards certain families can be statistically tested with the complete family monographs, but their unavailability at country-level impaired such an analysis. In spite of this limitation, a comparative assessment with the other works has depicted fairly similar trend across the tropical and sub-tropical regions. A total of 11 frequently used families from our list was shared by overly-used categories in the South African ethnomedicinal study (Douwes *et al.* 2008). Amiguet *et al.* (2006) highlighted the similarity in tropical useful medicinal floras among Chiapaz, Ecuador, and Veracruz, three southern neo-tropical regions, where Rubiaceae and Compositae have higher use along with few other families. Likewise, Leonti *et al.* (2003)

have also reported the dominance of Fabaceae, Compositae, Euphorbiaceae, and Lamiaceae from Popoluca, Mexico.

Distribution of medicinal plants

The diversity of species was not homogeneous across administrative or biogeographic regions. The skewed distribution could be partly due to the access of the relevant studies from certain regions and lack of from the other. Although the biogeographic classification is very basic in contrast to the enormous local and regional variations, it provides a preliminary understanding on groves' association with certain ecosystems of India. In this regard, the Himalaya and the North-eastern regions demonstrated higher percentage of unique species (64% and 62%, respectively) owing to their distinct floral assemblage resulting from complex history (Mani 2012). On the other hand, higher percentage of unique species (58%) from the Deccan peninsula could be attributed to its geographical expanse and better documentation, since 28 of 65 (43%) studies are from this region. However, the assessment of uniqueness may have been overestimated due to the lack of sufficient data from the other regions. Alternatively, our grove-centric analyses may influence species comparison exercise as it selectively focused on grove flora ignoring the entire floral assemblage. Despite these limitations, these findings provided us with important clues related to floral availability, acceptance, and use pattern across cultures and communities. The aspect of shared species (i.e., remaining 29%), the species documented from two or more regions, deserves further research to gain an insight into the processes leading to their multiple use and applications over a broader area. They may provide an opportunity to understand the larger context of human-environment interaction and socio-cultural knowledge sharing and transmission among communities - the factors are important to uncover basic ethnomedicinal principles.

Rural healthcare system

Our interpretation unraveled a distinct pattern in prevalent disease categories, spectrum of plant use, and its country-level variation in acceptance. The major advantages were a steady supply of authentic resource and a vast body of socially accepted traditional medical knowledge.

Prevalent disease categories

Eighteen disease categories and their remedial floral package indicated heavy reliance on the existing system as well as exploitation of resource diversity to fulfill the need. However, not all the categories were equally common, e.g., diseases related to digestive system, bacterial and parasitic attacks, skin

problems, and external injuries were more treated than the others; the observation reflected the general trend of disease prevalence throughout the tropics (Cunningham *et al.* 2012, Mitra & Mawson 2017). The causal factors could be multiple: malnutrition, ineffective food storage and family history; while, the agents inciting infections and skin problems are mostly external in nature (Negi & Singh 2018). These are closely related to the surrounding environment and the way people lead their daily chores. Majority of the diseases in our study were water- or animal-borne (e.g., cholera, diarrhoea, dysentery, malaria, scabies, rabies), and few were sexually transmitted (e.g., syphilis, gonorrhoea). Bacterial and parasitic agents were common in rural and forested landscapes, and their population shot up in specific seasons (e.g., rainy season). A general lack of awareness regarding their possible source and epidemiology was another reason of sickness (Anonymous 2017a). The other category, e.g., injuries and wounds could be caused by both biotic (e.g., snake, scorpion, insects, rodents and small mammals) and abiotic agents (accidental contacts). Summarizing, major diseases reported from the grove specific medicine system were related to low to moderately serious ailments associated with communities' life style choice and interaction with surroundings.

Diversity in plant use spectrum

It was found that nearly one-third of the total recorded plant species was in use to treat the dominant ailments. It was an indication that the treatment of a disease is not generally restricted to a few but employed a wide array of medicinal plants, an observation which also receives support from other studies (Jeeva *et al.* 2007, Sheikh *et al.* 2015). The finding of a number of species against a particular ailment also signified the flexibility, strong knowledge system, and rich resource base; it also insulated the loss of a species by replacement with other available and effective flora (Junior *et al.* 2015). On the other hand, employing a particular species against several diseases has been a common practice and the notion was supported by the fact that highly cited members demonstrated higher use values. The underlying reasons perhaps were easy availability, higher abundance, and cross-cultural knowledge base which allow experimentation against different ailments and facilitates cultural inclusion (Albuquerque *et al.* 2015, Leucena *et al.* 2012). However, species like *Gymnema sylvestre* and *Gloriosa superba* deviated from the predicted linear relation between citation index and use value. Both of them with moderate value of relative citation (0.23 and 0.27, respectively) have shown extreme opposite magnitude of use value. *G. sylvestre* scored the lowest with its major use in diabetes, irrespective

of its geographic and cultural presence. Its overly acceptance against diabetes could be an example of acquired knowledge through sharing of information or an independently perceived time-tested experience. Although the referred studies claimed to gather information from the local communities, the chances of information transfer from codified knowledge (i.e., Ayurvedic/Siddha/Unani) cannot be overruled (Biswas *et al.* 2017, Chandran 2016). On the other end of the spectrum, *G. superba* reportedly used in 51 ailments (highest among the priority species) portrayed its high acceptance among communities, but for its multipurpose use. The multifarious use of *G. superba* was in agreement with other studies where ethno-medicinal, pharmacological, and botanical aspects of the species have been discussed at length (Ashokkumar 2015, Padmapriya *et al.* 2015). Likewise, there were reviews on other plants, such as *Azadirachta indica*, *Syzygium cumini*, *Ocimum tenuifolium* (Ayyanar & Suresh-Babu 2012, Biswas *et al.* 2002, Gupta *et al.* 2002) indicating their wider acceptance but multi-community compilations, use-value determination, spatial patterns have rarely been described (but see Jain 2004, Srikanth *et al.* 2017).

Reliability in plant use

Evaluation of medicinal information from sacred groves revealed a considerable similarity in species and plant part use. Contrary to the popular use of the fidelity value index in one particular area, we have attempted to use the index to capture the acceptance level of a species throughout the country that may act as an indicator of its reliability. Inclusion of spatial dimension in reliability measure was an important addition to this study since it strengthened the widely held view on therapeutic potential of a plant. For instance, the common beliefs advocate the use of *Gymnema sylvestre* and *Syzygium cumini* in diabetes, *Ocimum tenuifolium* in cough and cold, which were quantitatively validated employing this index. The wider spatial distribution of the species with higher fidelity values also indicated broader cultural geographic acceptance than localized reliance. Jain (2004) earlier in his assessment of credibility of traditional medicinal knowledge performed a point-based credibility exercise to identify widely accepted plants against certain ailments. His findings demonstrated the cross-community applications of *G. sylvestre* and *S. cumini* in diabetes, *Boerhaavia diffusa* in liver problems which was in concord with our findings.

Among all, leaves appeared to be the most frequently used plant part. The underlying reason of such preference could be regular collections from herbs and trees where quantity and availability remained consistent throughout the year (Khan *et al.*

2014). Likewise, stem (or stem bark) and root were also regularly harvested probably due to the same reason. On the contrary, relatively lower use of reproductive parts (i.e., flower, fruits except seeds) may be explained by their seasonal availability, inconsistent quantity, and other uses in commercial, religious and cultural activities. Trees with highly differentiated morphology and longer life span allowed highest use of their parts than herbs and shrubs. Moreover, multiple other components (bark, secondary by-products, and aerial roots) were available from trees which collectively contributed to medicine preparation.

Implementation of grove tradition to rural healthcare system

The repertoire of medicinal flora conserved and managed in the sacred groves reinforced the fostering role of social institutions in biodiversity conservation and utilization (Colding & Folke 2001, Persha *et al.* 2011). From our analysis, we found that sacred groves allowed treatment of a wide variety of ailments with the available medicinal plants. It earned a strong support from isolated and marginalized people for whom accessibility and affordability to standard healthcare is a distant goal. To bridge the gap between healthcare services and marginalized and rural communities, the Government of India took initiatives at different levels which included plurality in medical practices (Katoch *et al.* 2017). The major aim to incorporate plurality was to make the healthcare sector more inclusive so that people may exercise different choices according to their socio-economic status, cultural inclination, and comfort level (Samal 2015). Similarly, plurality is also beneficial from the administrative and technical standpoint since it offers an option for healthcare services without heavy reliance on infrastructure and administrative intervention. For example, plurality in Indian context revolves around the inclusion of AYUSH (Ayurveda, Naturopathy, Yoga, Unani, Siddha, and Homoeopathy) codified systems in national health mission so that people get the benefit of age-old traditional medicine system with all divergent choices (Katoch *et al.* 2017, Samal 2015). The co-location of AYUSH facilities with Primary Health Centre (PHC), Community Health Centre (CHC), and District Hospital (DH) is the judicious implementation of this very idea (Priya & Sweta 2010). Medicinal plants are one of the integral component of the AYUSH system as the preparation mostly relies on resource availability, quality, and skilled handling. Pertinently, sacred groves in the villages could be an alternative resource for medicinal plants in the already established AYUSH program with an assurance for quality and availability. So, the need of the hour is the documentation of the medicinal plants and their

proper maintenance. Our study, in this line, revealed several important aspects of ethnomedicinal practices, e.g., multiple species use in particular ailments, spatial validity in disease treatment (spatial fidelity assessment), and multiple usages of certain species; these underscore the long term association of traditional healers with local flora and environment. This valuable experience pool can be utilized in for the improvement of the AYUSH program to render higher cultural acceptance (Dehury & Chatterjee 2016), since ethnomedicinal knowledge is informally accepted in medical research but lacks official recognition as a mode of treatment (Chandra & Patwardhan 2018).

Employing data-driven prioritization exercise, we have identified 12 groves or grove clusters with greater than 50% of widely used species; these can be taken as a model candidate for mending the local connection between primary healthcare and ethnomedicinal expertise. The grove flora could be useful for medicine preparation under proper management and skilled manpower, whereas the local healer can be consulted for treatment modality and socio-cultural link establishment with local community. Moreover, our analyses also demonstrated higher value in spatial fidelity of many frequently cited species (e.g. *Gymnema sylvestre*, *Syzygium cumini*, *Ocimum tenuiflorum*, *Eclipta prostrata*), i.e., their use against specific disease is well established across the country; it ensures long-term acceptance across wider cultural geographic regions which is advantageous for AYUSH program. Our prioritization exercise is an initial attempt to identify those spots where frequently used species with multi-community reliance are available in a cluster; we, therefore, intentionally kept aside the region-specific rare species which may have equal importance in medicine practice, for the sake of broad country-wide pattern. For instance, the Himalaya possesses a large number of valuable medicinal plants in the sacred groves but majority of them are locality specific (e.g., *Aconitum heterophyllum*, *Arnebia benthamii*, *Nardostachys grandiflora*, etc) thus exhibit low score as national candidates. However, this exercise can be region specific, improved, and extended further by adding other parameters, e.g., details of treatments, medicine preparation method, and community involvement, which can be further assimilated into health policies for successful implementation.

Conclusion

The study summarized an enormous diversity of folk medicinal flora conserved, managed, and utilized in sacred groves throughout the country. It further exhibited a heavy dependence of the users for a wide variety of ailments common in tropical and

subtropical rural landscapes; not limited to a few set, a diverse suite of plants has been generally applied to curing of different ailments.

Armed with data-driven inference, our study has stressed on the notion that sacred grove could be a strong base for traditional medicinal knowledge which can be complemented in local healthcare program as a part of national health mission agenda. Sacred groves, being a social institution, have an enduring association with local communities which hints at their embeddedness that raises their credibility in healthcare and promotes their conservation at local scale. A resurgence of popularity and awareness on ethnomedicine would resurrect the conservation and healthcare nexus liaising among the sacred grove stakeholders, local medical practitioners, and administrative bodies. In many areas, the community-led framework has already been in place which requires to be strengthened through proper planning, policy, and execution.

Declarations

List of abbreviations:

ICD10 - 10th revision of the International Statistical Classification of Diseases and Related Health Problems
 RFC - relative frequency of citation
 UV - use value
 CPP - consensus value for plant parts
 FL - fidelity level
 AICRPE - All India Coordinated Research Project on Ethnobiology
 AYUSH - Ayurveda, Naturopathy, Yoga, Unani, Siddha, and Homoeopathy
 PHC - Primary Health Centre
 CHC - Community Health Centre
 DH - District Hospital

Availability of data and materials:

Available from the authors, on request

Consent for publication: Not applicable.

Conflict of interests: None declared.

Ethical approval and consent to participate: Not applicable.

Funding: None.

Authors' contributions: RR designed the study, collected, compiled, and analyzed the data. AR involved in data analysis. RR and AR jointly contributed in manuscript preparation.

Acknowledgements

Authors thank Sayantani Chanda and Sreevidya E.A. for their assistance in data collection.

