4

Raw Drugs Consumption by Rural Household and Folk Healers

Nearly 138 million rural households in India and thousands of folk healers are believed to consume significant quantities of a diversity of medicinal plants for wellness and health care. Many of these plants are also known to be in commercial trade. It is important to know the annual demand of such commercially traded medicinal plants by different user groups for planning and implementing resource management initiatives. A survey for gathering information on consumption of herbal raw drugs by rural household and folk healers/ traditional practitioners was conducted in 15 randomly selected states under different agro-climatic zones of the country. The data collected reveals that virtually all rural households consume a good diversity of herbal raw drugs for health care. A sizeable total of 479 medicinal plants species has been recorded in use by the sampled rural households. The total consumption of herbal raw drugs in the country by this segment of users in 2014-15 has been estimated at 1,71,500 MT. Out of the total number of medicinal plant species consumed, 296 species forming 94% of the total annual consumption by weight are also in active trade. Survey of the traditional folk healers, identified by using *a priori* information in the sampled villages, revealed the use of 340 medicinal plant species of which 202 species are in active trade, at an average consumption of 5.89 MT of herbal raw drugs per folk healer.

4.1. INTRODUCTION

India has one of the oldest as well as one of the most varied traditional systems of medicine, both oral and codified, which are completely integrated with its culture. The various ethnic communities in the country have been using the botanicals from the nearby forests since times immemorial for their primary health care needs. To help address more serious health care issues, almost every village in the country also has folk healers/ traditional practitioners, often specialising in treating one or more ailments. The major mainstay of these practices is healing herbs collected either from the nearby areas or purchased from the retail shops. These communities and folk healers hold a phenomenal knowledge about the use of locally available plants for health care. Till date use of about 6,500 plant species by these communities across various States in the country has been documented (FRLHT database). The quantity of material used by this very important segment of the users of medicinal plants is believed to be very significant. Many of the plant species used by this segment of users is also in active trade. This brings in an issue of resource management. Till recently, consumption of medicinal plants by this important user group was not factored-in while estimating demand and supply of medicinal plants in the country. It was only after Ved and Goraya (2008), working on a very limited rural household sample, flagged the issue and estimated the total annual consumption of herbal raw drugs by this user segment at 86,000 MT that competitive consumption of medicinal plant species in actice trade has started gaining importance.

The present study was taken up with a view to revisit the previous estimates of consumption of herbal raw drugs by rural households and the folk healers.

4.2. ESTIMATION OF ANNUAL CONSUMPTION OF MEDICINAL PLANTS BY RURAL HOUSEHOLDS

National Census data for the year 2011 (Census, 2011), whereunder about 138 million households forming 71.16% of the total houseolds in the country have been recorded as rural households, has been taken as the base for planning the rural household sample survey for consumption of medicinal plants. The sample survey of rural households was carried out in accordance with planned multistage sampling with zone, state, district and villages in successive stages and household as sampling unit. The information on consumption of raw drugs by households was recorded as per pre-tested semi-structured questionnaires. A total of 2450 rural households spread across 15 states were surveyed as per detail given in table 4.1.

Table 4.1. Details of the Rural Household Surveyed

S. No.	Zone	States under the zone	Total Number of Rural Households in the zone*	States Selected as per Random Selection	Household Surveyed (Nos.)
1	North Western Zone	Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttarakhand	8793486	Himachal Pradesh, Punjab, Uttarakhand	409
2	North Eastern Zone	Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram,	17238501	Assam, Arunachal Pradesh,	675

S. No.	Zone	States under the zone	Total Number of Rural Households in the zone*	States Selected as per Random Selection	Household Surveyed (Nos.)
		Nagaland, Sikkim, Tripura, West Bengal		Mizoram	
3	Northern Zone	Bihar, Delhi, Jharkhand, Uttar Pradesh	36696541	Bihar	228
4	Central Zone	Chhattishgarh, Madhya, Pradesh, Maharashtra, Odisha	29062006	Chhattishgarh, Odisha	528
5	Western Zone	Daman & Diu, Goa, Gujarat, Rajasthan	13198663	Daman & Diu, Goa, Gujarat	428
6	Southern Zone	Andhra Pradesh, Andaman & Nicobar, Kerala, Karnataka, Lakshdeep, Puducherry, Telangana, Tamil Nadu	32758187	Andhra Pradesh, Karnataka, Puducherry	182
		Total	**137747384**		**2450**

*Number of rural households as per Census 2011

The major challenge during this survey was to establish identity of the medicinal plants reported to be in use by the rural communities and to correlate these with their accepted botanical nomenclature. The local names given were matched with the local and botanical names recorded in the available ethno-medicinal literature from the area [Das (1995), Mohant and Rout (2001), Das and Tag (2006), Patel and Patel (2006), Baruah and Kalita (2007), Verma and Chauhan (2007), Tag *et al.* (2007), Bhattacharjya and Borah (2008), Sen *et al.* (2008), Sharma and Mishra (2009), Udayakumar *et al.* (2009), Kalita and Phukan (2010), Meena and Yadav (2010), Dixit and Sudurshan (2011), Kaur *et al.* (2011), Nimachow *et al.* (2011), Sharma *et al.* (2011), Tangjanga *et al.* (2011), Chakravarty and Kalita (2012), Raut *et al.* (2012), Sinha *et al.* (2012), Sharma and Sood (2013), Sonowal (2013), Vashist and Sharma (2013), Kumar (2014); Sahu *et al.* (2014); Bhattacharjee (2015), Mahant (2015), Maitreya (2015) and Kumar *et al.* (2016)] and local floras and by consulting experts. As far as possible, samples of the plants reported to be used for health care were accessed and their identity confirmed with local floras and matching with herbarium specimens. Popular traditional/ vernacular names were thereafter correlated with the updated botanical nomenclature. Some plant species, of which the households were not able to show the specimens and which could not be correlated to botanical identities by the local names, have not been included in the documentation. Information on quantitative and qualitative parameters (local name of raw drugs, parts used, quantity used in a year, source of collection, price if purchased) in respect raw drugs consumed by rural households was gathered, collated and analysed. The average consumption per household worked out on the basis of data collected from the samples households in the zone, was extrapolated over all households of the zone. The data for all zones was thereafter added to arrive at the national consumption estimates.

Collation of the data gathered from the 2450 sampled rural households has resulted in documenting of 677 herbal raw drug entities pertaining to 479 medicinal plants species (excluding vegetables, fruits, spices, cereals and pulses) under use by the sampled rural communities for their health care. (table 4.2).

Table 4.2. Herbal Raw Drugs Consumed by Rural Households including those that are in Commercial Trade

S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump--tion (MT)	Status in Comme--rcial Trade
1	*Abelmoschus manihot*	Mushkdana, Kasturidana	Root	-	√	-	-	-	-	0.61	-
2	*Abroma augusta*	Ulatkambal	Leaf, Bark, Root	-	√	-	-	-	-	4.66	√
3	*Abrus precatorius*	Kunnimuthu, Gundumani	Seed, Leaf	-	-	-	√	√	√	109.85	√
4	*Abutilon indicum*	Thuthi	Leaf, Seed, Inflorescence	-	-	-	-	√	√	11.29	√
5	*Acacia catechu*	Kasikatti	Bark, Extract	-	-	-	√	-	-	5.50	√
6	*Acacia farnesiana [= A. indica]*	Irmed	Stem, Bark	-	√	-	-	-	-	60.63	√
7	*Acacia nilotica subsp. indica [= A. arabica var. indica*	Karuvelum, Babul, Kikar	Gum, Fruit, Leaf, Bark, Stem, Flower	√	-	√	-	√	√	520.89	√
8	*Acacia pennata*	Agla bel, Biswal	Leaf	-	√	-	-	-	-	1.74	-
9	*Acacia senegal*	Kumtha, Char gond, Kordofan, Kitir	Gum	-	-	-	-	√	-	57.09	√
10	*Acacia sinuata* [=*A. concinna*]	Shikakai	Fruit	-	-	-	-	-	√	86.40	√
11	*Acacia leucophloea*	Vaela maram	Root	-	-	-	-	-	√	21.60	√
12	*Acalypha indica*	Kuppai Maeni	Whole Plant	-	-	-	√	-	√	363.59	√
13	*Achyranthes aspera*	Nayuruvi, Putt Kanda	Whole Plant	√	√	√	√	-	√	2750.27	√
14	*Acmella oleracea [= Spilanthes acmella var. oleracea]*	Karkara	Flower, Leaf	-	√	√	√	-	-	12.98	√
15	*Acmella paniculata*	Jati malkathi	Whole Plant	-	√	-	-	-	-	7.51	√
16	*Aconitum heterophyllum*	Atees, Athividayan	Tubers	-	-	√	-	-	-	25.80	√
17	*Aconitum violaceum*	Dudhiya mohra	Root	-	-	√	-	-	-	3.01	√
18	*Acorus calamus*	Gurbach, Vasambu	Root, Leaf, Rhizome	-	√	-	√	-	√	163.91	√
19	*Adiantum capillus -veneris*	Maidenhair fern	Whole Plant	-	-	-	-	-	√	0.43	√
20	*Aeginetia indica*	Aankuri bankuri	Leaf	-	√	-	-	-	-	4.49	-

[N: Northern, NE: North Eastern, NW: North Western, CW: Central Western, S: Southern]

S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump-tion (MT)	Status in Comme-rcial Trade
21	*Aegle marmelos*	Vilvam	Fruit Pulp, Bark, Leaf	√	√	√	√	√	√	10592.02	√
22	*Aerva lanata*	Chiru poolai	Whole Plant	-	-	-	√	-	-	202.00	√
23	*Aeschynomene aspera*	Thakka poondu	Leaf	-	-	-	-	-	√	2.16	-
24	*Ageratum conyzoides*	Ukhal butti	Whole Plant	-	√	√	-	-	√	586.68	√
25	*Ailanthus excelsa*	Mahanim	Bark	-	-	-	√	-	-	22.02	√
26	*Ajuga parviflora*	Nilkanthi	Leaf	-	-	√	-	-	-	13.54	√
27	*Albizia amara*	Usilai	Leaf	-	-	-	-	-	√	7.20	√
28	*Albizia lebbeck*	Siris	Wood	-	-	√	-	-	-	1.07	√
29	*Albizia procera*	Siris	Leaf	-	√	-	-	-	-	1.02	√
30	*Alocasia macrorrh izos [= A. indica]*	Mankanda	Leaf, Stem	-	√	-	-	-	-	20.43	-
31	*Aloe vera [= A.barbadensis]*	Elva, Kumari, Soththu katrazhai	Leaf, Pulp, Stem	√	√	√	√	√	√	3262.07	√
32	*Alpinia nigra*	Tora	Rhizome	-	√	-	-	-	-	3.58	√
33	*Alpinia calcarata*	Sitharathai	Root, Rhizome	-	-	-	√	-	√	11.35	√
34	*Alpinia galanga*	Perarathai, Kulanjan	Rhizome	-	√	-	-	-	-	11.80	√
35	*Alstonia scholaris*	Saitan	Leaf, Bark, Stem	-	√	-	√	-	-	363.54	√
36	*Alternanthera sessilis*	Ponnanganni keerai, Mati kaduri	Whole Plant	-	√	-	-	-	√	1929.45	-
37	*Amorphophallus paeoniifolius [= A. campanulatus]*	Arsghna, Surankand, Zaminkand	Root, Flower, Rhizome	-	√	-	√	-	-	86.56	√
38	*Anacyclus pyrethrum*	Akraharam	Whole Plant	-	-	√	-	-	-	5.16	√
39	*Andrographis paniculata*	Nila vembu, Kalmegh	Whole Plant	√	√	-	√	-	√	2082.33	√
40	*Angelica glauca*	Chanra	Root	-	-	√	-	-	-	8.17	√
41	*Anisomeles indica*	Kala Bhangra	Aerial Parts	-	√	-	-	-	-	74.06	√
42	*Anogeissus acuminata*	Dhau	Stem	-	√	-	-	-	-	4.49	-
43	*Aponogeton natans*	Kottikizh anghu	Leaf	-	-	-	-	-	√	1.08	-
44	*Aporosa octandra*	Tamsir	Bark	-	√	-	-	-	-	63.85	-
45	*Ardisia paniculata*	Panicled Coralberry	Root	-	√	-	-	-	-	22.98	-
46	*Argemone mexicana*	Brahma dandu	Latex, Seed	-	-	-	√	-	√	2.54	√

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S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump-tion (MT)	Status in Comme-rcial Trade
47	*Argyreia nervosa [= A. speciosa]*	Samudraphal, Samundra Sokh	Leaf, Latex	-	√	-	-	-	-	21.91	√
48	*Arisaema tortuosum*	Baag Mingari	Tuber	-	-	√	-	-	-	21.93	√
49	*Aristolochia bracteolata*	Aaduthinna paalai	Whole Plant	-	-	-	-	-	√	15.12	√
50	*Arnebia benthamii*	Massrchini	Root	-	-	√	-	-	-	7.31	√
51	*Artemisia capillaris*	Wormwood		-	-	√	-	-	-	0.21	-
52	*Artocarpus chama*	Chaplash	Fruit	-	√	-	-	-	-	2.91	-
53	*Asparagus filicinus*	Chiriya-kanda	Bark	-	-	√	-	-	-	7.44	-
54	*Asparagus racemosus*	Shatawar	Root, Rhizome, Leaf	√	√	√	√	√	√	675.56	√
55	*Azadirachta indica*	Neem, Vembu Vaeppan, Vembu	Whole Plant	√	√	√	√	√	√	9087.68	√
56	*Azima tetracantha*	Sanga ilai	Leaf	-	-	-	-	-	√	33.84	√
57	*Baccaurea ramiflora*	Burmese Grape	Stem, Bark	-	√	-	-	-	-	4.55	-
58	*Baccharoides anthelmintica [= Centratherum anthelminticum]*	Kali zeeri	Seed	-	-	-	√	-	-	1.65	√
59	*Bacopa monnieri*	Neer brahmi	Whole Plant	-	√	√	√	√	-	140.62	√
60	*Bambusa bambos*	Mungilarisi, Bambo	Seed, Leaf	√	-	√	-	-	√	633.62	√
61	*Barleria prionitis*	Vajradanti	Leaf, Root	-	-	√	-	-	-	2.24	√
62	*Bauhinia tomentosa*	Thiruvaatchi	Leaf	-	-	-	-	-	√	62.64	√
63	*Bauhinia variegata*	Kachnar	Flower buds	-	-	√	-	-	-	19.35	√
64	*Begonia roxburghii*	Dieng jajew	Root, Rhizome, Leaf, Stem, Petiole	-	√	-	-	-	-	83.87	-
65	*Berberis aristata*	Daruhaldi	Stem, Bark, Root	-	√	√	-	-	-	49.95	√
66	*Berberis lycium*	Kasmala	Whole Plant	-	-	√	-	-	-	283.80	√
67	*Berginia ciliata*	Pashan Bhed	Whole Plant	-	√	√	-	-	-	124.89	√
68	*Bidens pilosa*	Phutium	Whole Plant	-	-	√	-	-	-	0.09	-
69	*Bischofia javanica*	Asri, Bolasri	Bark	-	√	-	-	-	-	2.55	-
70	*Bistorta affinis*	Ninai	Root	-	-	√	-	-	-	9.03	-
71	*Bixa orellana*	Jaffra vedai	Seed	-	√	-	-	-	-	2.04	√
72	*Blepharis maderaspatensis*	Elumbotti thazhai	Leaf	-	-	-	-	-	√	12.24	√

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S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump--tion (MT)	Status in Comme--rcial Trade
73	*Blumea balsamifera*	Basoor	Leaf	-	-	-	-	√	-	11.69	√
74	*Blumea lanceolaria*	Tera paibi	Leaf	-	√	-	-	-	-	5.11	√
75	*Boerhavia diffusa*	Punarnava, Mukarattai	Whole Plant	-	-	-	√	-	√	1047.02	√
76	*Bombax ceiba [= B. malabaricum*	Maratti mokku, Elevam, Seemal Flower	Fruits, Flower, Bark	√	√	√	√	-	-	443.31	√
77	*Bonnaya reptans*	Kausidarya	Whole Plant	-	√	-	-	-	-	167.48	-
78	*Boswellia serrata*	Mani kundrikam	Gum	-	-	-	-	√	-	13.43	√
79	*Breynia retusa [= B. patens]*	Kangli, Dalfodi	Leaf	-	-	-	-	√	-	5.78	-
80	*Bryophyllum campanulatum*	Patharchur	Leaf	-	√	-	-	-	-	13.28	√
81	*Bryophyllum peltatum*	Patharchur	Leaf	√	-	-	-	-	-	32.19	-
82	*Bryophyllum pinnatum [= Kalanchoe pinnata]*	Patharchur	Leaf, Whole Plant	-	√	√	-	-	-	108.69	√
83	*Butea monosperma [= B. frondosa]*	Murukkam, Tesu Phool, Palas Phool	Bark (Stem), Flower	-	-	√	√	√	-	603.52	√
84	*Byttneria pilosa*	Sazukngha wnghlap	Leaf	-	√	-	-	-	-	2.20	-
85	*Byttneria aspera [= B. grandifolia.]*	Tikani barua	Stem, Leaf	-	√	-	-	-	-	3.37	√
86	*Cadaba fruticosa [= C. indica]*	Vizhudhi	Leaf	-	-	-	√	-	√	42.01	√
87	*Caesalpinia bonduc*	Kalaachi kaai	Seed, Leaf	√	√	-	√	-	√	713.67	√
88	*Caeselpinia sappan*	Pathimugam	Wood	-	√	-	-	-	-	7.66	√
89	*Calamus guruba*	Rattan	Tender Plant		√					50.72	√
90	*Calendula officinalis*	Genda	Leaf	-	√	-	-	-	-	0.97	√
91	*Callicarpa arborea*	Khimbar, Moskhanchi	Bark, Leaf	-	√	-	-	-	-	153.33	-
92	*Callicarpa macrophylla*	Gandhphali	Root	-	√	-	-	-	-	0.31	√
93	*Calotropis gigantea*	Erukkam, Aak	Flower, Leaf, Seed, Latex	√	√	√	-	√	√	369.17	√

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S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump--tion (MT)	Status in Comme--rcial Trade
94	*Calotropis procera*	Aak, Akon	Flower, Leaf, Seed, Latex, Root	√	√	√	√	√	-	529.98	√
95	*Cannabis sativa*	Bhang	Leaf, Root	-	√	√	-	-	-	149.46	√
96	*Cardiospermum halicacabum*	Mudakaththaan	Whole Plant	-	-	-	-	-	√	4499.75	√
97	*Carissa carandas*	Karundal	Root	-	-	√	-	-	√	39.91	√
98	*Carum carvi*	Seemail sombu	Seed	-	-	-	√	-	-	4.40	√
99	*Cassia fistula*	Amaltas, Ghur lakkar	Leaf, Bark, Fruit (Pods), Seed, Root, Stem	-	√	√	√	-	-	841.99	√
100	*Cassine glauca*	Jamrasi	Root	-	-	-	√	-	-	1.10	-
101	*Castanopsis tribuloides*	Katus	Bark, Stem	-	√	-	-	-	-	16.70	-
102	*Catharanthus roseus [= Vinca rosea]*	Nithya kalyani	Whole Plant	√	√	√	√	-	√	249.26	√
103	*Celastrus paniculatus*	Vaaluluvai, Malkangni	Seed	-	-	-	-	-	√	0.86	√
104	*Centella asiatica*	Vallaarai, Brahmi, Thankhuni, Vaaluluvai, Malkangni	Whole Plant	-	√	√	-	-	√	1870.48	√
105	*Cheilocostus speciosus [= Costus speciosus]*	Kustha, Koshtum, Kuth	Aerial Parts, Rhizome, Tubers	-	√	-	√	-	√	189.07	√
106	*Chloranthus elatior*	Lope	Leaf	-	√	-	-	-	-	2.55	-
107	*Chlorophytum borivilianum*	Safed Musli	Seed	-	-	√	-	-	-	25.80	√
108	*Chlorophytum nepalense*	Safed Musli	Stem	-	√	-	-	-	-	1.07	-
109	*Chlorophytum tuberosum*	Safed Musli	Root	-	-	-	√	-	-	1.10	√
110	*Chromolaena odorata [= Eupatorium odoratum]*	Yamdak	Leaf	-	√	-	-	-	-	1.69	-
111	*Chrysanthemum indicum*	Guladaudi	Leaf	-	√	-	-	-	-	42.65	√
112	*Chrysopogon zizanioides*	Vilaamicham	Root	-	-	-	-	-	√	1355.32	√
113	*Cichorium intybus*	Kaasini	Seed, Leaf	-	-	-	-	-	√	18.00	√
114	*Cinnamomum glanduliferum*	Rolu	Stem	-	√	-	-	-	-	3.27	-

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S. No.	Name of Plant Species	Local Name (s)	Part Used	N	NE	NW	C	W	S	Estimated Total Annual Consump--tion (MT)	Status in Comme--rcial Trade
115	*Cinnamomum tamala*	Tejpatta	Leaf	-	√	√	-	-	-	156.74	√
116	*Cinnamomum verum [= C. zeylanicum]*	Dalchini	Bark	-	√	√	-	-	√	6.76	√
117	*Citrullus colocynthis*	Tumma	Fruit, Root	-	-	√	√	-	-	520.00	√
118	*Cissus quadrangularis*	Pirandai, Hutjodi	Whole Plant	√	√	-	√	-	√	5267.03	√
119	*Cleistanthus collinus*	Kutaja, Garhar	Bark	-	-	-	√	-	-	1.10	√
120	*Cleome gynandra [= Gynandropsis pentaphylla]*	Vaelai keerai, Nalla vaelai	Whole Plant	-	-	-	-	-	√	1124.58	√
121	*Cleome viscosa*	Naaivaelai	Leaf	-	-	-	-	-	√	134.99	√
122	*Clerodendrum colebrookianum*	Papua Toh	Leaf, Shoot	-	√	-	-	-	-	205.33	√
123	*Clerodendrum phlomidis*	Thazhuth aazhai	Leaf	-	-	-	√	-	√	3.73	√
124	*Clerodendrum glandulosum*	Tapen	Leaf	-	√	-	-	-	-	187.20	-
125	*Clerodendrum infortunatum [= C. viscosum]*	Bhant, Batigosh	Flower, Leaf	√	√	-	-	-	-	642.86	√
126	*Clitoria ternatea*	Sankhpushpa mKakkattaan, Sangupoo	Seed, Flower	-	-	-	-	-	√	2.34	√
127	*Cocculus hirsutus*	Vasanvel	Root	-	-	-	√	-	-	11.01	√
128	*Coleus forskohlii [= Plectranthus barbatu]*	Gandira	Leaf	-	-	-	-	√	-	2.08	√
129	*Commelina benghalensis*	Kozhi keerai, Kaanaankuzhal	Whole Plant	-	√	-	-	-	√	77.07	-
130	*Commiphora wightii*	Guggulu	Gum Resin	-	-	-	-	√	-	3.36	√
131	*Conyza leucantha*	Fleabane	Whole Plant	-	√	-	-	-	-	0.56	-
132	*Coptis teeta*	Peetha rohini	Root	-	√	-	-	-	-	71.61	√
133	*Cordia dichotoma*	Lasora, Sapistan	Leaf	-	-	-	-	-	√	1.12	√
134	*Cordia sinensis [= C. rothii]*	Gond	Leaf	√	-	-	-	√	-	33.76	-
135	*Crataeva religiosa [= C. nurvula]*	Maavilangam	Bark, Leaf	-	√	-	-	-	-	22.63	-
136	*Crotalaria pallida [= C. mucronata]*	Hemp	Root	-	-	-	√	-	-	0.55	-