Literature cited

Albert S, Porter J. 2015. Is 'mainstreaming AYUSH' the right policy for Meghalaya, northeast India? BMC Complementary and Alternative Medicine, 15:288

- Albert S, Nongrum M, Webb EL, Porter JDH, Kharkongor GC. 2015. Medical pluralism among indigenous peoples in northeast India - implications for health policy. *Tropical Medicine and International Health*, 20(7): 952-960
- Albuquerque UP, Soldati GT, Ramos MA, de Melo JG, de Medeiros PM, Nascimento ALB, Júnior WSF. 2015. The influence of the environment on natural resource use: evidence of apparency. In *Evolutionary ethnobiology*. Springer, Cham, Pp 131-147
- Amiguet VT, Arnason JT, Maquin P, Cal V, Pablo SV, Luis PA. 2006. A regression analysis of Q'eqchi'Maya medicinal plants from southern Belize. *Economic Botany*, 60(1): 24-38. <https://doi.org/10.1663/0013-0001>
- Anonymous 2017. National Health Policy. Ministry of Health and Family Welfare, Government of India. URL: <https://mohfw.gov.in/documents/policy> (last accessed 15th January 2020)
- Anonymous. 2017a. Tribal health in India – Bridging the gap and a roadmap for the future-executive summary and recommendations. Ministry of Health and Family Welfare and Ministry of Tribal Affairs, Government of India.
- Anyinam C, Kalipeni E, Zeleza PT. 1999. Ethnomedicine, sacred spaces, and ecosystem preservation & conservation in Africa. In *Sacred Spaces and Public Quarrels: African Cultural and Economic Landscapes*. Edited by Zeleza PT, Kalipeni E., Africa World Press, Inc.
- Arisdason W, Lakshminarasimhan P. 2016. Status of plant diversity in India: an overview. Central National Herbarium, Botanical Survey of India, Howrah.
- Ashokkumar K. 2015. *Gloriosa superba* (L.): A Brief Review of its Phytochemical Properties and Pharmacology. *International Journal of Pharmacognosy & Phytochemical Research* 7(6): 1190-1193
- Ayyanar M, SureshBabu P. 2012. *Syzygium cumini* (L.) Skeels: A review of its phytochemical constituents and traditional uses. *Asia Pacific Journal of Tropical Biomedicine* 2: 3 240-246. doi: 10.1016/S2221-1691(12)60050-1
- Bhattacharyya R, Asokan A, Bhattacharya P, Prasad R. 2009. The potential of certification for conservation and management of wild MAP resources. *Biodiversity & conservation* 18(13): 3441—3451. doi: 10.1007/s10531-009-9653-z)
- Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U. 2002. Biological activities and medicinal properties of neem (*Azadirachta indica*). *Current Science* 82: 1336-1345
- Biswas S, Shaw R, Bala S, Mazumdar A. 2017. Inventorization of some ayurvedic plants and their ethnomedicinal use in Kakrajhore forest area of West Bengal. *Journal of ethnopharmacology* 197: 231-241. DOI:10.1016/j.jep.2016.08.014
- Blicharska M, Mikusiński G, Godbole A, Sarnaik J. 2013. Safeguarding biodiversity and ecosystem services of sacred groves – experiences from northern Western Ghats. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 9:4, 339-346, DOI: 10.1080/21513732.2013.835350
- Chandra S, Patwardhan K. 2018. Allopathic, AYUSH and informal medical practitioners in rural India - a prescription for change. *Journal of Ayurveda & Integrative Medicine* 9:143-150
- Chandran MS. 2016. From the shadows of legitimacy problems and prospects of folk healing in India. *Journal of Traditional & Folk Practices* 2,3,4 (1): 74-95
- Chowdhury HR, Mandal SK, Pullaiah T. 2017. Ethnomedicinal plants of the Indo-Gangetic region and central India. In *Ethnobotany of India, Volume 5*, Apple Academic Press, Pp 127-199.
- Colding J, Folke C. 2001. Social taboos: “invisible” systems of local resource management & biological conservation. *Ecological applications* 11(2): 584-600. DOI: 10.2307/3060911
- Cunningham AB, Shanley P, Laird S. 2012. Health, habitats & medicinal plant use. In *Human Health & Forests*, Routledge, Pp 57-84.
- Currie E, Schofield J, Perez FO, Quiroga D. 2018. Health beliefs, healing practices & medico-ritual frameworks in the Ecuadorean Andes: the continuity of an ancient tradition. *World archeology* 50(3): 461-479. <https://doi.org/10.1080/00438243.2018.1474799>
- Dehury RK, Chatterjee SC. 2016. Dissociated reality vis-a-vis integrative planning of AYUSH in Maternal Health Program: A situational analysis in Jaleswar block of Balasore district of Odisha, India. *Journal of Ayurveda & Integrative Medicine* 7:124-131
- de Lucena RFP, de Medeiros PM, de Lima Araújo E, Alves AGC, de Albuquerque UP. 2012. The ecological apparency hypothesis & the importance of useful plants in rural communities from Northeastern Brazil: An assessment based on use value. *Journal of Environmental Management* 96(1): 106-115. doi: 10.1016/j.jenvman.2011.09.001
- Douwes E, Crouch NR, Edwards TJ, Mulholland DA. 2008. Regression analyses of southern African ethnomedicinal plants: informing the targeted selection of bioprospecting & pharmacological screening subjects. *Journal of Ethnopharmacology* 119(3): 356-364. doi:10.1016/j.jep.2008.07.040
- Gupta SK, Prakash J, Srivastava S. 2002. Validation of traditional claim of Tulsi, *Ocimum sanctum* Linn. as a medicinal plant. *Indian Journal of Experimental Biology* 40: 765-773

- Hollard G, Sene O. 2016. Social capital & access to primary health care in developing countries: Evidence from Sub-Saharan Africa. *Journal of Health Economics* 45:1-11.
- Holley J, Cherla K. 1998. Medicinal plants sector in India: a review. Medicinal and Aromatic Plants Program in Asia (MAPPA). IDRC/SARO New Delhi 110003, India
- Hone T, Macinko J, Millett C. 2018. Revisiting Alma-Ata: what is the role of primary health care in achieving the Sustainable Development Goals? *The Lancet* 392(10156):1461-1472.
- Innocent E. 2016. Trends & challenges toward integration of traditional medicine in formal health-care system: Historical perspectives & appraisal of education curricula in Sub-Sahara Africa. *Journal of Intercultural Ethnopharmacology*, 5:312-316
- Jain SK. 2004. Credibility of traditional knowledge—the criterion of multilocational & multiethnic use. *Indian Journal of Traditional Knowledge* 3(2): 137-153
- Jeeva GM, Jeeva S, Kingston C. 2007. Traditional treatment of skin diseases in South Travancore, southern peninsular India. *Indian Journal of Traditional Knowledge* 6(3): 498-501
- Júnior WSF, Nascimento ALB, Ramos MA, de Medeiros PM, Soldati GT, Santoro FR, Reyes-García V, Albuquerque UP. 2015. Resilience & adaptation in social-ecological systems. In *Evolutionary ethnobiology*, Springer, Cham, Pp 105-119.
- Karki M, Williams JT. 1999. Priority species of medicinal plants in South Asia. Medicinal and Aromatic Plants Program in Asia(MAPPA), International Development Research Centre, New Delhi, India.
- Karuppusamy S, Pullaiah T. 2016. Ethnomedicinal Plants of Eastern Ghats and Adjacent Deccan Region. In *Ethnobotany of India, Volume 1*. Apple Academic Press, Pp 235-322.
- Katoch D, Sharma JS, Banerjee S, Biswas R, Das B, Goswami D, Harwansh RK, Katiyar CK, Mukherjee PK. 2017. Government policies & initiatives for development of Ayurveda. *Journal of Ethnopharmacology* 197: 25–31.
- Khan I, AbdElsalam NM, Fouad H, Tariq A, Ullah R, Adnan M. 2014. Application of ethnobotanical indices on the use of traditional medicines against common diseases. *Evidence-Based Complementary & Alternative Medicine* 2014: 21. <http://dx.doi.org/10.1155/2014/635371>
- Khumbongmayum AD, Khan ML, Tripathi RS. 2005. Ethnomedicinal plants in the sacred groves of Manipur. *Indian Journal of Traditional Knowledge* 4(1): 21-32
- Leonti M, Fernando RR, Sticher O, Heinrich M. 2003. Medicinal flora of the Popoluca, Mexico: a botanical systematical perspective. *Economic Botany* (2003) 57: 218-230. <https://doi.org/10.1663/0013-0001>
- Mani MS. 2012. Ecology and biogeography in India (Vol. 23). Springer Science & Business Media.
- Minocha AA. Medical pluralism & health services in India. 1980. *Social Science & Medicine. Part B: Medical Anthropology*. 14(4):217-223.
- Mishra A, Nambiar D, Madhavan H. 2018. The Making of 'Local Health Traditions' in India. *Economic & Political Weekly* 53(30): 41-49.
- Mitra A, Mawson A. 2017. Neglected tropical diseases: epidemiology & global burden. *Tropical medicine & infectious disease*, 2(3), p.36. doi: 10.3390/tropicalmed2030036
- Nayaka S, Upreti DK, Khare R. 2010. Medicinal lichens of India. In *Drugs from Plants* Edited by P.C. Trivedi. Avishkar Publishers, Distributors, Jaipur, India, Pp 1-54.
- Negi DP, Singh MM. 2018. Tribal Health and Healthcare Beliefs in India: A Systematic Review. *International Journal of Research in Social Sciences* 8(5) 219
- Ogundele SO. 2007. Aspects of indigenous medicine in south-western Nigeria. *Studies on Ethnomedicine* 1(2): 127-133. <https://doi.org/10.1080/09735070.2007.11886305>
- Padmapriya S, Rajamani K, Sathiyamurthy VA. 2015. Glory lily (*Gloriosa superba* L.)-A review. *International Journal of Current Pharmaceutical Review & Research* 7(1): 43-49.
- Pandve HT, Pandve TK. 2013. Primary healthcare system in India: Evolution and challenges. *International Journal of Health System & Disaster Management* 1(3): 125-128.
- Pedersen D, Baruffati V. 1985. Health and traditional medicine culture in Latin America and the Caribbean. *Social Science and Medicine* 21(1): 5-12. [https://doi.org/10.1016/0277-9536\(85\)90282-5](https://doi.org/10.1016/0277-9536(85)90282-5)
- Persha L, Agrawal A, Chhatre A. 2011. Social and ecological synergy: local rulemaking, forest livelihoods, and biodiversity conservation. *Science* 331(6024): 1606-1608. DOI: 10.1126/science.1199343
- Priya R, Shweta AS. 2010. Status and role of AYUSH and local health traditions under the national rural health mission. National Health Systems Resource Centre, National Rural Health Mission, Ministry of Health & Family Welfare, Government of India, New Delhi
- Pushpangadan P, George V, Ijnu TP, Chithra MA. 2018. All India coordinated research project on ethnobiology and genesis of ethnopharmacology research in India including benefit sharing. *Annals of*

- Phytomedicine 7(1): 5-12. DOI: 10.21276/ap.2018.7.1.2
- Rai PK, Lalramnghinglova H. 2011. Ethnomedicinal plants of India with special reference to an Indo-Burma hotspot region: An overview. *Ethnobotany research & applications* 9: 379-420.
- Ray R, MDS Chandran, Ramachandra TV. 2014. Biodiversity and ecological assessments of Indian sacred groves. *Journal of Forestry Research* 25(1): 21-28. doi: 10.1007/s11676-014-0429-2
- Rudra S, Kalra A, Kumar A, Joe W. 2017. Utilization of alternative systems of medicine as health care services in India: Evidence on AYUSH care from NSS 2014. *PLoS One* 12:e0176916
- Samal J. 2015. Situational analysis and future directions of AYUSH: An assessment through 5-year plans of India. *Journal of Intercultural Ethnopharmacology* 4:348-354. DOI: 10.5455/jjce.20151101093011
- Sandilyan S, van't Klooster CIEA. 2016. The other sides of invasive alien plants of India—With special reference to medicinal values. *Journal for Nature Conservation* 31: 16-21. <https://doi.org/10.1016/j.jnc.2016.02.005>
- Sheehan HE. 2009. Medical pluralism in India: patient choice or no other options? *Indian Journal of Medical Ethics* 6(3): 138-141
- Sheikh Y, Maibam BC, Biswas D, Laisharm S, Deb L, Talukdar NC, Borah JC. 2015. Anti-diabetic potential of selected ethno-medicinal plants of north east India. *Journal of Ethnopharmacology* 171: 37-41. doi: 10.1016/j.jep.2015.05.030
- Shirsat RP. 2008. Ethnomedicinal Uses of some common Bryophytes and Pteridophytes used by tribals of Melghat Region (MS), India. *Ethnobotanical Leaflets* 12: 690-92
- Srikanth N, Singh S, Sharma BS, Khanduri S, Singh R, Maheswar T. 2017. Tribal Healthcare Research Program: An Overview of Central Council for Research in Ayurvedic Sciences Contributions. *Journal of Drug Research Ayurvedic Science* 2(2):118-148.
- Unnikrishnan P. 2010. Role of Traditional Medicine in Primary Healthcare: An Overview of Perspectives and Challenges. *Yokohama Journal of Social Sciences* 14(6): 57-77
- Venkatesh R, Mahammad KS. 2015. Ethnomedicinal plants in sacred groves in East Godavari district, Andhra Pradesh, India. *European Journal of Medicinal Plants*, 9(4): 1-29,
- Verschuuren B. 2010. Sacred natural sites: Conserving nature & culture. Routledge.
- Voeks RA. 1996. Tropical forest healers and habitat preference. *Economic Botany* 50(4): 381-400. doi: 10.1007/BF02866520
- World Flora Online consortium. <http://www.worldfloraonline.org/organisation/WFO>
- World Flora Online Data. 2018.
- World Health Organization, 2004. ICD-10: international statistical classification of diseases & related health problems. In ICD-10: International statistical classification of diseases & related health problems: tenth revision, 2nd ed. World Health Organization. <https://apps.who.int/iris/handle/10665/42980>
- Young A. 1983. The relevance of traditional medical cultures to modern primary healthcare. *Social science and medicine* 17(16): 1205-1211
- Zank S, Hanazaki N. 2017. The coexistence of traditional medicine and biomedicine: A study with local health experts in two Brazilian regions. *PLoS ONE* 12(4): e0174731. <https://doi.org/10.1371/journal.pone.0174731>

Appendix 1. Medicinal plants reported from the studied groves

Species	Family
<i>Acanthus ilicifolius</i> Lour.	Acanthaceae
<i>Acanthus leucostachyus</i> Wall. ex Nees	Acanthaceae
<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae
<i>Andrographis alata</i> (Vahl) Nees	Acanthaceae
<i>Andrographis echiioides</i> (L.) Nees	Acanthaceae
<i>Asystasia chelonoides</i> Nees	Acanthaceae
<i>Avicennia officinalis</i> L.	Acanthaceae
<i>Barleria buxifolia</i> L.	Acanthaceae
<i>Barleria cristata</i> L.	Acanthaceae
<i>Barleria cuspidata</i> F.Heyne ex Nees	Acanthaceae
<i>Barleria lupulina</i> Lindl.	Acanthaceae
<i>Barleria prionitis</i> L.	Acanthaceae
<i>Blepharis maderaspatensis</i> (L.) B.Heyne ex Roth	Acanthaceae
<i>Crossandra infundibuliformis</i> (L.) Nees	Acanthaceae
<i>Dicliptera bupleuroides</i> Nees	Acanthaceae
<i>Dicliptera chinensis</i> (L.) Juss.	Acanthaceae
<i>Dicliptera paniculata</i> (Forssk.) I.Darbysh.	Acanthaceae
<i>Ecbolium ligustrinum</i> (Vahl) Vollesen	Acanthaceae
<i>Ecbolium viride</i> (Forssk.) Alston	Acanthaceae
<i>Elytraria acaulis</i> (L.f.) Lindau	Acanthaceae
<i>Eranthemum purpurascens</i> Wight ex Nees	Acanthaceae
<i>Eranthemum roseum</i> (Vahl) R.Br.	Acanthaceae