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137	*Croton caudatus*	Damdawi	Leaf	-	√	-	-	-	-	7.56	-
138	*Croton tiglium*	Nervalum	Seed	-	√	-	-	-	√	4.62	√
139	*Cullen corylifolium [= Psoralea corylifolia]*	Babachi, Babchi	Leaf	-	-	-	-	√	-	1.01	√
140	*Curculigo orchioides*	Nilapanai	Root, Tuber	-	-	-	√	-	-	133.20	√
141	*Curcuma angustifolia*	Tikhur	Root	√	-	-	√	-	-	58.53	√
142	*Curcuma caesia*	Nar-kachura, Kala-haldi	Rhizome, Leaf	-	√	-	-	-	-	106.96	√
143	*Cuscuta reflexa*	Amar Bel, Amar lata	Aerial Parts, Stem	√	√	√	-	-	-	142.38	√
144	*Cymbopogon citratus*	Sonakapul	Aerial Parts, Stem, Leaf	√	-	-	-	√	-	133.72	√
145	*Cynodon dactylon*	Arugampul, Doob	Whole Plant	√	√	-	√	-	√	2954.05	√
146	*Cyperus rotundus*	Motha, Korai kizhangu, Sirukorai kizhanghu	Root, Tuber	√	-	-	√	-	√	1352.17	√
147	*Dactylorhiza hatagiera*	Hathajodi	Root	-	-	√	-	-	-	9.03	√
148	*Dalbergia sissoo*	Shisham	Heart Wood Bark (Stem)	√	-	√	-	-	-	287.66	√
149	*Dalbergia lanceol aria [= D. paniculata]*	Bithua, Bitwa, Takoli	Heart Wood Bark (Stem)	-	√	-	√	-	-	6.76	√
150	*Datura metel*	Oomaththai, Umatham	Fruit, Leaf, Seed	-	√	-	√	-	√	24.55	√
151	*Datura stramonium*	Dhatura	Leaf, Root	-	√	-	-	√	-	3.29	√
152	*Delonix elata*	Vaadha naraayanan	Leaf	-	-	-	-	-	√	517.29	√
153	*Dendrobium heterocarpum*	Tai Taming	Stem	-	√	-	-	-	-	6.13	-
154	*Dendrocalamus strictus*	Baans	Leaf	-	-	-	√	-	-	1.10	-
155	*Dicliptera chinensis [= D. roxburghiana]*	Ghas	Leaf	-	-	√	-	-	-	77.40	-
156	*Digera muricata*	Thoyyaa keerai	Leaf	-	-	-	-	-	√	170.99	
157	*Dillenia indica*	Chalita	Fruit, Sepals	-	√	-	-	-	-	145.11	-
158	*Dillenia pentagyna*	Nagkesaram	Bark	-	√	-	-	-	-	43.98	?
159	*Dioscorea bulbifera*	Varahi kand	Tuber	-	-	√	-	-	-	0.21	-

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160	*Dioscorea hispida*	Kath Alu	Tuber	-	-	-	√	-	-	220.17	-
161	*Dioscorea pentaphylla*	Kanta alu	Tuber	-	√	-	-	-	-	2.91	-
162	*Diospyros montana*	Bistendu, Kala dhao, Kendu	Root, Fruit	-	-	-	√	-	-	13.32	-
163	*Diplazium esculentum*	Diplazium esculentum	Rhizome, Root, Leaf, Tender Plant	-	√	-	-	-	-	112.37	-
164	*Dodonaea viscosa*	Mehandu	Leaf	-	-	√	-	-	-	32.25	√
165	*Drymaria cordata*	Sara Kiklo	Leaf	-	√	-	-	-	-	525.94	-
166	*Dysoxylum excelsum*	Bili devdari	Leaf	-	√	-	-	-	-	6.03	-
167	*Dysoxylum gotadhora*	Bili devdari	Root	-	√	-	-	-	-	0.61	-
168	*Eclipta prostrata [= E. alba]*	Bhringraj, Karisaalai	Whole Plant	√	√	-	√	-	√	2482.72	√
169	*Elaeagnus caudata*	Sarzuk	Bark, Leaf, Root	-	√	-	-	-	-	9.30	-
170	*Elaeagnus latifolia*	Goeli, Muslendi	Leaf, Root	-	√	-	-	-	-	66.91	√
171	*Elaeagnus pyriformis*	Sarzukui	Leaf	-	√	-	-	-	-	5.11	-
172	*Elaeocarpus floribundus*	Olive	Fruit	-	√	-	-	-	-	0.31	-
173	*Elephantopus scaber*	Gjihiva	Leaf, Root	-	√	-	√	-	-	220.80	√
174	*Elsholtzia blanda*	Ban tulsi, Lomba, Mauhri	Leaf	-	√	-	-	-	-	12.26	-
175	*Elsholtzia ciliata*	Crested Late -Summer Mint	Leaf	-	√	-	-	-	-	5.11	-
176	*Elsholtzia communis*	Kewa	Leaf	-	√	-	-	-	-	2.96	-
177	*Embelia ribes*	Vaividang	Stem	-	-	-	√	-	-	2.20	√
178	*Enicostemma axillare [= E. littorale]*	Vellarugu	Aerial Parts	-	-	-	-	-	√	2.52	√
179	*Entada phaseoloides*	Kakavalli	Seed	-	√	-	-	-	-	3.58	-
180	*Eryngium foetidum*	Ban dhania	Whole Plant	-	√	-	-	-	-	8.94	-
181	*Erythrina variegata [= E. indica]*	Kalyanamur ungai	Stem, Leaf	-	√	-	-	-	√	79.71	√
182	*Erythrina stricta*	Pangara, Korao	Flower	-	√	-	-	-	-	4.70	-

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183	*Ethulia conyzoides*	Golphuli	Leaf	-	√	-	-	-	-	2.66	-
184	*Eucalyptus globulus*	Safeda	Leaf, Root	√	-	√	-	√	√	359.25	√
185	*Eucalyptus tereticornis*	Speda, Thaila maram	Leaf	-	-	√	-	-	√	86.04	-
186	*Eupatorium odoratum*	Tivra gandha, Bagh dhoka	Leaf	-	√	-	-	-	-	33.94	-
187	*Euphorbia antiquorum*	Thiru kalli	Latex, Stem	-	-	-	-	-	√	7.20	-
188	*Euphorbia caducifolia*	Danda-thor	Leaf	-	-	-	-	√	-	13.57	-
189	*Euphorbia hirta*	Ammaan pacharisi	Whole Plant	-	-	-	√	-	√	8.62	√
190	*Euphorbia neriifolia*	Garbhans, Siju, Sign	Leaf, Stem	√	√	-	-	-	-	265.80	√
191	*Euphorbia prostrata*	Dudhli Booti	Leaf	-	-	√	-	-	-	12.90	-
192	*Euphorbia pulcherrima*	Lalpatta	Leaf	-	-	-	-	√	-	6.72	-
193	*Euphorbia royleana*	Giloe, Choro	Stem,	-	-	√	-	-	-	4.51	-
194	*Euphorbia tirucalli*	Llaikkalli, Paithangali	Latex, Stem	-	-	-	-	-	√	34.02	√
195	*Ficus benghalensis*	Aal, Bohr, Barota Ki Dari, Aalam	Seed, Bark, Leaf, Exuade, Root	√	-	√	-	-	√	340.48	√
196	*Ficus hispida*	Phalgu	Fruit	-	√	-	-	-	-	5.01	√
197	*Ficus maclellandii*	Alii Fig	Latex	-	√	-	-	-	-	1.28	-
198	*Ficus racemosa [= F. glomerata]*	Aththi, Gooler	Fruit, Leaf, Latex	√	-	-	-	-	√	37.02	√
199	*Ficus religiosa*	Arasu, Pipal, Arasan	Bark, Fruit, Leaf, Root, Latex	√	√	√	√	-	√	1391.44	√
200	*Ficus virens*	Pilkhan	Leaf	-	√	-	-	-	-	0.15	-
201	*Flacourtia indica*	Kattar	Bark	-	-	-	√	-	-	13.21	√
202	*Flemingia strobilifera*	Kanphuta	Root	-	-	-	√	-	-	1.10	-
203	*Flueggea virosa*	Dalme, patala	Leaf	-	√	-	-	-	-	10.98	√
204	*Fragaria vesca*	Tayin	Fruit	-	√	-	-	-	-	51.59	-
205	*Galium aparine*	Kharasha	Root	-	-	√	-	-	-	6.02	-
206	*Garcinia cowa*	Bonthekra	Fruit	-	√	-	-	-	-	8.17	-
207	*Garcinia indica*	Kokam, Cambogie	Fruit	-	-	-	-	√	-	261.96	√
208	*Garcinia lanceifolia*	Rupahi-thekera, Pelh, Rupohi tekera	Fruit	-	√	-	-	-	-	0.72	-

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209	*Garcinia pedunculata*	Amlavetasa	Fruit	-	√	-	-	-	-	229.90	√
210	*Garcinia sopsopia*	Vawm-va, Thensaker	Fruit	-	√	-	-	-	-	0.87	-
211	*Glinus oppositifolius*	Ushnasundara	Whole Plant	-	√	-	-	-	-	1.79	√
212	*Glycyrrhiza glabra*	Mulethi, Adhimadhuarm	Root, Stem	-	-	-	√	-	-	5.50	√
213	*Gmelina arborea*	Gamhar	Leaf, Bark, Root	√	√	-	-	-	-	13.27	√
214	*Gomphogyne cissiformis*	Jhur Thliem	Fruit	-	√	-	-	-	-	1.33	-
215	*Grewia hirsuta*	Kukurbicha, Phrongli, Nagvala	Root	-	-	-	√	-	-	2.20	-
216	*Gymnema sylvestre*	Sarkarai kolli, Siru kurinjaan	Leaf	-	-	-	√	√	√	2748.20	√
217	*Hedyotis scandens*	Kelhnamatur	Leaf	-	√	-	-	-	-	25.23	-
218	*Helicia robusta*	Pasaltakaza	Stem, Root, Leaf	-	√	-	-	-	-	63.28	-
219	*Helicteres isora*	Valampuri-Idampuri	Fruits	-	-	-	√	-	√	4.70	√
220	*Heliotropium indicum*	Thekkada	Whole Plant	-	√	-	-	-	-	0.05	-
221	*Hemidesmus indicus*	Nannari, Maahaali, Anantmool, Murod Phah	Root	-	-	-	√	-	√	40.54	√
222	*Hibiscus cannabinus*	Pulicha keerai	Flower, Leaf	-	-	-	√	-	√	101.91	-
223	*Hibiscus rosa-sinensis*	Semparuthi, Jobabhool	Flower, Leaf	√	√	-	-	-	√	1947.78	√
224	*Hibiscus sabdariffa*	Pulichchakeerai, Kasarakeerai	Aerial Parts	-	-	-	-	-	√	125.27	√
225	*Hiptage benghalensis*	Kerek-Iota	Root	-	-	-	√	-	-	0.55	-
226	*Holarrhena pubescens [= H. antidysenterica]*	Indirayan Beej, Kasappu vetpaalai	Root, Leaf, Bark, Stem	-	√	-	√	√	√	55.77	√
227	*Holostemma ada-kodien. [= H. annulare]*	Jeevanti	Whole Plant	-	-	-	√	-	-	1.10	√
228	*Homalomena aromatica*	Sugan mantri	Rhizome	-	√	-	-	-	-	44.64	√

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229	*Houttuynia cordata*	Fakmoi	Whole Plant	-	√	-	-	-	-	21.66	-
230	*Hybanthus enneaspermus*	Ratan Purush	Whole Plant	-	-	-	-	-	√	0.72	√
231	*Hydrocotyle rotundifolia*	Saru Manimuni	Whole Plant	-	√	-	-	-	-	182.45	-
232	*Hygrophila auricul ata [=H. schulli]*	Nirmulli	Whole Plant	-	-	-	-	-	√	169.19	-
233	*Hyptis suaveolens*	Naatu pachchilai	Leaf, Seed	√	-	√	√	-	-	115.17	-
234	*Illicium griffithii*	Domlishi	Fruits	-	√	-	-	-	-	5.47	√
235	*Impatiens balsamina*	Gul-mehndi	Root	-	√	-	-	-	-	0.18	-
236	*Inula cappa*	Buarthau	Leaf	-	√	-	-	-	-	14.51	-
237	*Ipomoea aquatica*	Vellaikeerai, Kalmisek	Whole Plant	-	√	-	-	-	√	235.62	√
238	*Ipomoea marginata [= I. sepiaria]*	Thallikeerai	Whole Plant	-	-	-	-	-	√	104.39	√
239	*Ipomoea paniculata*	Vellai kilangu	Tubers	-	-	-	-	√	-	13.43	-
240	*Ipomoea carnea*	Neyveli kaataman akku	Latex, Fruit, Leaf	-	-	-	-	-	√	12.96	-
241	*Ipomoea nil [= I. hederacea]*	Kaladanah	Seed	-	-	-	√	-	-	0.55	√√
242	*Ixora parviflora*	White Ixora, Naveri, Kuraat	Fruit, Root	-	-	-	-	-	√	0.72	-
243	*Jasminum multiflorum*	Khorika jai, Ban malati	Root	-	√	-	-	-	√	5.07	-
244	*Jatropha curcas*	Jamalghota, Ratanjot	Seed, Stem, Leaf	-	√	-	-	√	√	322.87	√
245	*Juglans regia*	Akhrot	Bark, Root, Stem	-	-	√	-	-	-	2.62	√
246	*Jurinea macrocephala [= J. dolomiaea]*	Dhoop	Root	-	-	√	-	-	-	10.96	√
247	*Justicia adhatoda [= Adhatoda zeylanica, A. vasica]*	Adathodai	Leaf	√	√	√	-	√	√	1973.82	√
248	*Justicia gendarussa [= Gendarussa vulgaris]*	Karunochchi	Leaf	-	√	-	-	-	√	52.23	√