<i>Hemigraphis hirta</i> (Vahl) T.Anderson	Acanthaceae
<i>Hygrophila auriculata</i> (Schumach.) Heine	Acanthaceae
<i>Justicia adhatoda</i> L.	Acanthaceae
<i>Justicia betonica</i> L.	Acanthaceae
<i>Justicia gendarussa</i> Burm.f.	Acanthaceae
<i>Justicia glauca</i> Rottler	Acanthaceae
<i>Justicia japonica</i> Thunb.	Acanthaceae
<i>Lepidagathis cristata</i> Willd.	Acanthaceae
<i>Peristrophe bicalyculata</i> (Retz.) Nees	Acanthaceae
<i>Phlogacanthus thyrsoiflorus</i> Nees	Acanthaceae
<i>Phlogacanthus thyrsoiformis</i> (Roxb. ex Hardw.) Mabb.	Acanthaceae
<i>Ruellia prostrata</i> Poir.	Acanthaceae
<i>Rungia pectinata</i> (L.) Nees	Acanthaceae
<i>Strobilanthes ciliata</i> Nees	Acanthaceae
<i>Strobilanthes scaber</i> T.Anderson	Acanthaceae
<i>Thunbergia fragrans</i> Roxb.	Acanthaceae
<i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	Acanthaceae
<i>Thunbergia laevis</i> Nees	Acanthaceae
<i>Hydnocarpus macrocarpa</i> Warb.	Achariaceae
<i>Hydnocarpus pentandrus</i> (Buch.-Ham.) Oken	Achariaceae
<i>Hydnocarpus wightianus</i> Blume	Achariaceae
<i>Acorus calamus</i> L.	Acoraceae
<i>Viburnum cotinifolium</i> D. Don	Adoxaceae

<i>Viburnum foetidum</i> Wall.	Adoxaceae	<i>Anacardium occidentale</i> L.	Anacardiaceae
<i>Trianthema portulacastrum</i> L.	Aizoaceae	<i>Buchanania axillaris</i> (Desr.) Ramamoorthy	Anacardiaceae
<i>Achyranthes aspera</i> L.	Amaranthaceae	<i>Buchanania cochinchinensis</i> (Lour.) M.R.Almeida	Anacardiaceae
<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Amaranthaceae	<i>Holigarna amottiana</i> Hook.f.	Anacardiaceae
<i>Aerva lanata</i> (L.) Juss.	Amaranthaceae	<i>Holigarna caustica</i> (Dennst.) Oken	Anacardiaceae
<i>Allmania nodiflora</i> (L.) R.Br. ex Wight	Amaranthaceae	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae
<i>Alternanthera brasiliana</i> (L.) Kuntze	Amaranthaceae	<i>Mangifera indica</i> L.	Anacardiaceae
<i>Alternanthera pungens</i> Kunth	Amaranthaceae	<i>Rhus chinensis</i> Mill.	Anacardiaceae
<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	<i>Rhus mysorensis</i> G.Don	Anacardiaceae
<i>Amaranthus caudatus</i> L.	Amaranthaceae	<i>Rhus parviflora</i> Roxb.	Anacardiaceae
<i>Amaranthus spinosus</i> L.	Amaranthaceae	<i>Rhus succedanea</i> L.	Anacardiaceae
<i>Amaranthus tricolor</i> L.	Amaranthaceae	<i>Semecarpus anacardium</i> L.f.	Anacardiaceae
<i>Amaranthus blitum</i> L.	Amaranthaceae	<i>Spondias pinnata</i> (L. f.) Kurz	Anacardiaceae
<i>Celosia argentea</i> L.	Amaranthaceae	<i>Ancistrocladus heyneanus</i> Wall. ex J.Graham	Ancistrocladaceae
<i>Chenopodium album</i> L.	Amaranthaceae	<i>Annona reticulata</i> L.	Annonaceae
<i>Cyathula prostrata</i> (L.) Blume	Amaranthaceae	<i>Annona squamosa</i> L.	Annonaceae
<i>Cyathula tomentosa</i> (Roth) Moq.	Amaranthaceae	<i>Artabotrys hexapetalus</i> (L.f.) Bhandari	Annonaceae
<i>Dysphania ambrosioides</i> (L.) Mosyakin & Clemants	Amaranthaceae	<i>Miliusa tomentosa</i> (Roxb.) J.Sinclair	Annonaceae
<i>Gomphrena serrata</i> L.	Amaranthaceae	<i>Polyalthia longifolia</i> (Sonn.) Thwaites	Annonaceae
<i>Pupalia lappacea</i> (L.) Juss.	Amaranthaceae	<i>Uvaria narum</i> A.DC.	Annonaceae
<i>Allium cepa</i> L.	Amaryllidaceae	<i>Angelica glauca</i> Edgew.	Apiaceae
<i>Allium sativum</i> L.	Amaryllidaceae	<i>Bunium persicum</i> (Boiss.) B.Fedtsch.	Apiaceae
<i>Crinum asiaticum</i> L.	Amaryllidaceae	<i>Centella asiatica</i> (L.) Urb.	Apiaceae

<i>Chaerophyllum reflexum</i> Aitch.	Apiaceae	<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida	Apocynaceae
<i>Ferula jaeskeana</i> C.B.Clarke	Apiaceae	<i>Cryptostegia grandiflora</i> Roxb. ex R.Br.	Apocynaceae
<i>Heracleum lanatum</i> Michx.	Apiaceae	<i>Cynanchum viminale</i> (L.) L.	Apocynaceae
<i>Narthex asafoetida</i> Falc. ex Lindl.	Apiaceae	<i>Dregea volubilis</i> (L.f.) Benth. ex Hook.f.	Apocynaceae
<i>Oenanthe javanica</i> (Blume) DC.	Apiaceae	<i>Gymnema decaisneanum</i> Wight	Apocynaceae
<i>Peucedanum nagpurensense</i> Prain	Apiaceae	<i>Gymnema sylvestre</i> (Retz.) R.Br. ex Sm.	Apocynaceae
<i>Pimpinella diversifolia</i> DC.	Apiaceae	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult.	Apocynaceae
<i>Allamanda cathartica</i> L.	Apocynaceae	<i>Holarrhena pubescens</i> Wall. ex G.Don	Apocynaceae
<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	<i>Hoya parviflora</i> Wight	Apocynaceae
<i>Alstonia venenata</i> R.Br.	Apocynaceae	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae
<i>Calotropis gigantea</i> (L.) Dryand.	Apocynaceae	<i>Leptadenia reticulata</i> (Retz.) Wight & Arn.	Apocynaceae
<i>Calotropis procera</i> (Aiton) Dryand.	Apocynaceae	<i>Nerium oleander</i> L.	Apocynaceae
<i>Caralluma adscendens</i> (Roxb.) R.Br.	Apocynaceae	<i>Pergularia daemia</i> (Forssk.) Chiov.	Apocynaceae
<i>Caralluma stalagmifera</i> C.E.C.Fisch.	Apocynaceae	<i>Plumeria obtusa</i> L.	Apocynaceae
<i>Carissa carandas</i> L.	Apocynaceae	<i>Plumeria rubra</i> L.	Apocynaceae
<i>Carissa spinarum</i> L.	Apocynaceae	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae
<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	<i>Rauvolfia tetraphylla</i> L.	Apocynaceae
<i>Catharanthus pusillus</i> (Murray) G.Don	Apocynaceae	<i>Sarcostemma acidum</i> (Roxb.) Voigt	Apocynaceae
<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	<i>Secamone emetica</i> (Retz.) R. Br. ex Schult.	Apocynaceae
<i>Ceropegia attenuata</i> Hook.	Apocynaceae	<i>Tabernaemontana alternifolia</i> L.	Apocynaceae
<i>Ceropegia bulbosa</i> Roxb.	Apocynaceae	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Apocynaceae
<i>Ceropegia candelabrum</i> L.	Apocynaceae	<i>Telosma pallida</i> (Roxb.) W. G. Craib	Apocynaceae
<i>Ceropegia vincifolia</i> Hook.	Apocynaceae	<i>Thevetia neriifolia</i> Juss. ex Steud.	Apocynaceae
<i>Chonemorpha fragrans</i> (Moon) Alston	Apocynaceae		

<i>Tylophora asthmatica</i> (L. f.) Wight & Arn.	Apocynaceae	<i>Schefflera hypoleuca</i> (Kurz) Harms	Araliaceae
<i>Tylophora indica</i> (Burm. f.) Merr.	Apocynaceae	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Araliaceae
<i>Tylophora rotundifolia</i> Buch.-Ham. ex Wight	Apocynaceae	<i>Areca catechu</i> L.	Arecaceae
<i>Vallis solanacea</i> (Roth) Kuntze	Apocynaceae	<i>Borassus flabellifer</i> L.	Arecaceae
<i>Wrightia tinctoria</i> R.Br.	Apocynaceae	<i>Caryota urens</i> L.	Arecaceae
<i>Ilex embelioides</i> Hook.f.	Aquifoliaceae	<i>Cocos nucifera</i> L.	Arecaceae
<i>Ilex khasiana</i> Purkay.	Aquifoliaceae	<i>Phoenix acaulis</i> Roxb.	Arecaceae
<i>Alocasia macrorrhizos</i> (L.) G.Don	Araceae	<i>Phoenix dactylifera</i> L.	Arecaceae
<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson	Araceae	<i>Phoenix loureiroi</i> Kunth	Arecaceae
<i>Amorphophallus sylvaticus</i> (Roxb.) Kunth	Araceae	<i>Phoenix pusilla</i> Gaertn.	Arecaceae
<i>Arisaema consanguineum</i> Schott	Araceae	<i>Phoenix sylvestris</i> (L.) Roxb.	Arecaceae
<i>Arisaema jacquemontii</i> Blume	Araceae	<i>Aristolochia bracteolata</i> Lam.	Aristolochiaceae
<i>Arisaema tortuosum</i> (Wall.) Schott	Araceae	<i>Aristolochia indica</i> L.	Aristolochiaceae
<i>Colocasia esculenta</i> (L.) Schott	Araceae	<i>Aristolochia littoralis</i> Parodi	Aristolochiaceae
<i>Lasia spinosa</i> (L.) Thwaites	Araceae	<i>Aristolochia saccata</i> Wall.	Aristolochiaceae
<i>Pothos curtisii</i> Hook.f.	Araceae	<i>Agave americana</i> L.	Asparagaceae
<i>Pothos scandens</i> L.	Araceae	<i>Agave sisalana</i> Perrine	Asparagaceae
<i>Remusatia vivipara</i> (Roxb.) Schott	Araceae	<i>Asparagus adscendens</i> Roxb.	Asparagaceae
<i>Rhaphidophora hookeri</i> Schott	Araceae	<i>Asparagus filicinus</i> Buch.-Ham. ex D.Don	Asparagaceae
<i>Sauromatum venosum</i> (Dryand. ex Aiton) Kunth	Araceae	<i>Asparagus racemosus</i> Willd.	Asparagaceae
<i>Scindapsus officinalis</i> (Roxb.) Schott	Araceae	<i>Chlorophytum borivilianum</i> Santapau & R.R.Fern.	Asparagaceae
<i>Hedera nepalensis</i> K.Koch	Araliaceae	<i>Chlorophytum breviscapum</i> Dalzell	Asparagaceae
<i>Hydrocotyle javanica</i> Thunb.	Araliaceae	<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Asparagaceae
<i>Macropanax undulatus</i> (Wall. ex G.Don) Seem.	Araliaceae		

<i>Drimia indica</i> (Roxb.) Jessop	Asparagaceae	<i>Tecomella undulata</i> (Sm.) Seem.	Bignoniaceae
<i>Furcraea foetida</i> (L.) Haw.	Asparagaceae	<i>Cochlospermum religiosum</i> (L.) Alston	Bixaceae
<i>Ledebouria revoluta</i> (L.f.) Jessop	Asparagaceae	<i>Arnebia benthamii</i> (Wall. ex G.Don)	Boraginaceae
<i>Muscari commutatum</i> Guss.	Asparagaceae	<i>Arnebia euchroma</i> (Royle) I.M.Johnst.	Boraginaceae
<i>Polygonatum cirrhifolium</i> (Wall.) Royle	Asparagaceae	<i>Coldenia procumbens</i> L.	Boraginaceae
<i>Polygonatum verticillatum</i> (L.) All.	Asparagaceae	<i>Cordia dichotoma</i> G.Forst.	Boraginaceae
<i>Sansevieria trifasciata</i> Prain	Asparagaceae	<i>Cordia fragrantissima</i> Kurz	Boraginaceae
<i>Sansevieria roxburghiana</i> Schult. & Schult.f.	Asparagaceae	<i>Cordia grandis</i> Roxb.	Boraginaceae
<i>Impatiens balsamina</i> L.	Balsaminaceae	<i>Cordia macleodii</i> Hook.f. & Thomson	Boraginaceae
<i>Impatiens racemosa</i> DC.	Balsaminaceae	<i>Cordia monoica</i> Roxb.	Boraginaceae
<i>Basella alba</i> L.	Basellaceae	<i>Cordia sinensis</i> Lam.	Boraginaceae
<i>Begonia palmata</i> D.Don	Begoniaceae	<i>Ehretia laevis</i> Roxb.	Boraginaceae
<i>Berberis aristata</i> DC.	Berberidaceae	<i>Ehretia microphylla</i> Lam.	Boraginaceae
<i>Berberis asiatica</i> Roxb. ex DC.	Berberidaceae	<i>Heliotropium bracteatum</i> R.Br.	Boraginaceae
<i>Berberis chitria</i> Buch.-Ham. ex Lindl.	Berberidaceae	<i>Heliotropium indicum</i> L.	Boraginaceae
<i>Berberis jaeschkeana</i> C.K.Schneid.	Berberidaceae	<i>Tournefortia candollei</i> C.B.Clarke	Boraginaceae
<i>Berberis wallichiana</i> DC.	Berberidaceae	<i>Tournefortia montana</i> Lour.	Boraginaceae
<i>Mahonia napaulensis</i> DC.	Berberidaceae	<i>Trichodesma indicum</i> (L.) Lehm.	Boraginaceae
<i>Sinopodophyllum hexandrum</i> (Royle) T.S.Ying	Berberidaceae	<i>Brassica juncea</i> (L.) Czern.	Brassicaceae
<i>Dolichandrone falcata</i> (Wall. ex DC.) Seem.	Bignoniaceae	<i>Cardamine hirsuta</i> L.	Brassicaceae
<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	<i>Lepidium sativum</i> L.	Brassicaceae
<i>Spathodea campanulata</i> P.Beauv.	Bignoniaceae	<i>Boswellia serrata</i> Roxb. ex Colebr.	Burseraceae
<i>Stereospermum chelonoides</i> (L.f.) DC.	Bignoniaceae	<i>Canarium strictum</i> Roxb.	Burseraceae
<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	<i>Commiphora caudata</i> (Wight & Arn.) Engl.	Burseraceae