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249	*Kalanchoe abrupta*	Bish Kobra	Leaf	-	√	-	-	-	-	15.07	-
250	*Kigelia africana*	Phari Khira	Fruit	-	-	√	-	-	-	258.00	-
251	*Kirganelia reticulata*	Amloki	Leaf	-	-	-	-	√	-	6.72	√
252	*Knema cinerea*	Kelat	Latex	-	√	-	-	-	-	0.15	-
253	*Knema linifolia*		Stem	-	√	-	-	-	-	0.56	-
254	*Lannea coromandelica*	Othiya maram	Bark	-	-	-	-	-	√	41.04	√
255	*Lantana camara*	Unnichedi	Leaf	-	-	-	-	-	√	2.88	√
256	*Laportea crenulata*	Bap Kangsam	Leaf, Shoots, Root	-	√	-	-	-	-	13.43	-
257	*Lasia spinosa*	Kanakachu	Leaf, Root, Stem, Tender Twig	-	√	-	-	-	-	85.35	-
258	*Lawsonia inermis*	Maruthondri	Leaf	√	-	√	-	√	√	990.05	√
259	*Lepidagathis cristata*	Kaadhu kaduppan poonu	Whole Plant	-	-	-	-	-	√	9.00	-
260	*Lepionurus sylvestris*	Vangvattur	Leaf	-	√	-	-	-	-	2.81	-
261	*Leptadenia reticulata*	Jivanti, Paalai kodi	Whole Plant	-	-	-	-	-	√	221.03	√
262	*Leucas aspera [= L. plukenetii]*	Dharm puspa	Whole Plant	-	√	-	√	-	√	402.22	√
263	*Leucas biflora [= L. procumbens]*	Jodi burumbi	Leaf	-	√	-	-	-	-	8.84	-
264	*Leucas indica*	Thumbai	Whole Plant	-	-	-	-	-	√	15.48	-
265	*Lindernia ruellioides*	Kausidarya	Whole Plant	-	√	-	-	-	-	8.99	-
266	*Litsea glutinosa [= L. chinensis]*	Menda Lakadi, Naramamidi, Maidachal, Medasakah	Bark	-	-	√	√	-	-	7.65	√
267	*Litsea salicifolia*	digloti, dighal-lat	Root	-	√	-	-	-	-	0.23	-
268	*Litsea polyantha*	Tumitla	Stem	-	√	-	-	-	-	0.77	-
269	*Lobelia angulata*	Choakthi	Leaf, Fruit	-	√	-	-	-	-	1.94	-
270	*Ludwigia perennis*	Dhan ghass	Leaf	√	-	-	-	-	-	7.73	-
271	*Madhuca longifolia var. latifolia*	Mahua	Root	-	-	-	√	-	-	1.10	√
272	*Mallotus nudiflorus*	Pindar, Wangphop	Root	-	√	-	-	-	-	1.28	√
273	*Mallotus roxburghianus*	Khabi-lakoi	Aerial Parts	-	√	-	-	-	-	25.08	-

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274	*Manilkra hexandra*	Rayan	Leaf	-	-	-	-	√	-	16.73	-
275	*Marsilea quadrifolia*	Aaraa keerai	Whole Plant	-	-	-	-	-	√	10.80	√
276	*Medicago polymorpha*	Bindo arxa, Nettho sag	Leaf	-	-	-	-	√	-	1.07	-
277	*Melastoma malabathricum*	Phutki	Root, Leaf	-	√	-	-	-	-	7.25	-
278	*Melia azedarach*	Neem, Malaivembu	Leaf, Seed	√	√	-	-	-	√	388.64	√
279	*Melia dubia*	Kadukhajur, Malabar Neem	Leaf	-	√	-	-	-	-	1.12	-
280	*Melocanna baccifera*	Muli Bans	Stem	-	√	-	-	-	-	0.10	-
281	*Mentha arvensis*	Pudina, Puthina	Whole Plant	√	√	√	√	-	√	300.23	√
282	*Mentha longifolia*	Pudina	Leaf	-	-	√	-	-	-	58.69	√
283	*Mentha piperita*	Puthina	Whole Plant,	-	√	-	√	-	√	307.39	√
284	*Merremia umbellata*	Voktesentil	Stem	-	√	-	-	-	-	0.15	√
285	*Merremia emarginata*	Elithazhai	Whole Plant	-	-	-	-	-	√	1.26	√
286	*Mikania micrantha*	Congress lota	Whole Plant	-	√	-	-	-	-	33.08	-
287	*Mimosa pudica*	Gajjalu, lajwanti, Lajpatti	Whole Plant	-	√	-	√	-	-	61.59	√
288	*Mimusops elengi*	Magudam poo	Flower, Bark, Fruit	-	√	-	-	-	-	20.43	√
289	*Mirabilis jalapa*	Amthimani tharai	Leaf	-	-	-	-	-	√	6.84	√
290	*Molineria capitulata*	Palm Grass	Tubers	-	√	-	-	-	-	0.56	-
291	*Mollugo cerviana*	Parpadagam	Whole Plant	-	-	-	-	-	√	0.72	
292	*Morinda coreia [= M. pubescens; M. tinctoria var. tomentosa]*	Nonaa, Nunna	Leaf, Fruits	-	√	-	-	-	√	295.08	√
293	*Moringa oleifera*	Murungai	Stem Bark, Seed, Leaf	√	√	-	√	-	√	8654.09	√
294	*Mucuna pruriens*	Konch	Seed	-	-	-	√	-	-	28.62	√
295	*Mukia maderaspatana [= Melothria maderaspatana]*	Musumu sukkai	Aerial Parts, Leaf	-	-	-	-	-	√	108.53	√
296	*Murraya koenigii*	Mitha Neem, Kari Patta, Karuvepilai	Leaf	-	√	√	-	√	√	538.21	√

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297	*Murraya paniculata*	Kamini	Leaf	-	√	-	-	-	-	7.41	-
298	*Myristica fragrans*	Jaathikaai, Jaiphal	Seed, Fruits	-	-	√	√	-	√	3.26	√
299	*Nardostachys jatamansi [= N. grandiflora]*	Jatamansi	Whole Plant	√	√	-	-	-	-	11.14	√
300	*Nelumbo nucifera*	Kamal phul, Kamala	Flower, Root (Rhizome)	-	-	-	-	-	√	1.44	√
301	*Nepenthes khasiana*	Ghatparni	Leaf	-	√	-	-	-	-	20.43	-
302	*Nerium oleander [= N. indicum]*	Kaner	Leaf	-	-	√	-	-	-	0.52	√
303	*Nervilia aragoana*	Sthalapadma	Root	-	√	-	-	-	-	1.53	√
304	*Nigella sativa*	Karunjeera gam, Kalonji	Seed	-	-	-	√	-	√	3.08	√
305	*Nyctanthes arbortristis*	Singar kali, Harsingar, Sewati dheu	Leaf, Bark, Flower	√	√	√	√	-	-	3262.52	√
306	*Nymphaea alba*	Kumud	Tuber	√	-	-	-	-	-	4.51	√
307	*Nymphaea pubescens*	Alli	Tuber	-	-	-	-	-	√	1.44	-
308	*Ocimum americanum*	Ganjam thulasi	Whole Plant	√	√	-	-	-	√	96.12	√
309	*Ocimum basilicum*	Kali Tulsi	Leaf	-	√	-	-	-	-	73.30	√
310	*Ocimum tenuiflorum [= O. sanctum]*	Thulasi	Whole Plant	√	√	√	√	√	√	30083.39	√
311	*Oldenlandia corymbosa [= Hedyotis corymbosa]*	Horpojiva	Whole Plant	-	√	-	-	-	-	9.35	√
312	*Oldenlandia herbacea [= Hedyotis diffusa]*	Mangaluk	Whole Plant	-	√	-	-	-	-	23.34	-
313	*Operculina turpethum [= Merremia turpethum]*	Shivadi	Root, Stem	√	-	-	-	-	-	117.49	√
314	*Opuntia dillenii*	Nag Phan	Leaf	-	√	-	-	-	-	0.20	√
315	*Oroxylum indicum*		Root, Bark, Stem, Fruit	-	√	-	-	-	-	312.08	√
316	*Oxalis corniculata*	Araa keerai, Tengeri	Whole Plant	-	√	√	-	-	√	329.71	√
317	*Paederia foetida*	Lokolast, Bhadai lota	Root, Leaf, Stem	√	√	-	-	-	-	510.67	√
318	*Paederia scandens*	Prasaarani	Leaf	-	√	-	√	-	-	36.30	√
319	*Panax bipinnatifidus var.*	Tetuchaal, Arlu,	Rhizome	-	√	-	-	-	-	10.57	-

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	angustifolius [= P. sikkimensis]	Syonaka									
320	*Pandanus amaryllifolius*	Rampe, Ambemohor Pat	Root	-	√	-	-	-	-	2.04	-
321	*Pandanus odorifer [= P. odorus]*	Kewada, Ketaki	Stem	-	√	-	-	-	-	2.20	√
322	*Paris polyphylla*	Satuwaa	Root, Rhizome	-	√	-	-	-	-	5.57	√
323	*Parmelia perforata*	Chhadila	Fruiting Body	-	-	-	-	-	√	1.73	√
324	*Pavetta indica*	Paavatta	Leaf	-	-	-	-	-	√	23.40	-
325	*Pavonia odorata*	Sugandh abala	Root	-	-	-	-	-	√	18.07	√
326	*Pedalium murex*	Annai nerunji, Peru nerinjal	Fruit, Leaf, Aerial Parts	-	-	-	-	-	√	161.99	√
327	*Peperomia pellucida*	Ponounua	Leaf	-	√	-	-	-	-	14.05	-
328	*Pergularia daemia*	Uthaamani	Leaf	-	-	-	-	-	√	37.80	√
329	*Phlogacanthus curviflorus*	Lamgi nongmangkha	Leaf	-	√	-	-	-	-	3.27	-
330	*Phlogacanthus pubinervius*	Titaaphul	Leaf	-	√	-	-	-	-	3.32	-
331	*Phlogacanthus thyrsiflorus*	Titaaphul	Leaf	-	√	-	-	-	-	81.62	-
332	*Phyla nodiflora*	Poduthalai	Whole Plant	-	-	-	-	-	√	183.95	√
333	*Phyllanthus amarus [= P. fraternus]*	Keezhaa nelli, Bhui aonala, Dudli	Whole Plant	√	√	√	√	-	√	266.78	√
334	*Phyllanthus emblica [= Emblica officinalis]*	Aonla, Nelli	Fruit, Leaf	√	√	√	√	√	√	11982.00	√
335	*Phyllanthus maderaspatensis*	Mevaa nelli	Whole Plant	-	-	-	√	-	-	11.01	√
336	*Phyllanthus niruri*	Bhuiamla, Bahupatra	Whole Plant	-	√	√	√	-	-	21.58	-
337	*Phyllanthus urinaria*	Hajarmani, chakpaheikru	Whole Plant	-	√	-	-	-	-	17.67	√
338	*Phyllanthus acidus*	Harfarauri, Gihori	Fruit	-	√	-	-	-	-	0.87	-
339	*Physalis minima*	Tulatipati, Tankari	Whole Plant	-	-	-	-	-	√	7.63	√
340	*Picrasma javanica*	Bonpashala	Leaf	-	√	-	-	-	-	8.17	-
341	*Picria fel-terrae*	Longritong	Leaf	-	√	-	-	-	-	4.75	-
342	*Picrorhiza kurroa*	Kutki	Root	-	-	√	-	-	-	15.05	√
343	*Pinus roxburghii*	Gandabiroja, Sarala	Resin	-	-	√	-	-	-	1.68	√