<i>Sarcococca pruniformis</i> Lindl.	Buxaceae	<i>Carica papaya</i> L.	Caricaceae
<i>Cereus hexagonus</i> (L.) Mill.	Cactaceae	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Caryophyllaceae
<i>Cereus pterogonus</i> Lem.	Cactaceae	<i>Polycarpaea aurea</i> Wight & Arn.	Caryophyllaceae
<i>Opuntia stricta</i> (Haw.) Haw.	Cactaceae	<i>Polycarpaea corymbosa</i> (L.) Lam.	Caryophyllaceae
<i>Mesua ferrea</i> L.	Calophyllaceae	<i>Casuarina equisetifolia</i> L.	Casuarinaceae
<i>Cannabis sativa</i> L.	Cannabaceae	<i>Cassine glauca</i> (Rottb.) Kuntze	Celastraceae
<i>Celtis australis</i> L.	Cannabaceae	<i>Celastrus paniculatus</i> Willd.	Celastraceae
<i>Celtis tetrandra</i> Roxb.	Cannabaceae	<i>Euonymus lawsonii</i> C.B. Clarke ex Prain	Celastraceae
<i>Celtis timorensis</i> Span.	Cannabaceae	<i>Gymnosporia emarginata</i> (Willd.) Thwaites	Celastraceae
<i>Trema orientalis</i> (L.) Blume	Cannabaceae	<i>Gymnosporia heyneana</i> (Roth) M.A. Lawson	Celastraceae
<i>Canna indica</i> L.	Cannaceae	<i>Gymnosporia montana</i> (Roth) Benth.	Celastraceae
<i>Cadaba fruticosa</i> (L.) Druce	Capparaceae	<i>Gymnosporia senegalensis</i> (Lam.) Loes.	Celastraceae
<i>Capparis brevispina</i> DC.	Capparaceae	<i>Reissantia indica</i> (Willd.) N.Hallé	Celastraceae
<i>Capparis decidua</i> (Forssk.) Edgew.	Capparaceae	<i>Calophyllum inophyllum</i> L.	Ciusiaceae
<i>Capparis divaricata</i> Lam.	Capparaceae	<i>Cleome aspera</i> J.Koenig ex DC.	Cleomaceae
<i>Capparis sepiaria</i> L.	Capparaceae	<i>Cleome gynandra</i> L.	Cleomaceae
<i>Capparis spinosa</i> L.	Capparaceae	<i>Cleome rutidosperma</i> var. <i>burmannii</i> (Wight & Arn.) Siddiqui & S.N. Dixit	Cleomaceae
<i>Capparis trifoliata</i> Roxb.	Capparaceae	<i>Cleome viscosa</i> L.	Cleomaceae
<i>Capparis zeylanica</i> L.	Capparaceae	<i>Garcinia cowa</i> Roxb. ex Choisy	Clusiaceae
<i>Crateva adansonii</i> DC.	Capparaceae	<i>Garcinia sopsopia</i> (Buch.-Ham.) Mabb.	Clusiaceae
<i>Crateva nurvala</i> Buch.-Ham.	Capparaceae	<i>Garcinia spicata</i> Hook.f.	Clusiaceae
<i>Crateva religiosa</i> G.Forst.	Capparaceae	<i>Mammea suriga</i> (Buch.-Ham. ex Roxb.) Kosterm.	Clusiaceae
<i>Lonicera japonica</i> Thunb.	Caprifoliaceae	<i>Disporum calcaratum</i> D. Don	Colchicaceae
<i>Valeriana jatamansi</i> Jones	Caprifoliaceae		

<i>Disporum cantoniense</i> (Lour.) Merr.	Colchicaceae	<i>Murdannia pauciflora</i> (G.Brückn.) G.Brückn.	Commelinaceae
<i>Gloriosa superba</i> L.	Colchicaceae	<i>Acanthospermum hispidum</i> DC.	Compositae
<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guillem. & Perr.	Combretaceae	<i>Achillea millefolium</i> L.	Compositae
<i>Combretum albidum</i> G.Don	Combretaceae	<i>Acmella calva</i> (DC.) R.K.Jansen	Compositae
<i>Combretum album</i> Pers.	Combretaceae	<i>Acmella paniculata</i> (Wall. ex DC.) R.K.Jansen	Compositae
<i>Combretum decandrum</i> Jacq.	Combretaceae	<i>Ageratina adenophora</i> (Spreng.) R.M.King & H.Rob.	Compositae
<i>Combretum indicum</i> (L.) DeFilipps	Combretaceae	<i>Ageratum conyzoides</i> (L.) L.	Compositae
<i>Combretum ovalifolium</i> Roxb.	Combretaceae	<i>Ainsliaea aptera</i> DC.	Compositae
<i>Combretum pilosum</i> Roxb. ex G.Don	Combretaceae	<i>Ainsliaea latifolia</i> (D.Don) Sch.Bip.	Compositae
<i>Getonia floribunda</i> Roxb.	Combretaceae	<i>Anaphalis contorta</i> (D.Don) Hook.f.	Compositae
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	<i>Artemisia dracunculus</i> L.	Compositae
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	<i>Artemisia maritima</i> L.	Compositae
<i>Terminalia catappa</i> L.	Combretaceae	<i>Artemisia nilagirica</i> (C.B.Clarke) Pamp.	Compositae
<i>Terminalia chebula</i> Retz.	Combretaceae	<i>Artemisia roxburghiana</i> Wall. ex Besser	Compositae
<i>Terminalia citrina</i> Roxb. ex Fleming	Combretaceae	<i>Artemisia vulgaris</i> L.	Compositae
<i>Terminalia cuneata</i> Roth	Combretaceae	<i>Bidens biternata</i> (Lour.) Merr. & Sherff	Compositae
<i>Terminalia pallida</i> Brandis	Combretaceae	<i>Bidens pilosa</i> L.	Compositae
<i>Terminalia paniculata</i> Roth	Combretaceae	<i>Blainvillea acmella</i> (L.) Philipson	Compositae
<i>Terminalia tomentosa</i> Wight & Arn.	Combretaceae	<i>Blumea axillaris</i> (Lam.) DC.	Compositae
<i>Commelina benghalensis</i> L.	Commelinaceae	<i>Blumea hieracifolia</i> Hayata	Compositae
<i>Commelina clavata</i> C.B.Clarke	Commelinaceae	<i>Blumea lacera</i> (Burm.f.) DC.	Compositae
<i>Cyanotis axillaris</i> (L.) D.Don ex Sweet	Commelinaceae	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Compositae
<i>Cyanotis cristata</i> (L.) D.Don	Commelinaceae	<i>Cirsium verutum</i> (D.Don) Spreng.	Compositae

<i>Cirsium wallichii</i> DC.	Compositae	<i>Sonchus oleraceus</i> (L.) L.	Compositae
<i>Cotula anthemoides</i> L.	Compositae	<i>Sphaeranthus indicus</i> L.	Compositae
<i>Cyanthillium albicans</i> (DC.) H.Rob.	Compositae	<i>Sphagneticola calendulacea</i> (L.) Pruski	Compositae
<i>Cyanthillium cinereum</i> (L.) H.Rob.	Compositae	<i>Spilanthes acmella</i> (L.) L.	Compositae
<i>Dicoma tomentosa</i> Cass.	Compositae	<i>Synedrella nodiflora</i> (L.) Gaertn.	Compositae
<i>Echinops echinatus</i> Roxb.	Compositae	<i>Tagetes erecta</i> L.	Compositae
<i>Eclipta prostrata</i> (L.) L.	Compositae	<i>Taraxacum campylodes</i> G.E.Haglund	Compositae
<i>Elephantopus scaber</i> L.	Compositae	<i>Tridax procumbens</i> (L.) L.	Compositae
<i>Emilia sonchifolia</i> (L.) DC. ex DC.	Compositae	<i>Xanthium strumarium</i> L.	Compositae
<i>Enydra fluctuans</i> DC.	Compositae	<i>Connarus monocarpus</i> L.	Connaraceae
<i>Erigeron trilobus</i> (Decne.) Boiss.	Compositae	<i>Argyreia cuneata</i> Ker Gawl.	Convolvulaceae
<i>Eupatorium cannabinum</i> L.	Compositae	<i>Argyreia kleiniana</i> Raizada	Convolvulaceae
<i>Galinsoga parviflora</i> Cav.	Compositae	<i>Argyreia nervosa</i> (Burm. f.) Bojer	Convolvulaceae
<i>Grangea maderaspatana</i> (L.) Poir.	Compositae	<i>Convolvulus arvensis</i> L.	Convolvulaceae
<i>Gynura cusimbua</i> (D.Don) S.Moore	Compositae	<i>Cuscuta hyalina</i> Roth	Convolvulaceae
<i>Gynura lycopersicifolia</i> DC.	Compositae	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae
<i>Inula cuspidata</i> (Wall. ex DC.) C.B.Clarke	Compositae	<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae
<i>Jurinea dolomiata</i> Boiss.	Compositae	<i>Evolvulus nummularius</i> (L.) L.	Convolvulaceae
<i>Lagascea mollis</i> Cav.	Compositae	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae
<i>Launaea intybacea</i> (Jacq.) Beauverd	Compositae	<i>Ipomoea cairica</i> (L.) Sweet	Convolvulaceae
<i>Mikania micrantha</i> Kunth	Compositae	<i>Ipomoea cheirophylla</i> O'Donell	Convolvulaceae
<i>Parthenium hysterophorus</i> L.	Compositae	<i>Ipomoea hederifolia</i> L.	Convolvulaceae
<i>Pentanema indicum</i> (L.) Ling	Compositae	<i>Ipomoea marginata</i> (Desr.) Verdc.	Convolvulaceae
<i>Saussurea costus</i> (Falc.) Lipsch.	Compositae	<i>Ipomoea mauritiana</i> Jacq.	Convolvulaceae

<i>Ipomoea nil</i> (L.) Roth	Convolvulaceae	<i>Cucumis melo</i> L.	Cucurbitaceae
<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	<i>Cucumis sativus</i> L.	Cucurbitaceae
<i>Ipomoea obtusata</i> Griseb.	Convolvulaceae	<i>Diplocyclos palmatus</i> (L.) C.Jeffrey	Cucurbitaceae
<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	<i>Hodgsonia macrocarpa</i> (Blume) Cogn.	Cucurbitaceae
<i>Ipomoea sumatrana</i> (Miq.) Ooststr.	Convolvulaceae	<i>Lagenaria siceraria</i> (Molina) Standl.	Cucurbitaceae
<i>Merremia emarginata</i> (Burm. f.) Hallier f.	Convolvulaceae	<i>Luffa cylindrica</i> (L.) M.Roem.	Cucurbitaceae
<i>Merremia tridentata</i> (L.) Hallier f.	Convolvulaceae	<i>Momordica charantia</i> L.	Cucurbitaceae
<i>Merremia vitifolia</i> (Burm. f.) Hallier f.	Convolvulaceae	<i>Momordica dioica</i> Roxb. ex Willd.	Cucurbitaceae
<i>Operculina turpethum</i> (L.) Silva Manso	Convolvulaceae	<i>Mukia maderaspatana</i> (L.) M.Roem.	Cucurbitaceae
<i>Rivea hypocrateriformis</i> Choisy	Convolvulaceae	<i>Solena amplexicaulis</i> (Lam.) Gandhi	Cucurbitaceae
<i>Coriaria nepalensis</i> Wall.	Coriariaceae	<i>Trichosanthes cucumerina</i> L.	Cucurbitaceae
<i>Alangium salviifolium</i> (L.f.) Wangerin	Cornaceae	<i>Trichosanthes tricuspidata</i> Lour.	Cucurbitaceae
<i>Alangium chinense</i> (Lour.) Harms	Cornaceae	<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke	Cyperaceae
<i>Cornus capitata</i> Wall.	Cornaceae	<i>Cyperus compressus</i> L.	Cyperaceae
<i>Cornus macrophylla</i> Wall.	Cornaceae	<i>Cyperus difformis</i> L.	Cyperaceae
<i>Cornus oblonga</i> Wall.	Cornaceae	<i>Cyperus rotundus</i> L.	Cyperaceae
<i>Cheilocostus speciosus</i> (J.Koenig)	Costaceae	<i>Cyperus scariosus</i> R.Br.	Cyperaceae
<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	<i>Fimbristylis aestivalis</i> Vahl	Cyperaceae
<i>Rhodiola heterodonta</i> (Hook. f. & Thomson) Boriss.	Crassulaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl	Cyperaceae
<i>Cayaponia laciniosa</i> (L.) C.Jeffrey	Cucurbitaceae	<i>Hypolytrum nemorum</i> (Vahl) Spreng.	Cyperaceae
<i>Citrullus colocynthis</i> (L.) Schrad.	Cucurbitaceae	<i>Rhynchospora colorata</i> (L.) H.Pfeiff.	Cyperaceae
<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	<i>Dillenia indica</i> L.	Dilleniaceae
<i>Corallocarpus epigaeus</i> (Rottler) Hook.f.	Cucurbitaceae	<i>Dillenia pentagyna</i> Roxb.	Dilleniaceae
		<i>Dioscorea alata</i> L.	Dioscoreaceae

<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	<i>Gaultheria fragrantissima</i> Wall.	Ericaceae
<i>Dioscorea deltoidea</i> Wall. ex Griseb.	Dioscoreaceae	<i>Lyonia ovalifolia</i> (Wall.) Drude	Ericaceae
<i>Dioscorea hispida</i> Dennst.	Dioscoreaceae	<i>Rhododendron lepidotum</i> Wall. ex G. Don	Ericaceae
<i>Dioscorea oppositiflora</i> Griseb.	Dioscoreaceae	<i>Rhododendron anthopogon</i> D. Don	Ericaceae
<i>Dioscorea pentaphylla</i> L.	Dioscoreaceae	<i>Rhododendron arboreum</i> Sm.	Ericaceae
<i>Dioscorea pubera</i> Blume	Dioscoreaceae	<i>Rhododendron campanulatum</i> D. Don	Ericaceae
<i>Dioscorea wallichii</i> Hook.f.	Dioscoreaceae	<i>Erythroxylum kunthianum</i> Kurz	Erythroxylaceae
<i>Tacca leontopetaloides</i> (L.) Kuntze	Dioscoreaceae	<i>Erythroxylum monogynum</i> Roxb.	Erythroxylaceae
<i>Hopea parviflora</i> Bedd.	Dipterocarpaceae	<i>Acalypha alnifolia</i> Klein ex Willd.	Euphorbiaceae
<i>Shorea robusta</i> Gaertn.	Dipterocarpaceae	<i>Acalypha fruticosa</i> Forssk.	Euphorbiaceae
<i>Shorea roxburghii</i> G. Don	Dipterocarpaceae	<i>Acalypha indica</i> L.	Euphorbiaceae
<i>Shorea tumbuggaia</i> Roxb.	Dipterocarpaceae	<i>Croton bonplandianus</i> Baill.	Euphorbiaceae
<i>Vateria indica</i> L.	Dipterocarpaceae	<i>Croton caudatus</i> Geiseler	Euphorbiaceae
<i>Diospyros ebenum</i> J. Koenig ex Retz.	Ebenaceae	<i>Euphorbia antiquorum</i> L.	Euphorbiaceae
<i>Diospyros malabarica</i> (Desr.) Kostel.	Ebenaceae	<i>Euphorbia fusiformis</i> Buch.-Ham. ex D. Don	Euphorbiaceae
<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	<i>Euphorbia hirta</i> L.	Euphorbiaceae
<i>Diospyros montana</i> Roxb.	Ebenaceae	<i>Euphorbia indica</i> Lam.	Euphorbiaceae
<i>Diospyros pilosiuscula</i> G. Don	Ebenaceae	<i>Euphorbia neriifolia</i> L.	Euphorbiaceae
<i>Diospyros vera</i> (Lour.) A. Chev.	Ebenaceae	<i>Euphorbia pilosa</i> L.	Euphorbiaceae
<i>Elaeagnus rhamnoides</i> (L.) A. Nelson	Elaeagnaceae	<i>Euphorbia tirucalli</i> L.	Euphorbiaceae
<i>Hippophae salicifolia</i> D. Don	Elaeagnaceae	<i>Euphorbia tortilis</i> Rottler ex Ainslie	Euphorbiaceae
<i>Elaeocarpus tuberculatus</i> Roxb.	Elaeocarpaceae	<i>Euphorbia trigona</i> Mill.	Euphorbiaceae
<i>Agapetes auriculata</i> (Griff.) Benth. & Hook.f.	Ericaceae	<i>Excoecaria agallocha</i> L.	Euphorbiaceae
<i>Agapetes variegata</i> (Roxb.) D. Don ex G. Don	Ericaceae	<i>Givotia moluccana</i> (L.) Sreem.	Euphorbiaceae