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344	*Pinus wallichiana*	Blue Pine	Bark	-	√	-	-	-	-	0.10	-
345	*Piper album*	Vellamilagu	Fruits	-	√	-	-	-	-	0.51	-
346	*Piper longum*	Pipal chhoti, Pipli	Seed, Fruit, Root, Leaf	-	√	-	√	-	√	227.00	√
347	*Piper thomsonii*	Pipla	Fruits	-	√	-	-	-	-	0.26	-
348	*Pisonia grandis*	Nachchu kottai	Leaf	-	-	-	-	-	√	10.08	-
349	*Pistacia integerrima [= P. chinensis subsp. integerrima]*	Kakarsingi	Galls, Fruit	-	-	√	-	-	-	18.70	√
350	*Plantago major*	Lahuriya	Whole Plant	-	√	-	-	-	-	26.97	√
351	*Plantago ovata*	Isappukol	Seed	-	-	-	-	√	-	322.41	√
352	*Plectranthus amboinicus*	Karpooravali	Leaf	-	-	-	-	-	√	137.48	√
353	*Plumbago zeylanica*	Kodiveli, Chitramulam	Root, Bark, Leaf, Stem	-	√	-	√	-	-	1344.00	√
354	*Podophyllum hexandrum [= P. emodi]*	Bankakri, Papra	Leaf	-	√	-	-	-	-	0.10	√
355	*Pogostemon benghalensis*	Jui-lata	Leaf	-	√	-	-	-	-	129.13	-
356	*Polyalthia longifolia*	Debodarn	Leaf, Bark	-	√	-	-	-	-	1.38	√
357	*Polygonum hydropiper*	Panimorisk	Leaf	-	√	-	-	-	-	4.19	-
358	*Polygonum microcephalum*	Tarakmana	Leaf	-	√	-	-	-	-	1.63	-
359	*Polygonum strigosum*	Tarakmana	Whole Plant	-	√	-	-	-	-	5.98	-
360	*Pongamia pinnata [= Derris indica]*	Karanj	Root	-	-	-	√	√	√	30.38	√
361	*Portulaca oleracea*	Kulfa	Seed	-	-	-	-	-	√	399.58	√
362	*Portulaca quadrifida*	Pasala keerai, Pasalai	Whole Plant	-	-	-	-	-	√	629.97	√
363	*Prosopis juliflora*	Velikaathaan	Leaf	-	-	-	-	-	√	16.38	-
364	*Prunus cornuta*	Jangli jamun	Bark (Root)	-	-	√	-	-	-	3.01	-
365	*Pseudodrynaria coronans [= Aglaomorpha coronans]*	Awmvel	Rhizome	-	√	-	-	-	-	0.31	-
366	*Pterocarpus marsupium*	Bijasal	Wood, Fruit, Bark	-	-	-	√	√	-	1412.79	√
367	*Pterospermum acerifolium*	Kanak Champa	Leaf	-	-	-	-	-	√	0.86	√
368	*Pueraria tuberosa*	Vidharikhand	Tubers	-	-	-	√	-	-	1.10	√

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369	*Punica granatum*	Maadulam	Seed, Fruit rind, Leaf	-	√	√	-	-	√	301.29	√
370	*Pyrus pashia*	Kainth	Fruit	-	-	√	-	-	-	6.45	-
371	*Quercus leucotrichophora*	Banj	Gum	-	-	√	-	-	-	0.82	-
372	*Rauvolfia serpentina*	Sarpagandha, Sivanmelpodi	Root, Leaf	-	-	-	√	√	-	26.47	√
373	*Rheum australe [= R. emodi]*	Revanchini, Dolu	Root	-	-	√	-	-	-	33.39	√
374	*Rhodiola wallichiana*	Mathi	Leaf	-	-	√	-	-	-	657.90	-
375	*Rhododendron arboreum*	Burans	Flower	-	-	√	-	-	-	17.50	√
376	*Rhododendron formosum*	Tiewsaw	Stem	-	√	-	-	-	-	0.92	-
377	*Rhododendron fulgens*	Tiewsaw	Flower	-	√	-	-	-	-	4.80	-
378	*Rhododendron campanulatum*	Cherailu	Leaf, wood	-	-	√	-	-	-	3.22	√
379	*Rhus chinensis*	Tamo	Seed, Leaf	-	√	-	-	-	-	6.59	-
380	*Rhynchostylis retusa*	Chintaran amu	Root	-	√	-	-	-	-	48.27	-
381	*Roylea cinerea*	Kadavi	Leaf	-	-	√	-	-	-	3.22	-
382	*Rubia cordifolia*	Manjeeth, Manjishti	Stem, Root	-	√	-	-	-	-	1.53	√
383	*Rubus alceifolius*	Sial-inuchhu	Fruit	-	√	-	-	-	-	0.26	-
384	*Rubus ellipticus*	Hmu-tau, Hisalu	Root, Fruit	-	√	√	-	-	-	46.74	-
385	*Rubus glaucifolius*		Fruit	-	√	-	-	-	-	15.32	-
386	*Rubus moluccanus*	Jetulipoka	Fruit, Root	-	√	-	-	-	-	2.36	-
387	*Ruellia prostrata*	Pattaasu ilai	Leaf	-	-	-	-	-	√	2.16	-
388	*Ruta chalepensis*	Pismaram	Aerial Parts	-	-	-	-	-	√	1.30	-
389	*Salvadora oleiodes*	Bada Pelu	Leaf	-	-	-	-	√	-	18.47	√
390	*Salvadora persica*	Bann	Fruit, Root	-	-	√	-	√	-	30.45	√
391	*Sansevieria roxburghiana*	Marul	Whole Plant	-	√	-	-	-	√	128.52	√
392	*Sapindus mukorossi*	Reetha	Fruit, Seed	-	√	√	-	-	-	116.19	√
393	*Saurauia napaulensis*	Goganda, Singkrang	Shoot	-	√	-	-	-	-	0.77	-
394	*Schima wallichii*	Chilauni, Makria	Bark, Fruit	-	√	-	-	-	-	5.77	-
395	*Scoparia dulcis*	Chinipatta	Whole Plant	-	√	-	-	-	-	139.34	-
396	*Scurrula parasitica*	Pavetta	Leaf	-	√	-	-	-	-	1.23	-
397	*Semecarpus anacardium*	Senkottai	Fruit	-	-	-	√	-	-	1.76	√

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398	*Senna alata [= Cassia alata]*	Khorpat	Leaf	-	√	-	-	-	-	36.62	√
399	*Senna alexandrina [= Cassia angustifolia, C. senna]*	Sona patta, Sonamukhi, Senna, Svarnapatri	Leaf, Flower	-	-	-	√	√	-	36.55	√
400	*Senna auriculata [= Cassia auriculata]*	Avarai	Root, Leaf, Fruit	-	-	-	√	√	√	628.65	√
401	*Senna occidentalis [= Cassia occidentalis]*	Shyam Chakor	Seed	√	-	-	-	-	-	939.95	√
402	*Senna sophera [= Cassia sophera]*	Kasodi, Ponthakaram	Root	-	√	-	-	-	-	0.10	√
403	*Senna tora [= Cassia tora]*	Oosi thagarai	Leaf, Seed	-	√	-	-	√	-	1.92	√
404	*Sesbania grandiflora*	Agathi	Leaf	-	-	-	-	-	√	411.82	√
405	*Shorea robusta*	Raal, Sala	Fruit	-	-	-	√	-	-	12.11	√
406	*Sida acuta*	Vatta thirupi	Whole Plant	-	-	-	√	-	-	1.10	√
407	*Sida cordata*	Bala	Whole Plant, Bark, Seed						√	2.70	√
408	*Sida cordifolia*	Velipaassai	Leaf	-	√	-	-	-		13.18	√
409	*Silybum marianum*	Milk thistle	Leaf	-	-	-	-	√	-	2.55	√
410	*Smilax glabra*	Chobchini, Lokhandi	Whole Plant	-	√	-	-	-	-	188.88	√
411	*Smilax zeylanica*	Jangali Ushbaa	Whole Plant	-	√	-	-	-	-	0.51	-
412	*Smilax purhampuy [= S. macrophylla]*	Sarsaparilla	Root	-	-	-	√	-	-	1.10	-
413	*Solanum anguivi. [= S. indicum., S.violaceum]*	Karimulli	Whole Plant	-	√	-	-	-	-	130.35	√
414	*Solanum khasianum*	Nightshade	Fruit	-	√	-	-	-	-	5.77	-
415	*Solanum nigrum*	Makoh, Mirchi, Man athakkaali	Whole Plant	√	√	√	-	-	√	1683.06	√
416	*Solanum torvum*	Sundakaai	Leaf, Fruit, Root	-	√	-	-	-	√	21.21	√
417	*Solanum trilobatum*	Thoodhuvalai	Whole Plant	-	-	-	-	-	√	104.39	√
418	*Solanum viarum*	Athalo	Fruit	-	√	-	-	-	-	1.28	-
419	*Solanum virginianum [= S. surattense,*	Kantakari, Kandan kattari,	Whole Plant	-	-	√	√	-	-	293.00	√

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	S. xanthocarpum]	Shankar, namoli									
420	*Sonerila maculata*		Leaf	-	√	-	-	-	-	0.92	-
421	*Soymida febrifuga*	Raktarohan	Bark	-	-	-	√	-	-	11.01	√
422	*Sphaeranthus indicus*	Kotta karanthai	Flower	-	-	-	√	-	-	11.01	√
423	*Sphagneticola calendulacea [= Wedelia chinensis, W. calendulacea]*	Manja karisalaangkanni	Whole Plant	-	-	-	-	-	√	992.74	-
424	*Spilanthes paniculata*	Pkakphet	Whole Plant,	-	√	-	-	-	-	20.33	√
425	*Spondias pinnata*	Mathimaangaa, Amora	Stem, Fruit, Leaf	-	√	-	-	-	√	122.14	√
426	*Stemona tuberosa*	Sural, Bilaikand, Bharda	Leaf	-	√	-	-	-	-	1.79	-
427	*Stephania rotunda*	Purha	Root	-	√	-	-	-	-	20.12	-
428	*Sterculia villosa*	Udal, Katira	Leaf	-	√	-	-	-	-	0.36	-
429	*Stereospermum chelonoides [= S. suaveolens]*	Padal fali	Seed, Fruit	-	√	-	√	-	-	20.83	√
430	*Streblus asper*	Sohra	Latex	√	-	-	-	-	-	3.22	√
431	*Strobilanthes callosus*	Maruadona	Leaf	-	-	-	-	√	-	1.68	-
432	*Strychnos nux-vomica*	Etti, Kuchada	Seed	-	-	-	-	-	√	0.29	√
433	*Strychnos potatorum*	Thaethaan	Seed, Stem	-	-	-	√	-	-	22.68	√
434	*Swertia chirayita*	Chiretta	Whole Plant	√	√	-	-	-	-	145.29	√
435	*Syzygium cumini*	Naaval	Seed, Fruits, Leaf, Stem, Bark	√	√	√	√	-	√	862.60	√
436	*Tabernaemontana divaricata [= T. coronaria]*	Nanthiya vattam	Stem, Leaf	-	√	-	-	-	√	6.86	√
437	*Tagetes erecta*	Genda	Leaf	√	√	√	-	-	√	623.46	√
438	*Tephrosia purpurea*	Kozhinji	Whole Plant	-	-	-	-	-	√	0.72	√
439	*Terminalia alata*	Asan, Sain	Fruits	-	-	-	√	-	-	33.03	-
440	*Terminalia arjuna*	Marudham, Arjun	Bark (Stem), Fruits	√	√	√	√	-	-	2747.17	√
441	*Terminalia bellirica*	Thandrikaai, Beheda	Fruits, Seed	√	√	√	√	√	√	5780.47	√
442	*Terminalia catappa*	Jangli badam	Bark	-	-	√	-	-	-	1.93	√
443	*Terminalia chebula*	Kadukkaai, Harda	Fruit, Flower, Bark	√	√	√	√	√	-	5740.33	√