<i>Hevea brasiliensis</i> (Willd. ex A.Juss.)	Euphorbiaceae	<i>Geranium wallichianum</i> D.Don ex Sweet	Geraniaceae
<i>Homonoia riparia</i> Lour.	Euphorbiaceae	<i>Aeschynanthus superbus</i> C.B.Clarke	Gesneriaceae
<i>Jatropha curcas</i> L.	Euphorbiaceae	<i>Aeschynomene aspera</i> L.	Gesneriaceae
<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	<i>Corylopsis himalayana</i> Griff.	Hamamelidaceae
<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	<i>Gyrocarpus americanus</i> Jacq.	Hernandiaceae
<i>Macaranga peltata</i> (Roxb.) Müll.Arg.	Euphorbiaceae	<i>Hypericum oblongifolium</i> Choisy	Hypericaceae
<i>Mallotus philippensis</i> (Lam.) Müll.Arg.	Euphorbiaceae	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae
<i>Mallotus repandus</i> (Willd.) Müll.Arg.	Euphorbiaceae	<i>Nothapodytes nimmoniana</i> (J.Graham) Mabb.	Icacinaceae
<i>Microstachys chamaelea</i> (L.) Müll.Arg.	Euphorbiaceae	<i>Engelhardtia spicata</i> Lechen ex Blume	Juglandaceae
<i>Ricinus communis</i> L.	Euphorbiaceae	<i>Juglans regia</i> L.	Juglandaceae
<i>Tragia involucrata</i> L.	Euphorbiaceae	<i>Ajuga integrifolia</i> Buch.-Ham.	Lamiaceae
<i>Tragia plukenetii</i> Radcl.-Sm.	Euphorbiaceae	<i>Anisochilus carnosus</i> (L.f.) Wall.	Lamiaceae
<i>Quercus oblongata</i> D.Don	Fagaceae	<i>Anisomeles indica</i> (L.) Kuntze	Lamiaceae
<i>Quercus semecarpifolia</i> Sm.	Fagaceae	<i>Anisomeles malabarica</i> (L.) R.Br. ex Sims	Lamiaceae
<i>Quercus serrata</i> Murray	Fagaceae	<i>Basilicum polystachyon</i> (L.) Moench	Lamiaceae
<i>Canscora alata</i> (Roth) Wall.	Gentianaceae	<i>Callicarpa arborea</i> Roxb.	Lamiaceae
<i>Canscora diffusa</i> (Vahl) R.Br. ex Roem. & Schult.	Gentianaceae	<i>Callicarpa macrophylla</i> Vahl	Lamiaceae
<i>Enicostema axillare</i> (Poir. ex Lam.) A.Raynal	Gentianaceae	<i>Clerodendrum chinense</i> (Osbeck) Mabb.	Lamiaceae
<i>Gentiana kurroo</i> Royle	Gentianaceae	<i>Clerodendrum cordatum</i> D.Don	Lamiaceae
<i>Swertia angustifolia</i> Buch.-Ham. ex D. Don	Gentianaceae	<i>Clerodendrum infortunatum</i> L.	Lamiaceae
<i>Swertia chirayita</i> (Roxb.) Buch.-Ham. ex C.B.Clarke	Gentianaceae	<i>Clerodendrum paniculatum</i> L.	Lamiaceae
<i>Swertia cordata</i> (Wall. ex G. Don) C.B. Clarke	Gentianaceae	<i>Clerodendrum phlomidis</i> L.f.	Lamiaceae
<i>Geranium mascatense</i> Boiss.	Geraniaceae	<i>Clerodendrum volubile</i> P.Beauv.	Lamiaceae
		<i>Colebrookea oppositifolia</i> Sm.	Lamiaceae

<i>Gmelina arborea</i> Roxb.	Lamiaceae	<i>Premna serratifolia</i> L.	Lamiaceae
<i>Gmelina asiatica</i> L.	Lamiaceae	<i>Premna tomentosa</i> Willd.	Lamiaceae
<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	<i>Rothea serrata</i> (L.) Steane & Mabb.	Lamiaceae
<i>Hyssopus officinalis</i> L.	Lamiaceae	<i>Salvia nubicola</i> Wall. ex Sweet	Lamiaceae
<i>Lavandula bipinnata</i> (Roth) Kuntze	Lamiaceae	<i>Scutellaria discolor</i> Colebr.	Lamiaceae
<i>Leonotis nepetifolia</i> (L.) R.Br.	Lamiaceae	<i>Symphorema involucratum</i> Roxb.	Lamiaceae
<i>Leonurus sibiricus</i> L.	Lamiaceae	<i>Symphorema polyandrum</i> Wight	Lamiaceae
<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	<i>Tectona grandis</i> L.f.	Lamiaceae
<i>Leucas biflora</i> (Vahl) Sm.	Lamiaceae	<i>Thymus mongolicus</i> (Ronniger) Ronniger	Lamiaceae
<i>Leucas cephalotes</i> (Roth) Spreng.	Lamiaceae	<i>Thymus vulgaris</i> L.	Lamiaceae
<i>Leucas lanata</i> Benth.	Lamiaceae	<i>Vitex altissima</i> L.f.	Lamiaceae
<i>Leucas zeylanica</i> (L.) W.T.Aiton	Lamiaceae	<i>Vitex leucoxydon</i> L.f.	Lamiaceae
<i>Mentha arvensis</i> L.	Lamiaceae	<i>Vitex negundo</i> L.	Lamiaceae
<i>Ocimum americanum</i> L.	Lamiaceae	<i>Vitex parviflora</i> A.Juss.	Lamiaceae
<i>Ocimum basilicum</i> L.	Lamiaceae	<i>Vitex trifolia</i> L.	Lamiaceae
<i>Ocimum gratissimum</i> L.	Lamiaceae	<i>Volkameria inermis</i> L.	Lamiaceae
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	<i>Actinodaphne madraspatana</i> Bedd. ex Hook.f.	Lauraceae
<i>Origanum vulgare</i> L.	Lamiaceae	<i>Alseodaphne semecarpifolia</i> Nees	Lauraceae
<i>Orthosiphon thymiflorus</i> (Roth) Sleesen	Lamiaceae	<i>Cassytha filiformis</i> L.	Lauraceae
<i>Pogostemon myosuroides</i> (Roth) Kuntze	Lamiaceae	<i>Cinnamomum curvifolium</i> (Lam.) Nees	Lauraceae
<i>Pogostemon parviflorus</i> Benth.	Lamiaceae	<i>Cinnamomum glanduliferum</i> (Wall.) Meisn.	Lauraceae
<i>Pogostemon purpurascens</i> Dalzell	Lamiaceae	<i>Cinnamomum tamala</i> (Buch.-Ham.) T.Nees & Eberm.	Lauraceae
<i>Pogostemon quadrifolius</i> (Benth.) F.Muell.	Lamiaceae	<i>Cinnamomum verum</i> J.Presl	Lauraceae
<i>Premna mollissima</i> Roth	Lamiaceae		

<i>Cryptocarya amygdalina</i> Nees	Lauraceae	<i>Acacia nilotica</i> (L.) Delile	Leguminosae
<i>Lindera latifolia</i> Hook. f.	Lauraceae	<i>Acacia polyacantha</i> Willd.	Leguminosae
<i>Lindera pulcherrima</i> (Nees) Hook. f.	Lauraceae	<i>Acacia sinuata</i> (Lour.) Merr.	Leguminosae
<i>Litsea cubeba</i> (Lour.) Pers.	Lauraceae	<i>Acacia torta</i> (Roxb.) Craib	Leguminosae
<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	Lauraceae	<i>Adenantha pavonina</i> L.	Leguminosae
<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	<i>Albizia amara</i> (Roxb.) B.Boivin	Leguminosae
<i>Litsea salicifolia</i> (J. Roxb. ex Nees) Hook. f.	Lauraceae	<i>Albizia chinensis</i> (Osbeck) Merr.	Leguminosae
<i>Machilus duthiei</i> King	Lauraceae	<i>Albizia lebeck</i> (L.) Benth.	Leguminosae
<i>Machilus gamblei</i> King ex Hook. f.	Lauraceae	<i>Albizia odoratissima</i> (L.f.) Benth.	Leguminosae
<i>Persea gamblei</i> (King ex Hook. f.) Kosterm.	Lauraceae	<i>Albizia procera</i> (Roxb.) Benth.	Leguminosae
<i>Phoebe attenuata</i> (Nees) Nees	Lauraceae	<i>Alysicarpus monilifer</i> (L.) DC.	Leguminosae
<i>Barringtonia acutangula</i> (L.) Gaertn.	Lecythidaceae	<i>Astragalus rhizanthus</i> Benth.	Leguminosae
<i>Careya arborea</i> Roxb.	Lecythidaceae	<i>Bauhinia acuminata</i> L.	Leguminosae
<i>Careya herbacea</i> Roxb.	Lecythidaceae	<i>Bauhinia malabarica</i> Roxb.	Leguminosae
<i>Couropita guianensis</i> Aubl.	Lecythidaceae	<i>Bauhinia purpurea</i> L.	Leguminosae
<i>Abrus precatorius</i> L.	Leguminosae	<i>Bauhinia racemosa</i> Lam.	Leguminosae
<i>Abrus pulchellus</i> Thwaites	Leguminosae	<i>Bauhinia vahlii</i> Wight & Arn.	Leguminosae
<i>Acacia caesia</i> (L.) Willd.	Leguminosae	<i>Bauhinia variegata</i> L.	Leguminosae
<i>Acacia catechu</i> (L.f.) Willd.	Leguminosae	<i>Butea monosperma</i> (Lam.) Taub.	Leguminosae
<i>Acacia chundra</i> (Rottler) Willd.	Leguminosae	<i>Butea superba</i> Roxb.	Leguminosae
<i>Acacia farnesiana</i> (L.) Willd.	Leguminosae	<i>Caesalpinia bonduc</i> (L.) Roxb.	Leguminosae
<i>Acacia ferruginea</i> DC.	Leguminosae	<i>Caesalpinia crista</i> L.	Leguminosae
<i>Acacia intsia</i> (L.) Willd.	Leguminosae	<i>Caesalpinia decapetala</i> (Roth) Alston	Leguminosae
<i>Acacia leucophloea</i> (Roxb.) Willd.	Leguminosae	<i>Caesalpinia globulorum</i> Bakh.f. & P.Royen	Leguminosae

<i>Caesalpinia pulcherrima</i> (L.) Sw.	Leguminosae	<i>Dalbergia latifolia</i> Roxb.	Leguminosae
<i>Cajanus cajan</i> (L.) Millsp.	Leguminosae	<i>Dalbergia sissoo</i> DC.	Leguminosae
<i>Cajanus crassus</i> (King) Maesen	Leguminosae	<i>Delonix elata</i> (L.) Gamble	Leguminosae
<i>Cajanus scarabaeoides</i> (L.) Thouars	Leguminosae	<i>Delonix regia</i> (Hook.) Raf.	Leguminosae
<i>Cassia bakeriana</i> Craib	Leguminosae	<i>Derris scandens</i> (Roxb.) Benth.	Leguminosae
<i>Cassia fistula</i> L.	Leguminosae	<i>Desmodium elegans</i> DC.	Leguminosae
<i>Senna montana</i> (Roth) V.Singh	Leguminosae	<i>Desmodium gangeticum</i> (L.) DC.	Leguminosae
<i>Centrosema coriaceum</i> Benth.	Leguminosae	<i>Desmodium heterocarpon</i> (L.) DC.	Leguminosae
<i>Chamaecrista absus</i> (L.) H.S.Irwin & Barneby	Leguminosae	<i>Desmodium oojeinense</i> (Roxb.) H. Ohashi	Leguminosae
<i>Chamaecrista mimosoides</i> (L.) Greene	Leguminosae	<i>Desmodium scorpiurus</i> (Sw.) Desv.	Leguminosae
<i>Clitoria ternatea</i> L.	Leguminosae	<i>Desmodium triflorum</i> (L.) DC.	Leguminosae
<i>Codariocalyx motorius</i> (Houtt.) H. Ohashi	Leguminosae	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	Leguminosae
<i>Crotalaria albida</i> Roth	Leguminosae	<i>Entada gigas</i> (L.) Fawc. & Rendle	Leguminosae
<i>Crotalaria pallida</i> Aiton	Leguminosae	<i>Entada phaseoloides</i> (L.) Merr.	Leguminosae
<i>Crotalaria prostrata</i> Willd.	Leguminosae	<i>Entada rheedii</i> Spreng.	Leguminosae
<i>Crotalaria ramosissima</i> Roxb.	Leguminosae	<i>Eriosema himalaicum</i> H. Ohashi	Leguminosae
<i>Crotalaria retusa</i> L.	Leguminosae	<i>Erythrina stricta</i> Roxb.	Leguminosae
<i>Crotalaria spectabilis</i> Roth	Leguminosae	<i>Erythrina suberosa</i> Roxb.	Leguminosae
<i>Crotalaria verrucosa</i> L.	Leguminosae	<i>Erythrina variegata</i> L.	Leguminosae
<i>Cullen corylifolium</i> (L.) Medik.	Leguminosae	<i>Flemingia macrophylla</i> (Willd.) Merr.	Leguminosae
<i>Dalbergia candenatensis</i> (Dennst.) Prain	Leguminosae	<i>Flemingia semialata</i> Roxb.	Leguminosae
<i>Dalbergia lanceolaria</i> L.f.	Leguminosae	<i>Flemingia strobilifera</i> (L.) W.T.Aiton	Leguminosae
<i>Dalbergia lanceolaria</i> subsp. <i>paniculata</i> (Roxb.) Thoth	Leguminosae	<i>Gliricidia sepium</i> (Jacq.) Walp.	Leguminosae
		<i>Indigofera aspalathoides</i> DC.	Leguminosae