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444	*Terminalia citrina*	Citrine myrobalan, Hillika	Fruit	-	√	-	-	-	-	15.27	-
445	*Tetrameles nudiflora*	Thitpok	Stem	-	√	-	-	-	-	11.44	-
446	*Tetrastigma serrulatum*	Monjam Hei	Leaf	-	√	-	-	-	-	38.26	-
447	*Tetrastigma thomsonianum*	Nal tenga	Leaf	-	√	-	-	-	-	3.37	-
448	*Thalictrum foliolosum*	Mamira	Root	-	-	√	-	-	-	1.63	√
449	*Thespesia populnea*	Poovarasa maram	Leaf, Stem	-	-	-	-	-	√	72.36	√
450	*Thottea tomentosa*	Thottea	Root, Rhizome	-	√	-	-	-	-	3.98	-
451	*Thunbergia alata*	Black-Eyed Susan Vine	Stem	-	√	-	-	-	-	3.22	-
452	*Thunbergia coccinea*	Chonga lota	Stem	-	√	-	-	-	-	2.86	-
453	*Thunbergia grandiflora*	Kukua loti, Neel Lata	Stem	-	√	-	-	-	-	1.74	-
454	*Thymus serpyllum*	Banajwain	Leaf	-	-	√	-	-	-	16.12	√
455	*Tinospora cordifolia*	Giloe, Amruthvalli, Seendhil	Whole Plant	√	√	√	√	√	√	2331.92	√
456	*Toddalia asiatica*	Milgaranai	Whole Plant	-	-	-	-	-	√	1.30	√
457	*Trianthema portulacastrum*	Mamadha poondu	Aerial Parts	-	-	-	-	-	√	97.19	√
458	*Tribulus terrestris [= T. lanuginosus]*	Gokuru, Seru nerunjil	Whole Plant	-	-	-	√	-	√	81.14	√
459	*Trichosanthes cucumerina [= T. anguina]*		Fruit	-	√	-	-	-	-	4.19	√
460	*Tridax procumbens*	Thaatha thalavetti poo	Leaf	-	-	-	√	-	√	537.54	√
461	*Tylophora indica [= T. asthmatica]*	Nanju murichaan	Whole Plant	-	-	-	-	-	√	1.80	√
462	*Uncaria macrophylla*	Cat's claw	Bark	-	√	-	-	-	-	2.55	√
463	*Urena lobata*	Sampakpi	Root, Stem	-	√	-	-	-	-	1.23	-
464	*Urginea indica*	jangli-piyaz	Root	-	-	-	√	-	-	22.13	√
465	*Urtica dioica*	Bichchhu buti, Kandali	Leaf, Root	-	√	√	-	-	-	133.33	√
466	*Valeriana jatamansii*	Tagar ganth, Sugandhbala, Asaroon	Root	-	√	-	-	-	-	1.28	√

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467	*Vallaris solanacea*	Agarmoni	Leaf, Stem	-	-	-	-	-	√	1.73	-
468	*Ventilago maderaspatana*	Pitti	Root, Seed	-	-	-	√	-	-	4.40	√
469	*Verbena officinalis*	Tharo-phijub	Root	-	√	-	-	-	-	35.75	-
470	*Viola pilosa*	Banksha	Flower	-	-	√	-	-	-	13.54	√
471	*Vitex negundo*	Nochi	Leaf, Seed	√	√	√	-	√	√	759.13	√
472	*Vitex peduncularis*	Kaktikta	Stem, Bark	-	√	-	-	-	-	16.75	-
473	*Withania somnifera*	Amukkuraa, Ashwagandha	Shoots, Root	-	-	-	√	√	√	19.32	√
474	*Wrightia tinctoria*	Veppalai	Bark, Seed, Leaf	-	-	-	√	-	√	11.08	√
475	*Zaleya decandra [= Trianthema decandra]*	Muthu saataranai	Aerial Parts	-	-	-	-	-	√	54.00	√
476	*Zanthoxylum armatum*	Timru	Whole Plant	-	√	√	-	-	-	219.19	√
477	*Zanthoxylum nitidum [= Z. hamiltonianum]*	Ricom, Tezmui	Root, Stem	-	√	-	-	-	-	12.69	√
478	*Ziziphus mauritiana [= Z. jujuba]*	Elandhai, Ber	Fruit, Leave	-	√	√	-	-	√	40.34	√
479	*Ziziphus rugosa*	Bogori	Root	-	√	-	-	-	-	2.04	√

Zone-wise analysis of the consumption pattern of diversity of medicinal plant specis used by rural households as given in table 4.2 reveals that the highest diversity of plants was used in North Eastern Zone followed by households of Southern Zone, Central Zone, North Western Zone, Northern Zone and Western Zone respectively (fig. 4.1).

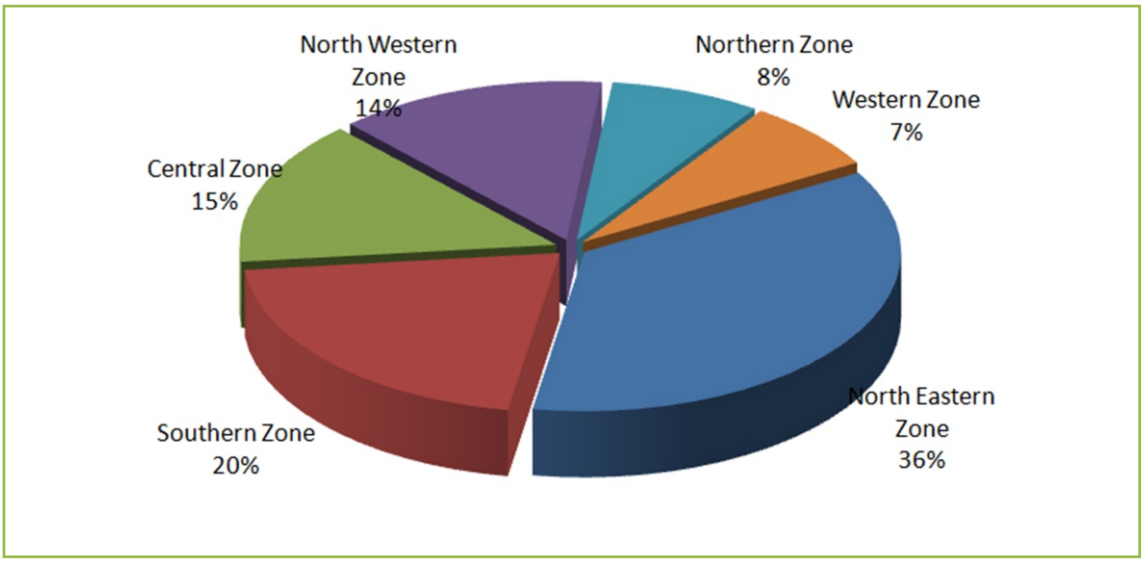

Fig. 4.1. Zone-wise usage of 479 medicinal plant species by rural household

Analysis of data in table 4.2 also reveals that 8 species i.e. 'tulasi' (*Ocimum tenuiflorum*), 'amla' (*Phyllanthus emblica*), 'bael' (*Aegle marmelos*), 'neem' (*Azadirachta indica*), 'sahjan' (*Moringa oleifera*), 'bahera' (*Terminalia bellirica*), 'shatavari' (*Asparagus racemosus*), and 'ghritkumari (*Aloe vera*) are used by rural households across all the 6 zones. 10 species including 'arka' (*Calotropis procera*), 'sadabahar' (*Catharanthus roseus*), 'harar' (*Terminalia chebula*), 'asvatha' (*Ficus religiosa*), 'vasaka' (*Justicia adhatoda*), 'mint' (*Mentha arvensis*), 'bhumiamla' (*Phyllanthus amarus*), 'jamum' (*Syzygium cumini*), and 'nirgundi' (*Vitex negundo*) are used across 5 zones. Another 14 species are used across 4 zones. The remaining species were used in three or less zones.

Documentation of 479 medicinal plant species under this study is an improvement over the 354 medicinal plant species documented by Ved and Goraya (2008) for the rural households. Average annual consumption of herbal raw drugs (dry weight) per household has been computed at 1.24 kg. Computation of the estimated annual consumption, on dry weight basis, of the 479 recorded medicinal plant species by rural households at national level on the basis of sampled rural households places the annual estimated consumption of herbal raw drugs by rural households for the year 2014-15 at 1,71,500 MT. Out of the total recorded medicinal plant species from rural household surveys, 296 species, constituting about 94% of the total consumption by weight of herbal raw drugs by rural household, are in active trade (Table 4.2).

Further analysis of data in table 4.2 reveals that 109 medicinal plants out of the 296 listed as traded have annual consumption of >100 MT. These 109 species account for 92% of the total annual consumption at the rural household level. Of these 109 medicinal plant species, 'tulasi' (*Ocimum tenuiflorum*), 'amla' (*Phyllanthus emblica*), 'bael' (*Aegle marmelos*), 'neem' (*Azadirachta indica*), 'sahjan' (*Moringa oleifera*), 'bahera' (*Terminalia bellirica*), 'harar' (*Terminalia chebula*), 'asthisamhrta' (*Cissus quadrangularis*), 'karnasphota' (*Cardiospermum halicacabum*), 'harshingar' (*Nyctnathes arbor-tristis*), and 'ghritkumari (*Aloe vera*) are used in very large quantities i.e. exceeding 3000 MT per year, at the rural household level.

Habit-wise analysis (fig. 4.2) of the 296 species in active trade as given in table 4.2 reveals that 41% of these species are herbs, 27% are trees, 23% are shrubs, and 9% are climbers, with one entity falling in the category of 'thallus' (*Parmelia perlata*).

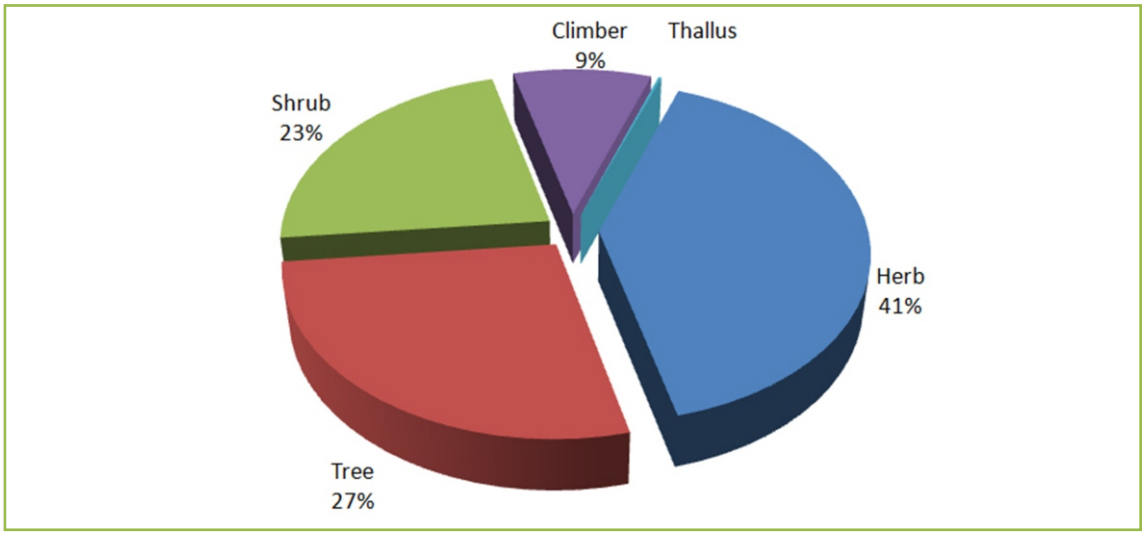

Fig. 4.2. Habit wise distribution of 296 traded Medicinal Plant species consumed by Rural Households

The 479 medicinal plant species documented under this rural households survey belong to 128 families of plants, of which the dominant families are Asteraceae, Lamiaceae, Fabaceae, Malvaceae, Euphorbiaceae, Rubiaceae, Acanthaceae, Apocynaceae, Solanaceae, Caesalpiniaceae, Convolvulaceae, Mimosaceae, and Phyllanthaceae with each of these families represented by at least 11 plant species (fig. 4.3). More than one third medicinal plant entities used by the rural households belong to three plant families i.e. Asteraceae, Fabaceae and Lamiaceae. This highlights the pressures on these limited numbers of families and suggests use of an added focus for further studies.

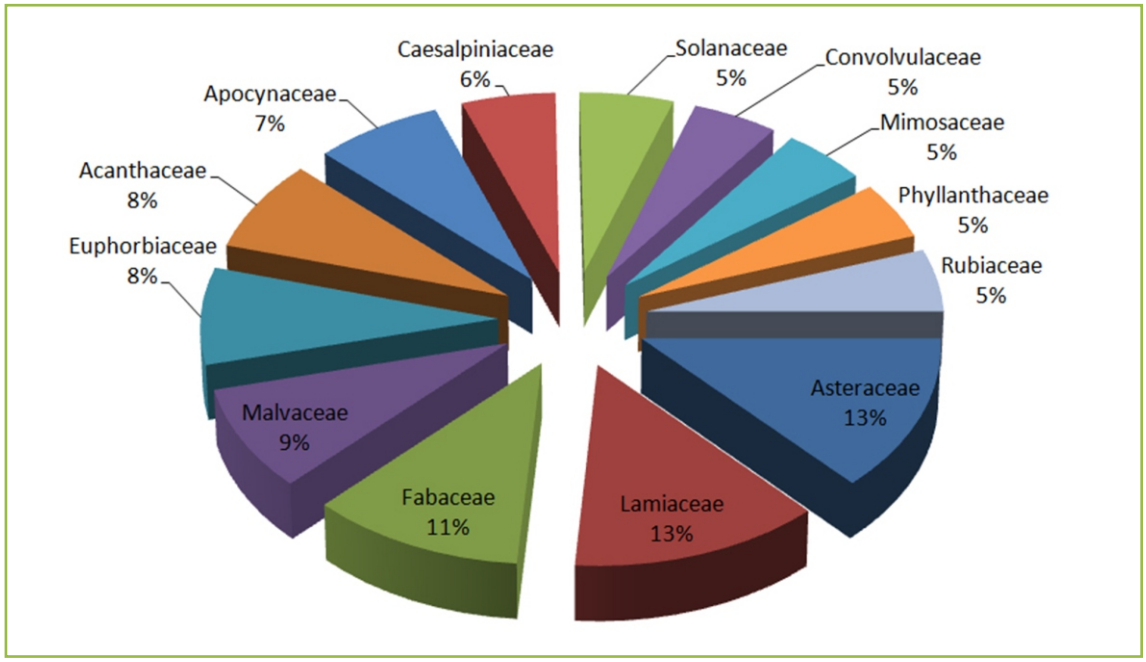

Fig. 4.3. Dominant Families of 479 Medicinal Plant Species Consumed by Rural Households

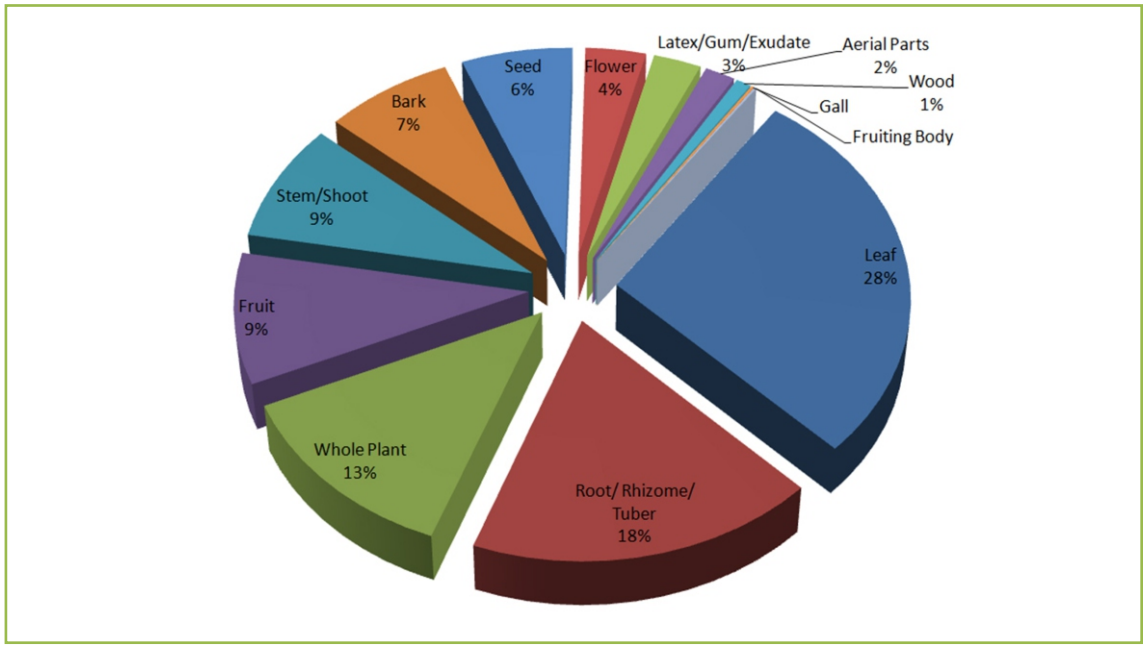

Fig. 4.4. Part-wise Consumption of 677 Herbal Raw drug entities by Rural Households

Analysis of the 677 herbal raw drug entities pertaining to 479 medicinal plant species consumed by the rural households brings out that leaf (28%), and root/ rhizome/ tuber (18%) form the major herbal raw drugs used by these communities. The remaining raw drug entities pertain to whole plant (13%), fruits and stem (9%), bark (7%), seeds (6%), flowers (4%) with less than 1% being latex/ gum/ exudates, aerial parts, wood, gall and fruiting body/ thallus, etc. (fig. 4.4). Use of whole plants, roots, stem and bark, amounting to destructive harvesting, forms about 47% of the total medicinal plant species in usage.

During survey people at many places shared that availability of some of the species had become scarce. It was also noted that some plant species, in less frequent use, remained very important as these were needed for very specific therapeutic purposes. The people expressed a general fear that the increasing scarcity of many plants might lead to the loss of traditional knowledge about the medicinal uses of such species. For example, drastic decrease in the availability of medicinal plant species like *Aconitum heterophyllum*, *Paris polyphylla*, *Dactylorhiza hatageria*, *Podophyllum hexandrum*, *Rhododendron campanulatum*, *Swertia chirayita* and *Zanthoxylum armatum*, was reported by the local people during survey in the North-West zone.

The most frequently mentioned diseases recorded during the survey were related to digestive/ abdominal disorders, post-delivery care, snake bite, body injuries, common cold, flu, cough and wounds. The survey also highlighted that most of the medicinal plant species common to all regions were being used to treat more than one common ailment. It also came out that different parts of the same plant were being used for different purposes by different population groups. Sometimes, a specific plant part was being used for children and another part of the same plant for adults to treat the same disease. It was generally observed that the women folk were especially knowledgeable regarding common home remedies, and it was them who were managing the collection of plants, and also the preparation of formulations and their administration.

Chewing Sticks for Oral Healthcare

Chewing sticks are one of the most widely used herbal raw drugs for dental and oral healthcare across the country, both in rural and urban areas. Taken from various plant parts viz. stem, bark, root or leaf of various plant species, chewing sticks are used as tooth brushes and are chewed several times daily to clean and freshen teeth, strengthen gums and also to mitigate digestive problems. The use of chewing sticks is thus both preventative and curative. A number of plant species used for dental care and care of oral cavity were documented during the survey of households. Some of the commonly used species for this purpose include 'neem' (*Azadirachta indica*), 'babool' (*Acacia nilotica*), 'meswak' (*Salvadora oleoides*), 'dandasa' (*Juglans regia*), 'paja' (*Prunus cerasoides*), 'bashal' (*Salix tetrasperma*), 'basuti' (*Adhatoda zeylanica*), 'gandhla' (*Murraya koenigii*), 'puthkanda' (*Achyranthes aspera*), and 'timber' (*Zanthoxylum armatum*). These plant entities have characteristic taste and flavour (bitter, sweet, sour, astringent and antiseptic) and qualities (hard and soft) and the local people use different chewing sticks for taking care of teeth, oral hygiene and digestion problems.

Data gathering on Herbal Raw Drug Consumption by Rural Households

4.3. SOURCE OF MEDICINAL PLANTS / RAW DRUGS

The rural communities have been traditionally collecting most of the medicinal plant species from nearby forests and from field bunds and fallow lands/ wastelands. Some of the species are also cultivated in the homesteads and some are purchased from market too. Survey data from rural households reveals that the communities were collecting more than 80% of the medicinal plants (excluding fruits, vegetables, cereals and spices) from the local forests and non-forest habitats, and about 10% of the medicinal plants were being sourced from cultivation in the homesteads. Only the remaining less than 10% of the medicinal plants, not available locally, are purchased from the market.

Constituents of Triphala - a popular herbal formulation

4.4. ESTIMATION OF HERBAL RAW DRUG CONSUMPTION BY FOLK HEALERS

Based on *a priori* information gathered during household survey, 89 folk healers were interviewed and data about their usage of herbal raw drugs for treating various ailments recorded.

Collation of data has resulted in enlisting of 340 medicinal plant species (excluding vegetables, fruits, spices, cereals and pulses) used by the surveyed 89 folk healers for their day-to-day dispensation (table 4.4). Total annual consumption of medicinal plants by 89 responding folk healers has been estimated to be 9.82 MT with an average estimated per folk healer annual consumption of about 109 kg.