<i>Indigofera endecaphylla</i> Jacq. ex Poir.	Leguminosae	<i>Pueraria phaseoloides</i> (Roxb.) Benth.	Leguminosae
<i>Indigofera hirsuta</i> L.	Leguminosae	<i>Pueraria tuberosa</i> (Willd.) DC.	Leguminosae
<i>Indigofera linnaei</i> Ali	Leguminosae	<i>Rhynchosia beddomei</i> Baker	Leguminosae
<i>Indigofera mysorensis</i> DC.	Leguminosae	<i>Rhynchosia cana</i> (Willd.) DC.	Leguminosae
<i>Indigofera oblongifolia</i> Forssk.	Leguminosae	<i>Rhynchosia minima</i> (L.) DC.	Leguminosae
<i>Indigofera tinctoria</i> L.	Leguminosae	<i>Saraca asoca</i> (Roxb.) Willd.	Leguminosae
<i>Indigofera trita</i> L.f.	Leguminosae	<i>Saraca indica</i> L.	Leguminosae
<i>Kingiodendron pinnatum</i> (DC.) Harms	Leguminosae	<i>Senna alata</i> (L.) Roxb.	Leguminosae
<i>Leucaena leucocephala</i> (Lam.) de Wit	Leguminosae	<i>Senna alexandrina</i> Mill.	Leguminosae
<i>Mimosa hamata</i> Willd.	Leguminosae	<i>Senna auriculata</i> (L.) Roxb.	Leguminosae
<i>Mimosa pudica</i> L.	Leguminosae	<i>Senna occidentalis</i> (L.) Link	Leguminosae
<i>Mimosa rubicaulis</i> Lam.	Leguminosae	<i>Senna siamea</i> (Lam.) H.S.Irwin & Barneby	Leguminosae
<i>Mucuna gigantea</i> (Willd.) DC.	Leguminosae	<i>Senna sophera</i> (L.) Roxb.	Leguminosae
<i>Mucuna pruriens</i> (L.) DC.	Leguminosae	<i>Senna tora</i> (L.) Roxb.	Leguminosae
<i>Parkia timoriana</i> (DC.) Merr.	Leguminosae	<i>Sesbania grandiflora</i> (L.) Pers.	Leguminosae
<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	Leguminosae	<i>Sesbania sesban</i> (L.) Merr.	Leguminosae
<i>Pithecellobium dulce</i> (Roxb.) Benth.	Leguminosae	<i>Tadehagi triquetrum</i> (L.) H.Ohashi	Leguminosae
<i>Pongamia pinnata</i> (L.) Pierre	Leguminosae	<i>Tamarindus indica</i> L.	Leguminosae
<i>Prosopis chilensis</i> (Molina) Stuntz	Leguminosae	<i>Tephrosia purpurea</i> (L.) Pers.	Leguminosae
<i>Prosopis cineraria</i> (L.) Druce	Leguminosae	<i>Tephrosia tinctoria</i> Pers.	Leguminosae
<i>Pseudarthria viscida</i> (L.) Wight & Arn.	Leguminosae	<i>Tephrosia villosa</i> (L.) Pers.	Leguminosae
<i>Pterocarpus marsupium</i> Roxb.	Leguminosae	<i>Teramnus labialis</i> (L.f.) Spreng.	Leguminosae
<i>Pterolobium hexapetalum</i> (Roth) Santapau & Wagh	Leguminosae	<i>Trigonella foenum-graecum</i> L.	Leguminosae
		<i>Uria lagopodoides</i> (L.) DC.	Leguminosae

<i>Uraria picta</i> (Jacq.) DC.	Leguminosae	<i>Punica granatum</i> L.	Lythraceae
<i>Vigna aconitifolia</i> (Jacq.) Marechal	Leguminosae	<i>Woodfordia fruticosa</i> (L.) Kurz	Lythraceae
<i>Vigna radiata</i> (L.) R.Wilczek	Leguminosae	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae
<i>Zornia diphylla</i> (L.) Pers.	Leguminosae	<i>Hiptage benghalensis</i> (L.) Kurz	Malpighiaceae
<i>Zornia gibbosa</i> Span.	Leguminosae	<i>Abelmoschus manihot</i> (L.) Medik.	Malvaceae
<i>Fritillaria cirrhosa</i> D.Don	Liliaceae	<i>Abroma augusta</i> (L.) L.f.	Malvaceae
<i>Hugonia serrata</i> Lam.	Linaceae	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae
<i>Reinwardtia indica</i> Dumort.	Linaceae	<i>Abutilon pannosum</i> (G.Forst.) Schldl.	Malvaceae
<i>Lindernia ciliata</i> (Colsm.) Pennell	Linderniaceae	<i>Bombax ceiba</i> L.	Malvaceae
<i>Lindernia crustacea</i> (L.) F.Muell.	Linderniaceae	<i>Byttneria herbacea</i> Roxb.	Malvaceae
<i>Mitreola petiolata</i> (J.F.Gmel.) Torr. & A.Gray	Loganiaceae	<i>Ceiba pentandra</i> (L.) Gaertn.	Malvaceae
<i>Spigelia anthelmia</i> L.	Loganiaceae	<i>Corchorus aestuans</i> L.	Malvaceae
<i>Strychnos colubrina</i> L.	Loganiaceae	<i>Corchorus capsularis</i> L.	Malvaceae
<i>Strychnos dalzellii</i> C.B.Clarke	Loganiaceae	<i>Corchorus trilocularis</i> L.	Malvaceae
<i>Strychnos nux-vomica</i> L.	Loganiaceae	<i>Firmiana simplex</i> (L.) W.Wight	Malvaceae
<i>Strychnos potatorum</i> L.f.	Loganiaceae	<i>Grewia carpinifolia</i> Juss.	Malvaceae
<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	Loranthaceae	<i>Grewia flavescens</i> Juss.	Malvaceae
<i>Helixanthera ligustrina</i> (Wall.) Danser	Loranthaceae	<i>Grewia hirsuta</i> Vahl	Malvaceae
<i>Loranthus longiflorus</i> Desr.	Loranthaceae	<i>Grewia multiflora</i> Juss.	Malvaceae
<i>Taxillus tomentosus</i> Tiegh.	Loranthaceae	<i>Grewia nervosa</i> (Lour.) Panigrahi	Malvaceae
<i>Ammannia baccifera</i> L.	Lythraceae	<i>Grewia optiva</i> J.R.Drumm. ex Burret	Malvaceae
<i>Lagerstroemia parviflora</i> Roxb.	Lythraceae	<i>Grewia tiliifolia</i> Vahl	Malvaceae
<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	<i>Guazuma ulmifolia</i> Lam.	Malvaceae
<i>Lawsonia inermis</i> L.	Lythraceae	<i>Helicteres isora</i> L.	Malvaceae

<i>Herissantia crispa</i> (L.) Brizicky	Malvaceae	<i>Triumfetta rhomboidea</i> Jacq.	Malvaceae
<i>Hibiscus hispidissimus</i> Griff.	Malvaceae	<i>Triumfetta rotundifolia</i> Lam.	Malvaceae
<i>Hibiscus mutabilis</i> L.	Malvaceae	<i>Urena lobata</i> L.	Malvaceae
<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	<i>Waltheria indica</i> L.	Malvaceae
<i>Hibiscus sabdariffa</i> L.	Malvaceae	<i>Manilkara hexandra</i> (Roxb.) Dubard	Martyniaceae
<i>Hibiscus vitifolius</i> L.	Malvaceae	<i>Martynia annua</i> L.	Martyniaceae
<i>Kleinhovia hospita</i> L.	Malvaceae	<i>Paris polyphylla</i> Sm.	Melanthiaceae
<i>Kydia calycina</i> Roxb.	Malvaceae	<i>Melastoma malabathricum</i> L.	Melastomataceae
<i>Melochia corchorifolia</i> L.	Malvaceae	<i>Memecylon edule</i> Roxb.	Melastomataceae
<i>Pavonia zeylanica</i> (L.) Cav.	Malvaceae	<i>Memecylon randerianum</i> S.M.Almeida & M.R.Almeida	Melastomataceae
<i>Pterospermum acerifolium</i> (L.) Willd.	Malvaceae	<i>Memecylon umbellatum</i> Burm. f.	Melastomataceae
<i>Pterospermum canescens</i> Roxb.	Malvaceae	<i>Osbeckia capitata</i> Benth. ex Naudin	Melastomataceae
<i>Pterospermum xylocarpum</i> (Gaertn.) Santapau & Wagh	Malvaceae	<i>Osbeckia chinensis</i> L.	Melastomataceae
<i>Sida acuta</i> Burm.f.	Malvaceae	<i>Osbeckia muralis</i> Naudin	Melastomataceae
<i>Sida cordata</i> (Burm.f.) Borss.Waalk.	Malvaceae	<i>Osbeckia stellata</i> Buch.-Ham. ex Ker Gawl.	Melastomataceae
<i>Sida cordifolia</i> L.	Malvaceae	<i>Aglaia elaeagnoidea</i> (A.Juss.) Benth.	Meliaceae
<i>Sida rhombifolia</i> L.	Malvaceae	<i>Aphanamixis polystachya</i> (Wall.) R.Parker	Meliaceae
<i>Sterculia coccinea</i> Roxb.	Malvaceae	<i>Azadirachta indica</i> A.Juss.	Meliaceae
<i>Sterculia guttata</i> Roxb. ex G.Don	Malvaceae	<i>Chukrasia tabularis</i> A.Juss.	Meliaceae
<i>Sterculia villosa</i> Roxb.	Malvaceae	<i>Cipadessa baccifera</i> (Roth) Miq.	Meliaceae
<i>Thespesia lampas</i> (Cav.) Dalzell	Malvaceae	<i>Dysoxylum excelsum</i> Blume	Meliaceae
<i>Thespesia populnea</i> (L.) Sol. ex Corrêa	Malvaceae	<i>Dysoxylum gotadhora</i> (Buch.-Ham.) Mabb.	Meliaceae
<i>Triumfetta pilosa</i> Roth	Malvaceae	<i>Dysoxylum mollissimum</i> Blume	Meliaceae

<i>Melia azedarach</i> L.	Meliaceae	<i>Ficus benghalensis</i> L.	Moraceae
<i>Naregamia alata</i> Wight & Arn.	Meliaceae	<i>Ficus benjamina</i> L.	Moraceae
<i>Soymida febrifuga</i> (Roxb.) A. Juss.	Meliaceae	<i>Ficus hispida</i> L.f.	Moraceae
<i>Toona ciliata</i> M.Roem.	Meliaceae	<i>Ficus microcarpa</i> L.f.	Moraceae
<i>Cissampelos pareira</i> L.	Menispermaceae	<i>Ficus mollis</i> Vahl	Moraceae
<i>Cocculus hirsutus</i> (L.) W.Theob	Menispermaceae	<i>Ficus nervosa</i> B.Heyne ex Roth	Moraceae
<i>Cyclea peltata</i> (Lam.) Hook.f. & Thomson	Menispermaceae	<i>Ficus palmata</i> Forssk.	Moraceae
<i>Pachygone ovata</i> (Poir.) Diels	Menispermaceae	<i>Ficus racemosa</i> L.	Moraceae
<i>Pericampylus glaucus</i> (Lam.) Merr.	Menispermaceae	<i>Ficus religiosa</i> L.	Moraceae
<i>Stephania hernandiifolia</i> (Willd.) Walp.	Menispermaceae	<i>Ficus semicordata</i> Buch.-Ham. ex Sm.	Moraceae
<i>Stephania japonica</i> (Thunb.) Miers	Menispermaceae	<i>Ficus virens</i> Aiton	Moraceae
<i>Stephania glabra</i> (Roxb.) Miers	Menispermaceae	<i>Morus alba</i> L.	Moraceae
<i>Tiliacora racemosa</i> Colebr.	Menispermaceae	<i>Plecosperrum spinosum</i> Trécul	Moraceae
<i>Tinospora sinensis</i> (Lour.) Merr.	Menispermaceae	<i>Streblus asper</i> Lour.	Moraceae
<i>Glinus oppositifolius</i> (L.) Aug.DC.	Molluginaceae	<i>Moringa concanensis</i> Nimmo	Moringaceae
<i>Mollugo pentaphylla</i> L.	Molluginaceae	<i>Moringa oleifera</i> Lam.	Moringaceae
<i>Antiaris toxicaria</i> Lesch.	Moraceae	<i>Ensete superbum</i> (Roxb.) Cheesman	Musaceae
<i>Artocarpus heterophyllus</i> Lam.	Moraceae	<i>Musa acuminata</i> Colla	Musaceae
<i>Artocarpus hirsutus</i> Lam.	Moraceae	<i>Musa balbisiana</i> Colla	Musaceae
<i>Artocarpus rigidus</i> Blume	Moraceae	<i>Musa x paradisiaca</i> L.	Musaceae
<i>Artocarpus lacucha</i> Buch.-Ham.	Moraceae	<i>Myrcia bracteata</i> (Rich.) DC.	Myricaceae
<i>Ficus amplissima</i> Sm.	Moraceae	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don	Myricaceae
<i>Ficus arnottiana</i> (Miq.) Miq.	Moraceae	<i>Knema attenuata</i> Warb.	Myristicaceae
<i>Ficus auriculata</i> Lour.	Moraceae	<i>Knema latifolia</i> Warb.	Myristicaceae

<i>Myristica beddomei</i> King	Myristicaceae	<i>Ximenia americana</i> L.	Oleaceae
<i>Myristica fragrans</i> Houtt.	Myristicaceae	<i>Chionanthus zeylanicus</i> L.	Oleaceae
<i>Myristica malabarica</i> Lam.	Myristicaceae	<i>Fraxinus micrantha</i> Lingelsh.	Oleaceae
<i>Corymbia citriodora</i> (Hook.) K.D.Hill & L.A.S.Johnson	Myrtaceae	<i>Jasminum angustifolium</i> (L.) Willd.	Oleaceae
<i>Corymbia maculata</i> (Hook.) K.D.Hill & L.A.S.Johnson	Myrtaceae	<i>Jasminum arborescens</i> Roxb.	Oleaceae
<i>Eucalyptus globulus</i> Labill.	Myrtaceae	<i>Jasminum auriculatum</i> Vahl	Oleaceae
<i>Eucalyptus tereticornis</i> Sm.	Myrtaceae	<i>Jasminum grandiflorum</i> L.	Oleaceae
<i>Psidium guajava</i> L.	Myrtaceae	<i>Jasminum humile</i> L.	Oleaceae
<i>Syzygium alternifolium</i> (Wight) Walp.	Myrtaceae	<i>Jasminum lanceolarium</i> Roxb.	Oleaceae
<i>Syzygium caryophyllatum</i> (L.) Alston	Myrtaceae	<i>Jasminum multiflorum</i> (Burm.f.) Andrews	Oleaceae
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	<i>Myxopyrum smilacifolium</i> (Wall.) Blume	Oleaceae
<i>Syzygium formosum</i> (Wall.) Masam.	Myrtaceae	<i>Nyctanthes arbor-tristis</i> L.	Oleaceae
<i>Syzygium jambos</i> (L.) Alston	Myrtaceae	<i>Olea dioica</i> Roxb.	Oleaceae
<i>Syzygium salicifolium</i> (Wight) J.Graham	Myrtaceae	<i>Schrebera swietenoides</i> Roxb.	Oleaceae
<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	<i>Ludwigia adscendens</i> (L.) H.Hara	Onagraceae
<i>Boerhavia diffusa</i> L.	Nyctaginaceae	<i>Ludwigia hyssopifolia</i> (G.Don) Exell	Onagraceae
<i>Mirabilis jalapa</i> L.	Nyctaginaceae	<i>Cansjera rheedei</i> J.F.Gmel.	Opiliaceae
<i>Pisonia aculeata</i> L.	Nyctaginaceae	<i>Crepidium acuminatum</i> (D.Don) Szlach.	Orchidaceae
<i>Gomphia serrata</i> (Gaertn.) Kanis	Ochnaceae	<i>Habenaria digitata</i> Lindl.	Orchidaceae
<i>Ochna obtusata</i> DC.	Ochnaceae	<i>Habenaria furcifera</i> Lindl.	Orchidaceae
<i>Anacolosa crassipes</i> (Kurz) Kurz	Oleaceae	<i>Habenaria marginata</i> Colebr.	Orchidaceae
<i>Olax acuminata</i> Wall. ex Benth.	Oleaceae	<i>Habenaria grandifloriformis</i> Blatt. & McCann	Orchidaceae
<i>Olax scandens</i> Roxb.	Oleaceae	<i>Vanda tessellata</i> (Roxb.) Hook. ex G.Don	Orchidaceae
		<i>Vanda testacea</i> (Lindl.) Rchb.f.	Orchidaceae

<i>Striga angustifolia</i> (D. Don) C.J. Saldanha	Orobanchaceae	<i>Embelia tsjeriam-cottam</i> (Roem. & Schult.) A.DC.	Phyllanthaceae
<i>Striga asiatica</i> (L.) Kuntze	Orobanchaceae	<i>Flueggea leucopyrus</i> Willd.	Phyllanthaceae
<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch	Oxalidaceae	<i>Flueggea virosa</i> (Roxb. ex Willd.) Royle	Phyllanthaceae
<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae	<i>Glochidion ellipticum</i> Wight	Phyllanthaceae
<i>Oxalis corniculata</i> L.	Oxalidaceae	<i>Glochidion heyneanum</i> (Wight & Arn.) Wight	Phyllanthaceae
<i>Oxalis latifolia</i> Kunth	Oxalidaceae	<i>Glochidion lanceolarium</i> (Roxb.) Voigt	Phyllanthaceae
<i>Pandanus odorifer</i> (Forssk.) Kuntze	Pandanaceae	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae
<i>Argemone mexicana</i> L.	Papaveraceae	<i>Phyllanthus debilis</i> Klein ex Willd.	Phyllanthaceae
<i>Meconopsis aculeata</i> Royle	Papaveraceae	<i>Phyllanthus emblica</i> L.	Phyllanthaceae
<i>Passiflora foetida</i> L.	Passifloraceae	<i>Phyllanthus fraternus</i> G.L.Webster	Phyllanthaceae
<i>Pedaliium murex</i> L.	Pedaliaceae	<i>Phyllanthus maderaspatensis</i> L.	Phyllanthaceae
<i>Eurya acuminata</i> DC.	Pentaphylacaceae	<i>Phyllanthus niruri</i> L.	Phyllanthaceae
<i>Eurya japonica</i> Thunb.	Pentaphylacaceae	<i>Phyllanthus parvifolius</i> Buch.-Ham. ex D.Don	Phyllanthaceae
<i>Antidesma acidum</i> Retz.	Phyllanthaceae	<i>Phyllanthus polyphyllus</i> Willd.	Phyllanthaceae
<i>Aporosa octandra</i> (Buch.-Ham. ex D.Don) Vickery	Phyllanthaceae	<i>Phyllanthus reticulatus</i> Poir.	Phyllanthaceae
<i>Bischofia javanica</i> Blume	Phyllanthaceae	<i>Phyllanthus urinaria</i> L.	Phyllanthaceae
<i>Breynia retusa</i> (Dennst.) Alston	Phyllanthaceae	<i>Phyllanthus virgatus</i> G.Forst.	Phyllanthaceae
<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C.Fisch.	Phyllanthaceae	<i>Peperomia tetraphylla</i> (G.Forst.) Hook. & Arn.	Piperaceae
<i>Bridelia retusa</i> (L.) A.Juss.	Phyllanthaceae	<i>Piper attenuatum</i> Buch.-Ham. ex Miq.	Piperaceae
<i>Bridelia stipularis</i> (L.) Blume	Phyllanthaceae	<i>Piper betle</i> L.	Piperaceae
<i>Bridelia tomentosa</i> Blume	Phyllanthaceae	<i>Piper griffithii</i> C.DC.	Piperaceae
<i>Cleistanthus collinus</i> (Roxb.) Benth. ex Hook.f.	Phyllanthaceae	<i>Piper longum</i> L.	Piperaceae
<i>Embelia ribes</i> Burm.f.	Phyllanthaceae	<i>Piper nigrum</i> L.	Piperaceae

<i>Pittosporum wightii</i> A.K.Mukh.	Pittosporaceae	<i>Eragrostis nigra</i> Nees ex Steud.	Poaceae
<i>Bacopa monnieri</i> (L.) Wettst.	Plantaginaceae	<i>Eulaliopsis binata</i> (Retz.) C.E.Hubb.	Poaceae
<i>Limnophila indica</i> (L.) Druce	Plantaginaceae	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae
<i>Lindenbergia grandiflora</i> (Buch.-Ham. ex D. Don) Benth.	Plantaginaceae	<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae
<i>Picrorhiza kurrooa</i> Royle	Plantaginaceae	<i>Oryza sativa</i> L.	Poaceae
<i>Plantago asiatica</i> subsp. <i>erosa</i> (Wall.) Z.Yu Li	Plantaginaceae	<i>Saccharum bengalense</i> Retz.	Poaceae
<i>Scoparia dulcis</i> L.	Plantaginaceae	<i>Saccharum officinarum</i> L.	Poaceae
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	<i>Setaria macrostachya</i> Kunth	Poaceae
<i>Apluda mutica</i> L.	Poaceae	<i>Sporobolus diandrus</i> (Retz.) P.Beauv.	Poaceae
<i>Aristida adscensionis</i> L.	Poaceae	<i>Themeda quadrivalvis</i> (L.) Kuntze	Poaceae
<i>Bambusa bambos</i> (L.) Voss	Poaceae	<i>Polygala arvensis</i> Willd.	Polygalaceae
<i>Chloris barbata</i> Sw.	Poaceae	<i>Polygala chinensis</i> L.	Polygalaceae
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	Poaceae	<i>Polygala elongata</i> Klein ex Willd.	Polygalaceae
<i>Chrysopogon zizanioides</i> (L.) Roberty	Poaceae	<i>Fagopyrum acutatum</i> (Lehm.) Mansf. ex K.Hammer	Polygonaceae
<i>Coix lacryma-jobi</i> L.	Poaceae	<i>Fagopyrum esculentum</i> Moench	Polygonaceae
<i>Cymbopogon citratus</i> (DC.) Stapf	Poaceae	<i>Persicaria amplexicaulis</i> (D.Don) Ronse Decr.	Polygonaceae
<i>Cymbopogon flexuosus</i> (Nees ex Steud.) W.Watson	Poaceae	<i>Persicaria capitata</i> (Buch.-Ham. ex D.Don) H.Gross	Polygonaceae
<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	<i>Persicaria chinensis</i> (L.) H. Gross	Polygonaceae
<i>Dactyloctenium aegyptium</i> (L.) Willd.	Poaceae	<i>Persicaria glabra</i> (Willd.) M.Gómez	Polygonaceae
<i>Dendrocalamus strictus</i> (Roxb.) Nees	Poaceae	<i>Persicaria hydropiper</i> (L.) Delarbre	Polygonaceae
<i>Desmostachya bipinnata</i> (L.) Stapf	Poaceae	<i>Persicaria orientalis</i> (L.) Spach	Polygonaceae
<i>Echinochloa crus-galli</i> (L.) P.Beauv.	Poaceae	<i>Rheum webbianum</i> Royle	Polygonaceae
<i>Eleusine indica</i> (L.) Gaertn.	Poaceae		

<i>Rumex hastatus</i> D. Don	Polygonaceae	<i>Scutia myrtina</i> (Burm.f.) Kurz	Rhamnaceae
<i>Rumex nepalensis</i> Spreng.	Polygonaceae	<i>Ventilago denticulata</i> Willd.	Rhamnaceae
<i>Rumex vesicarius</i> L.	Polygonaceae	<i>Ventilago maderaspatana</i> Gaertn.	Rhamnaceae
<i>Anagallis arvensis</i> L.	Primulaceae	<i>Ziziphus glabrata</i> B.Heyne ex Roth	Rhamnaceae
<i>Ardisia paniculata</i> Roxb.	Primulaceae	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae
<i>Maesa indica</i> (Roxb.) A. DC.	Primulaceae	<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn.	Rhamnaceae
<i>Myrsine africana</i> L.	Primulaceae	<i>Ziziphus oenopolia</i> (L.) Mill.	Rhamnaceae
<i>Myrsine semiserrata</i> Wall.	Primulaceae	<i>Ziziphus rugosa</i> Lam.	Rhamnaceae
<i>Helicia excelsa</i> (Roxb.) Blume	Proteaceae	<i>Ziziphus xylopyrus</i> (Retz.) Willd.	Rhamnaceae
<i>Drypetes sepiaria</i> (Wight & Arn.) Pax & K.Hoffm.	Putranjivaceae	<i>Carallia brachiata</i> (Lour.) Merr.	Rhizophoraceae
<i>Putranjiva roxburghii</i> Wall.	Putranjivaceae	<i>Agrimonia pilosa</i> Ledeb.	Rosaceae
<i>Aconitum heterophylloides</i> (Brühl) Stapf	Ranunculaceae	<i>Cotoneaster affinis</i> Lindl.	Rosaceae
<i>Aconitum heterophyllum</i> Wall. ex Royle	Ranunculaceae	<i>Cotoneaster microphyllum</i> Wall. ex Lindl.	Rosaceae
<i>Aconitum villosum</i> Rchb.	Ranunculaceae	<i>Docynia indica</i> (Wall.) Decne.	Rosaceae
<i>Anemone obtusiloba</i> D.Don	Ranunculaceae	<i>Duchesnea indica</i> (Jacks.) Focke	Rosaceae
<i>Aquilegia fragrans</i> Benth.	Ranunculaceae	<i>Geum elatum</i> Wall. ex Hook.f.	Rosaceae
<i>Clematis buchananiana</i> DC.	Ranunculaceae	<i>Malus domestica</i> Borkh.	Rosaceae
<i>Clematis gouriana</i> Roxb. ex DC.	Ranunculaceae	<i>Potentilla indica</i> (Jacks.) Th.Wolf	Rosaceae
<i>Clematis heynei</i> M.A.Rau & al.	Ranunculaceae	<i>Prinsepia utilis</i> Royle	Rosaceae
<i>Nigella sativa</i> L.	Ranunculaceae	<i>Prunus campanulata</i> Maxim.	Rosaceae
<i>Ranunculus arvensis</i> L.	Ranunculaceae	<i>Prunus nepalensis</i> Ser.	Rosaceae
<i>Ranunculus sceleratus</i> L.	Ranunculaceae	<i>Pyracantha crenulata</i> (Roxb. ex D.Don) M.Roem.	Rosaceae
<i>Thalictrum foliolosum</i> DC.	Ranunculaceae	<i>Pyrus pashia</i> Buch.-Ham. ex D.Don	Rosaceae
<i>Gouania tiliifolia</i> Lam.	Rhamnaceae	<i>Rubus foliosus</i> Weihe	Rosaceae

<i>Rubus x nobilis</i> hort. angl. ex Regel	Rosaceae	<i>Houstonia purpurea</i> L.	Rubiaceae
<i>Rubus biflorus</i> Buch.-Ham. ex Sm.	Rosaceae	<i>Ixora coccinea</i> L.	Rubiaceae
<i>Rubus buergeri</i> Miq.	Rosaceae	<i>Ixora elongata</i> B.Heyne ex G.Don	Rubiaceae
<i>Rubus ellipticus</i> Sm.	Rosaceae	<i>Ixora malabarica</i> (Dennst.) Mabb.	Rubiaceae
<i>Rubus khasianus</i> Cardot	Rosaceae	<i>Ixora parviflora</i> Lam.	Rubiaceae
<i>Rubus niveus</i> Thunb.	Rosaceae	<i>Ixora pavetta</i> Andr.	Rubiaceae
<i>Benkara malabarica</i> (Lam.) Tirveng.	Rubiaceae	<i>Ixora thwaitesii</i> Hook.f.	Rubiaceae
<i>Canthium coromandelicum</i> (Burm.f.) Alston	Rubiaceae	<i>Meyna laxiflora</i> Robyns	Rubiaceae
<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Rubiaceae	<i>Meyna spinosa</i> Roxb. ex Link	Rubiaceae
<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Rubiaceae	<i>Mitragyna parvifolia</i> var. <i>microphylla</i> (Kurz) Ridsdale	Rubiaceae
<i>Ceriscoides campanulata</i> (Roxb.) Tirveng.	Rubiaceae	<i>Morinda citrifolia</i> L.	Rubiaceae
<i>Chassalia curviflora</i> (Wall.) Thwaites	Rubiaceae	<i>Morinda coreia</i> Buch.-Ham.	Rubiaceae
<i>Coffea benghalensis</i> B.Heyne ex Schult.	Rubiaceae	<i>Morinda umbellata</i> L.	Rubiaceae
<i>Galium asperifolium</i> Wall.	Rubiaceae	<i>Mussaenda frondosa</i> L.	Rubiaceae
<i>Galium elegans</i> Wall. ex Roxb.	Rubiaceae	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae
<i>Galium rotundifolium</i> L.	Rubiaceae	<i>Neonauclea purpurea</i> (Roxb.) Merr.	Rubiaceae
<i>Gardenia gummifera</i> L.f.	Rubiaceae	<i>Oldenlandia corymbosa</i> L.	Rubiaceae
<i>Gardenia latifolia</i> Aiton	Rubiaceae	<i>Oldenlandia diffusa</i> (Willd.) Roxb.	Rubiaceae
<i>Gardenia resinifera</i> Roth	Rubiaceae	<i>Oldenlandia umbellata</i> L.	Rubiaceae
<i>Geophila repens</i> (L.) I.M.Johnst.	Rubiaceae	<i>Ophiorrhiza mungos</i> L.	Rubiaceae
<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Rubiaceae	<i>Oxyceros longiflorus</i> (Lam.) T.Yamaz.	Rubiaceae
<i>Hedyotis scandens</i> Roxb.	Rubiaceae	<i>Paederia foetida</i> L.	Rubiaceae
<i>Himalrandia tetrasperma</i> (Wall. ex Roxb.) T.Yamaz.	Rubiaceae	<i>Pavetta indica</i> L.	Rubiaceae

<i>Pavetta tomentosa</i> Roxb. ex Sm.	Rubiaceae	<i>Citrus medica</i> L.	Rutaceae
<i>Psydrax dicoccos</i> Gaertn.	Rubiaceae	<i>Clausena dentata</i> (Willd.) Roem.	Rutaceae
<i>Richardia scabra</i> L.	Rubiaceae	<i>Clausena excavata</i> Burm.f.	Rutaceae
<i>Rubia cordifolia</i> L.	Rubiaceae	<i>Glycosmis mauritiana</i> (Lam.) Tanaka	Rutaceae
<i>Rubia manjith</i> Roxb. ex Fleming	Rubiaceae	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae
<i>Saprosma ternatum</i> (Wall.) Hook.f.	Rubiaceae	<i>Hesperethusa crenulata</i> (Roxb.) M. Roem.	Rutaceae
<i>Spermacoce alata</i> Aubl.	Rubiaceae	<i>Limonia acidissima</i> Groff	Rutaceae
<i>Spermacoce articularis</i> L.f.	Rubiaceae	<i>Micromelum pubescens</i> Blume	Rutaceae
<i>Spermacoce hispida</i> L.	Rubiaceae	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae
<i>Spermadictyon suaveolens</i> Roxb.	Rubiaceae	<i>Murraya paniculata</i> (L.) Jack	Rutaceae
<i>Tamilnadia uliginosa</i> (Retz.) Tirveng. & Sastre	Rubiaceae	<i>Naringi alata</i> (Wall. ex Wight & Arn.) J.L.Ellis	Rutaceae
<i>Tarenna asiatica</i> (L.) Kuntze ex K.Schum.	Rubiaceae	<i>Pamburus missionis</i> (Wight) Swingle	Rutaceae
<i>Wendlandia heynei</i> (Schult.) Santapau & Merchant	Rubiaceae	<i>Pleiospermium alatum</i> (Wight & Arn.) Swingle	Rutaceae
<i>Wendlandia tinctoria</i> (Roxb.) DC.	Rubiaceae	<i>Ruta graveolens</i> L.	Rutaceae
<i>Acronychia pedunculata</i> (L.) Miq.	Rutaceae	<i>Skimmia laureola</i> Franch.	Rutaceae
<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	<i>Toddalia asiatica</i> (L.) Lam.	Rutaceae
<i>Atalantia monophylla</i> DC.	Rutaceae	<i>Zanthoxylum armatum</i> DC.	Rutaceae
<i>Atalantia racemosa</i> Wight ex Hook.	Rutaceae	<i>Zanthoxylum khasianum</i> Hook. f.	Rutaceae
<i>Boenninghausenia albiflora</i> (Hook.) Rchb. ex Meisn.	Rutaceae	<i>Zanthoxylum limonella</i> (Dennst.) Alston	Rutaceae
<i>Chloroxylon swietenia</i> DC.	Rutaceae	<i>Zanthoxylum oxyphyllum</i> Edgew.	Rutaceae
<i>Citrus aurantiifolia</i> (Christm.) Swingle	Rutaceae	<i>Zanthoxylum rhetsa</i> DC.	Rutaceae
<i>Citrus latipes</i> (Swingle) Yu.Tanaka	Rutaceae	<i>Casearia vareca</i> Roxb.	Salicaceae
<i>Citrus limon</i> (L.) Osbeck	Rutaceae	<i>Flacourtia indica</i> (Burm.f.) Merr.	Salicaceae
		<i>Flacourtia jangomas</i> (Lour.) Raeusch.	Salicaceae

<i>Flacourtia montana</i> J.Graham	Salicaceae	<i>Madhuca neriifolia</i> (Moon) H.J.Lam	Sapotaceae
<i>Populus ciliata</i> Wall. ex Royle	Salicaceae	<i>Mimusops elengi</i> L.	Sapotaceae
<i>Salix tetrasperma</i> Roxb.	Salicaceae	<i>Houttuynia cordata</i> Thunb.	Saururaceae
<i>Xylosma longifolia</i> Clos	Salicaceae	<i>Bergenia ciliata</i> (Haw.) Sternb.	Saxifragaceae
<i>Azima tetracantha</i> Lam.	Salvadoraceae	<i>Verbascum thapsus</i> L.	Scrophulariaceae
<i>Salvadora oleoides</i> Decne.	Salvadoraceae	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae
<i>Salvadora persica</i> L.	Salvadoraceae	<i>Brucea javanica</i> (L.) Merr.	Simaroubaceae
<i>Santalum album</i> L.	Santalaceae	<i>Picrasma javanica</i> Blume	Simaroubaceae
<i>Viscum angulatum</i> B.Heyne ex DC.	Santalaceae	<i>Smilax aspera</i> L.	Smilacaceae
<i>Acer oblongum</i> Wall. ex DC.	Sapindaceae	<i>Smilax ovalifolia</i> Roxb. ex D.Don	Smilacaceae
<i>Aesculus assamica</i> Griff.	Sapindaceae	<i>Smilax perfoliata</i> Lour.	Smilacaceae
<i>Aesculus indica</i> (Wall. ex Cambess.) Hook.	Sapindaceae	<i>Smilax zeylanica</i> L.	Smilacaceae
<i>Allophylus cobbe</i> (L.) Raeusch.	Sapindaceae	<i>Brugmansia suaveolens</i> (Willd.) Sweet	Solanaceae
<i>Allophylus serratus</i> (Hiern) Kurz	Sapindaceae	<i>Capsicum annuum</i> L.	Solanaceae
<i>Cardiospermum corindum</i> L.	Sapindaceae	<i>Datura inoxia</i> Mill.	Solanaceae
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	<i>Datura metel</i> L.	Solanaceae
<i>Dodonaea viscosa</i> (L.) Jacq.	Sapindaceae	<i>Datura stramonium</i> L.	Solanaceae
<i>Lepisanthes tetraphylla</i> Radlk.	Sapindaceae	<i>Hyoscyamus niger</i> L.	Solanaceae
<i>Sapindus attenuatus</i> Wall.	Sapindaceae	<i>Nicotiana tabacum</i> L.	Solanaceae
<i>Sapindus emarginatus</i> Vahl	Sapindaceae	<i>Physalis minima</i> L.	Solanaceae
<i>Sapindus laurifolius</i> Vahl	Sapindaceae	<i>Physochlaina praealta</i> (Decne.) Miers	Solanaceae
<i>Sapindus mukorossi</i> Gaertn.	Sapindaceae	<i>Solanum aculeatissimum</i> Jacq.	Solanaceae
<i>Schleichera oleosa</i> (Lour.) Merr.	Sapindaceae	<i>Solanum americanum</i> Mill.	Solanaceae
<i>Madhuca longifolia</i> (J.Koenig ex L.) J.F.Macbr.	Sapotaceae	<i>Solanum melongena</i> L.	Solanaceae

<i>Solanum surattense</i> Burm.f.	Solanaceae	<i>Pouzolzia zeylanica</i> (L.) Benn.	Urticaceae
<i>Solanum torvum</i> Sw.	Solanaceae	<i>Urtica dioica</i> L.	Urticaceae
<i>Solanum trilobatum</i> L.	Solanaceae	<i>Duranta erecta</i> L.	Verbenaceae
<i>Solanum violaceum</i> Ortega	Solanaceae	<i>Lantana camara</i> L.	Verbenaceae
<i>Solanum virginianum</i> L.	Solanaceae	<i>Lantana indica</i> Roxb.	Verbenaceae
<i>Withania somnifera</i> (L.) Dunal	Solanaceae	<i>Lippia javanica</i> (Burm.f.) Spreng.	Verbenaceae
<i>Gomphandra coriacea</i> Wight	Stemonuraceae	<i>Phyla nodiflora</i> (L.) Greene	Verbenaceae
<i>Symplocos lucida</i> (Thunb.) Siebold & Zucc.	Symplocaceae	<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Verbenaceae
<i>Symplocos racemosa</i> Roxb.	Symplocaceae	<i>Hybanthus enneaspermus</i> (L.) F.Muell.	Violaceae
<i>Symplocos ramosissima</i> Wall. ex G. Don	Symplocaceae	<i>Hybanthus linearifolius</i> (Vahl) Urb.	Violaceae
<i>Camellia kissii</i> Wall.	Theaceae	<i>Viola canescens</i> Wall.	Violaceae
<i>Schima khasiana</i> Dyer	Theaceae	<i>Viola diffusa</i> Ging.	Violaceae
<i>Schima wallichii</i> Choisy	Theaceae	<i>Viola pilosa</i> Blume	Violaceae
<i>Aquilaria agallocha</i> Roxb.	Thymelaeaceae	<i>Ampelocissus indica</i> (L.) Planch.	Vitaceae
<i>Daphne mucronata</i> Royle	Thymelaeaceae	<i>Ampelocissus latifolia</i> (Roxb.) Planch.	Vitaceae
<i>Daphne papyracea</i> Wall. ex G. Don	Thymelaeaceae	<i>Ampelocissus tomentosa</i> (B.Heyne & Roth) Planch.	Vitaceae
<i>Typha domingensis</i> Pers.	Typhaceae	<i>Cayratia pedata</i> (Lam.) Gagnep.	Vitaceae
<i>Holoptelea integrifolia</i> Planch.	Ulmaceae	<i>Cayratia trifolia</i> (L.) Domin	Vitaceae
<i>Boehmeria macrophylla</i> Hornem.	Urticaceae	<i>Cissus adnata</i> Roxb.	Vitaceae
<i>Boehmeria rugulosa</i> Wedd.	Urticaceae	<i>Cissus javana</i> DC.	Vitaceae
<i>Girardinia diversifolia</i> (Link) Friis	Urticaceae	<i>Cissus quadrangularis</i> L.	Vitaceae
<i>Pouzolzia hirta</i> Blume ex Hassk.	Urticaceae	<i>Cissus verticillata</i> (L.) Nicolson & C.E.Jarvis	Vitaceae
<i>Pouzolzia pentandra</i> var. <i>wightii</i> (Benn. & Br.) Friis & Wilmot-Dear	Urticaceae	<i>Cissus vitiginea</i> L.	Vitaceae

<i>Cissus woodrowii</i> (Stapf ex Cooke) Santapau	Vitaceae	<i>Balanites aegyptiaca</i> (L.) Delile	Zygophyllaceae
<i>Leea asiatica</i> (L.) Ridsdale	Vitaceae	<i>Tribulus pentandrus</i> Forssk.	Zygophyllaceae
<i>Leea indica</i> (Burm. f.) Merr.	Vitaceae	<i>Tribulus terrestris</i> L.	Zygophyllaceae
<i>Leea macrophylla</i> Roxb. ex Hornem.	Vitaceae		
<i>Tetrastigma leucostaphylum</i> (Dennst.) Alston	Vitaceae		
<i>Aloe vera</i> (L.) Burm.f.	Xanthorrhoeaceae		
<i>Alpinia galanga</i> (L.) Willd.	Zingiberaceae		
<i>Curcuma amada</i> Roxb.	Zingiberaceae		
<i>Curcuma angustifolia</i> Roxb.	Zingiberaceae		
<i>Curcuma aromatica</i> Salisb.	Zingiberaceae		
<i>Curcuma caesia</i> Roxb.	Zingiberaceae		
<i>Curcuma caulina</i> J.Graham	Zingiberaceae		
<i>Curcuma longa</i> L.	Zingiberaceae		
<i>Kaempferia galanga</i> L.	Zingiberaceae		
<i>Curcuma pseudomontana</i> J.Graham	Zingiberaceae		
<i>Elettaria cardamomum</i> (L.) Maton	Zingiberaceae		
<i>Globba marantina</i> L.	Zingiberaceae		
<i>Hedychium spicatum</i> Sm.	Zingiberaceae		
<i>Zingiber capitatum</i> Roxb.	Zingiberaceae		
<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr.	Zingiberaceae		
<i>Zingiber neesanum</i> (J.Graham)	Zingiberaceae		
<i>Zingiber nimmonii</i> (J.Graham) Dalzell	Zingiberaceae		
<i>Zingiber officinale</i> Roscoe	Zingiberaceae		
<i>Zingiber roseum</i> (Roxb.) Roscoe	Zingiberaceae		

Appendix 2. Representation of plant families against seven prevalent disease categories as recorded from sacred grove studies

Disease Category	Families recorded	Species recorded	50% of total species (no. of families)	75% of total species (no. of families)	Top three families
Diseases related to the digestive system	64	170	85 (11)	127 (26)	Leguminosae, Apocynaceae, Compositae
Diseases related to the infections and parasitic attacks	96	366	183 (11)	274 (31)	Leguminosae, Malvaceae, Compositae
Diseases related to the skin and sub-cutaneous tissues	68	153	76 (12)	114 (29)	Leguminosae, Compositae, Lamiaceae
General health problem	100	358	179 (13)	268 (35)	Leguminosae, Compositae, Apocynaceae
Diseases related to the external causes	105	324	162 (12)	243 (38)	Leguminosae, Malvaceae, Lamiaceae
Diseases related to the respiratory system	80	240	120 (11)	180 (29)	Leguminosae, Lamiaceae, Compositae
Diseases related to the genito-urinary system	45	100	50 (9)	75 (20)	Leguminosae, Malvaceae, Compositae