Table 4.4. Herbal Raw Drugs Reported in Consumption by 89 Sampled Folk Healers

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
1	*Abelmoschus manihot*	Mushkdana, Kasturidana	Root	0.00002	-
2	*Abroma augusta*	Gorokhia kosai	Root	0.00050	√
3	*Abutilon indicum*	Thuthi	Leaf	0.02450	√
4	*Acacia catechu*	Kasikatti, Khair, Katha	Stem, Bark	0.01610	√
5	*Acacia pennata*	Agla bel, Biswal	Leaf/Bark	0.00001	-
6	*Achyranthes aspera*	Nayuruvi, Chid chida, Sajhi	Whole Plant, Stem, Leaf, Root	0.00675	√
7	*Acmella oleracea*	Akarkara	Root	0.00003	√
8	*Acmella paniculata*	Jatimal kath, Jati malkathi	Whole Plant, Leaf, Root	0.00284	-
9	*Aconitum heterophyllum*	Bonga kanpo, Atees	Root, Bulb	0.00025	√
10	*Aconitum chasmanthum*	Bikh	Root	0.00002	√
11	*Aconitum ferox*	Metha zehar, Chandog	Root, Bulb	0.00013	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
12	*Acontum lethale*	Bonga marpo	Root	0.00005	√
13	*Acorus calamus*	Gurbach, Vasambu, Bach	Root, Rhizome, Leaf	0.01447	√
14	*Adenia trilobata*	Pu-hing	Leaf	0.00007	-
15	*Aeginetia indica*	Aankuri bankuri	Leaf	0.00007	-
16	*Aegle marmelos*	Bel	Bark, Fruit, Leaf	0.23329	√
17	*Aerva lanata*	Chiru poolai	Root	0.00060	√
18	*Ageratum conyzoides*	Ukhal butti	Whole Plant	0.00001	√
19	*Ajuga bracteosa*	Neel Kanthi	Leaf	0.00130	√
20	*Alangium salvifolium*	Azhinjal	Root	0.00100	√
21	*Albizia lebbeck*	Siris	Wood, Leaf, Bark	0.00242	√
22	*Albizia lucidior*	Moj	Root	0.00014	-
23	*Aloe vera*	Gritkumari	Leaf	1.07720	√
24	*Alpinia galanga*	Perarathai, Kulanjan, Rasna	Rhizome, Root	0.22214	√
25	*Alpinia nigra*	Ya-muneheu	Tender Shoot	0.00280	-
26	*Alstonia scholaris*	Saitan	Stem, Bark, Leaf, Latex	0.00337	√
27	*Alternanthera sessilis*	Khutora sal	Whole Plant	0.00009	√
28	*Amorphophallus paeoniifolius*	Olkochu, Suran	Tuber, Leaf	0.00024	√
29	*Andrographis paniculata*	Nila vembu, Kalmegh	Whole Plant, Leaf	0.01655	√
30	*Angelica glauca*	Chanra	Root	0.00017	√
31	*Anisomeles indica*	Hakup hing	Ariel Part	0.00163	-
32	*Anogeissus latifolia*	Dhaura	Leaf	0.00020	√
33	*Anogeissus acuminata*	Dhau, Dhoy, Dhaura	Bark (Stem)	0.00006	-
34	*Aporosa octandra*	Tamsir	Bark	0.00090	-
35	*Argemone mexicana*	Brahma dandu	Root	0.00300	√
36	*Argyreia nervosa*	Guduk Twak	Bark (Stem), Leaf	0.02542	√
37	*Arisaema speciosum*	Chamosh	Bulbs	0.00017	-
38	*Aristolochia bracteolata*	Kidmaar	Leaf	0.00030	√
39	*Aristolochia indica*	Eeswaramooli	Leaf/Root	0.00036	√
40	*Aristolochia tagala*	Puliphum	Leaf	0.00005	√
41	*Artocarpus chama*	Robot	Seed	0.00006	-
42	*Asparagus racemosus*	Shatawar	Root/Rhizome, Leaf, Stem	0.16628	√
43	*Asparagus adscendens*	Satrouri	Leaf	0.00014	√
44	*Asparagus officinalis*	Hathmol	Rhizome	0.00006	-
45	*Averrhoa carambola*	Nanni nai	Fruit	0.00071	-
46	*Azadirachta indica*	Neem, Vaeppan, Maha Neem	Leaf, Whole Plant, Bark, Stem	0.06341	√
47	*Baccaurea ramiflora*	Burmese Grape	Bark	0.00005	-
48	*Bacopa monnieri*	Neer brahmi	Leaf, Whole Plant	0.00206	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
49	*Bambusa bombas*	Mungilarisi, Banh	Stem, Tender Shoot	0.00126	√
50	*Barleria prionitis*	Daskaranta	Whole Plant	0.06000	√
51	*Bauhinia variegata*	Kachnar	Flower	0.00180	√
52	*Begonia roxburghii*	Dieng jajew	Stem, Root/ Rhizome, Leaf	0.00096	-
53	*Berberis aristata*	Daruhaldi, Kilmora	Root	0.00120	√
54	*Berginia ciliata*	Pashan Bhed, Silfora, Pathhar chatta, Bramentok	Root / Bulb, Leaf	0.00081	√
55	*Blumea lanceolaria*	Tera paibi	Leaf	0.00008	-
56	*Boerhavia diffusa*	Punarnava, Mukarattai	Whole Plant, Leaf, Bark, Root, Seed	0.00196	√
57	*Bombax ceiba*	Simalu, Savari	Root/ Tuber	0.00176	√
58	*Bonnaya reptans*	Kausidarya	Whole Plant	0.00067	-
59	*Boswellia serrata*	Mani kundrikam	Bark	0.00080	√
60	*Bryophyllum pinnatum*	Dupoor tanga, Pathar Chatt	Leaf	0.00075	√
61	*Bulbophyllum odoratissimum*	Washom, Rapak hing	Rhizome/ Bulb	0.00038	-
62	*Butea monosperma*	Tesu Phool, Palas Phool	Root, Flower	0.00026	√
63	*Buxus sempervirens*	Kangu	Whole Plant	0.00030	-
64	*Byttneria aspera*	Tikani barua	Stem/Bark	0.00007	-
65	*Byttneria pilosa*	Sazuknghawnghlap	Leaf	0.00002	-
66	*Caesalpinia bonduc*	Sagargoti	Soot	0.00050	√
67	*Calamus guruba*	Rattan	Tender Shoot	0.00008	-
68	*Callicarpa arborea*	Tabuk-hing	Bark (Stem & Root), Root	0.00578	-
69	*Callicarpa macrophylla*	Tonglofi	Tender Shoot, Fruit	0.00712	√
70	*Calotropis gigantea*	Erukkam	Leaf, Latex	0.00037	√
71	*Calotropis procera*	Aken	Root, Leaf	0.00410	√
72	*Cannabis sativa*	Fung, Bhang	Leaf	0.00029	√
73	*Carum carvi*	Seemail sombu, Goh nyud	Seed	0.00030	√
74	*Castanopsis tribuloides*	Katus	Stem/Bark	0.00008	-
75	*Catharanthus roseus*	Nithyakalyani	Leaf, Flower, Tender Shoot	0.00305	√
76	*Catunaregam spinosa*	Bihmora	Seed	0.00009	√
77	*Cedrus deodara*	Devdaru	Bark, Wood, Leaf	0.01200	√
78	*Celastrus aculeatus*	Bhumloti	Tender twig	0.00009	-
79	*Centella asiatica*	Vallaarai	Whole Plant	0.00402	√
80	*Cheilocostus speciosus*	Dev dhonki, Jamlakhuti	Root/Rhizome	0.00139	√
81	*Chlorophytum borivilianum*	Safed musli	Root, Seed	0.00260	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
82	*Chlorophytum arundinaceum*	Safed musli	Root	0.00280	-
83	*Chlorophytum nepalense*	Safed musli	Stem / Bark Juice	0.00002	-
84	*Chloroxylon swietenia*	Bhirra, Bhivia, Dhoura	Bark	0.00100	-
85	*Chromolaena odorata*	Hingan	Leaf, Root	0.00071	-
86	*Chrysopogon zizanioides*	Birina	Root	0.00172	√
87	*Cichorium intybus*	Kaasini	Leaf	0.00030	√
88	*Cinnamomum verum*	Dalchini	Bark	0.00040	√
89	*Cinnamomum glanduliferum*	Rolu	Stem, Bark	0.00011	-
90	*Cissampelos pareira* var. *hirsuta*	Randsang satu	Leaf, Root/Bulb	0.00288	√
91	*Cissus quadrangularis*	Pirandai, Hutjodi	Stem	0.00200	√
92	*Cleome gynandra*	Vaelai keerai, Nalla vaelai	Leaf	0.00020	√
93	*Clerodendrum glandulosum*	Tapen	Leaf	0.00032	-
94	*Clerodendrum infortunatum*	Bhant, Batigosh	Leaf, Tender Shoot	0.00142	√
95	*Clitoria ternatea*	Aprajita Black Flower	Fruit	0.00320	√
96	*Codariocalyx motorius*	Thozhukanni	Leaf	0.00050	-
97	*Coleus forskohlii*	Gandira	Root	0.00002	√
98	*Colona floribunda*	Devanagari	Leaf	0.00001	-
99	*Commiphora wightii*	Guggulu	Stem, Gum Resin	0.02420	√
100	*Conyza leucantha*	Fleabane	Whole Plant / Stem	0.00001	-
101	*Crateva religiosa*	Bomn	Bark	0.00024	√
102	*Croton caudatus*	Lata mahudi	Twig, Leaf	0.00019	-
103	*Croton tiglium*	Nervalum, Kanibih	Root/Bark	0.00021	√
104	*Curculigo orchioides*	Nilapanai, Kali musli	Root/Tuber	0.00900	√
105	*Curcuma angustifolia*	Ya-pansut	Rhizome	0.00280	√
106	*Curcuma caesia*	Nar-kachura, Kala-haldi	Rhizome	0.00124	√
107	*Cuscuta europaea*	Aakash Laguli, Aakash bel	Leaf/Root	0.00200	-
108	*Cuscuta reflexa*	Amar bel, Akashi lata	Stem	0.00052	√
109	*Cynodon dactylon*	Arugampul, Dub ghas	Whole Plant	0.00316	√
110	*Cyperus scariosus*	Nagarmotha	Rhizome	0.00006	√
111	*Dactylicapnos scandens*	Thoo	Root/Tuber	0.00006	-
112	*Dactylorhiza hatagirea*	Wanpolagpa, Hathajodi, Salam panja	Root, Rhizome	0.00400	√
113	*Dalbergia sissoo*	Shisham	Leaf, Twigs	0.00125	√
114	*Datura metel*	Oomaththai, Umatham, Maah-hing, Dudura/Datura	Fruit	0.00053	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
115	*Datura stramonium*	Dhatura	Flower, Fruit, Seed, Leaf	0.03360	√
116	*Dendrobium heterocarpum*	Tai Taming	Stem/Leaf	0.00001	-
117	*Dendrocalamus strictus*	Baans	Root	0.00006	-
118	*Dendrocnide sinuata*		Root, Shoota	0.00018	-
119	*Desmodium sequax*	Bioni sabala	Tender Leaf	0.00065	-
120	*Dichrostachys cinerea*		Leaf	0.00050	√
121	*Dillenia indica*	Chalita	Flower	0.00069	-
122	*Dillenia pentagyna*	Nagkesaram	Leaf	0.00042	√
123	*Dioscorea bulbifera*	Varahi kand,	Root	0.00080	√
124	*Dioscorea hispida*	Kath Alu, Baichandi	Tuber	0.00003	-
125	*Dioscorea pentaphylla*	Kanta alu	Rhizome/Tuber	0.00001	√
126	*Diplocyclos palmatus*	Shivlingi	Seed	0.00040	√
127	*Drymaria cordata*	Ya-kithoy	Whole Plant	0.00028	-
128	*Dysoxylum excelsum*	Bili devdari	Leaf	0.00005	-
129	*Dysoxylum gotadhora*	Bili devdari	Root/Bulb	0.00001	-
130	*Eclipta prostrata*	Bhrangraj	Leaf	0.00600	√
131	*Elaeagnus caudata*	Mirika tory, Sarzuk	Leaf, Bark (Stem), Root	0.00064	-
132	*Elaeagnus latifolia*	Goeli, Muslendi	Leaf, stem, Root	0.00030	-
133	*Elaeagnus pyriformis*	Sarzukui	Leaf	0.00004	-
134	*Elephantopus scaber*	Gjihiva	Leaf	0.00160	√
135	*Elsholtzia communis*	Kewa	Leaf	0.00001	-
136	*Entada phaseoloides*	Kakavalli	Seed	0.00003	-
137	*Eryngium foetidum*	Ban dhania	Leaf	0.00010	-
138	*Erythrina variegata [= E. indica]*	Kalyanamurungai	Bark, Stem	0.00008	√
139	*Euphorbia antiquorum*	Bisalyakarani	Leaf	0.00060	-
140	*Euphorbia hirta*	Ammaan pacharisi	Whole Plant, Stem, Leaf, Root	0.00227	√
141	*Euphorbia neriifolia*	Sigu	Stem	0.00009	√
142	*Ficus benghalensis*	Aal	Stem, Bark, Leaf	0.00095	√
143	*Ficus hispida*	Dimaru, Awa dimaru	Root	0.00040	√
144	*Ficus racemosa*	Gular, Phangrok	Leaf, Fruit	0.00055	√
145	*Ficus maclellandii*	Alii Fig	Latex	0.00001	-
146	*Ficus palmata*	Dudla safed mirch	Leaf	0.00130	-
147	*Ficus religiosa*	Arasu	Root	0.00160	√
148	*Ficus virens*	Nai	Leaf Powder	0.00006	-
149	*Flueggea virosa*	Dalme, patala	Leaf	0.00004	√
150	*Fragaria vesca*	Niwikhea	Arial Parts	0.00140	-
151	*Garcinia sopsopia*	Vawm-va, Thensaker	Fruit	0.00009	-
152	*Gardenia resinifera*	Jaysendha	Bark (Stem, Root)	0.01065	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
153	*Glinus oppositifolius*	Ushnasundara	Whole Plant	0.00001	√
154	*Gloriosa superba*	Chithiraikizhangu	Root/Tuber	0.00004	√
155	*Glycyrrhiza glabra*	Mulethi	Stem, Root	0.03840	√
156	*Gmelina arborea*	Gamhar	Bark	0.00120	√
157	*Gomphogyne cissiformis*	Jhur Thliem	Fruit	0.00005	-
158	*Gymnema sylvestre*	Sarkarai kolli, Siru kurinjaan	Leaf, Whole Plant	0.01394	√
159	*Hedyotis scandens*	Kelhnamatur	Leaf	0.00018	-
160	*Helicia robusta*	Pasaltakaza	Stem, Root, Leaf, Bark (Stem & Root)	0.00057	-
161	*Helicteres isora*	Valampuri-Idampuri	Fruit	0.00005	√
162	*Hemidesmus indicus*	Anantmul	Leaf, Root	0.01520	√
163	*Heteropanax fragrans*	Keserm	Bark	0.00024	-
164	*Hibiscus rosa-sinensis*	Joba phool	Root Powder	0.00030	√
165	*Holarrhena pubescens*	Kurai/Kutaz	Bark, Fruit, Root	0.04100	√
166	*Homalomena aromatica*	Sugan mantri	Rhizome	0.00051	√
167	*Houttuynia cordata*	Soru maimimi		0.00009	-
168	*Impatiens balsamina*	Kanjuli, Gul-mehndi	Stem	0.00005	-
169	*Imperata cylindrica*	Boroter		0.00008	√
170	*Inula racemosa*	Manav	Root	0.00500	√
171	*Inula cappa*	Chinen lap	Leaf	0.00017	-
172	*Ipomoea fistulosa*	Amar	Root	0.00018	-
173	*Jatropha curcas*	Bhotax	Latex, Stem, Seed	0.00059	√
174	*Justicia adhatoda*	Adathodai, Pait boha	Leaf, Whole Plant	0.00162	√
175	*Justicia gendarussa*	Rapak hing	Leaf	0.00030	√
176	*Kalanchoe laciniata*	Pathar Chatt	Leaf	0.00017	√
177	*Knema cinerea*	Kelat	Latex	0.000002	-
178	*Knema linifolia*		Stem Bark	0.00004	-
179	*Kyllinga brevifolia*	Kahan Ban	Arial Parts	0.00030	-
180	*Lannea coromandelica*	Movai	Stem	0.00024	√
181	*Lasia spinosa*	Sengmora	Rhizome	0.00012	-
182	*Lawsonia inermis*	Maruthondri, Mehndi Paat	Leaf	0.00420	√
183	*Leea compactiflora*	Kum-tin-tuai	Leaf, Flower	0.00015	-
184	*Lepidium sativum*	Chitamul	Whole Plant	0.02000	√
185	*Lepionurus sylvestris*	An-pang-thuam, Vangvattur	Leaf	0.00004	-
186	*Leucas aspera*	Drunban	Tender Leaf	0.00039	√
187	*Ligularia amplexicaulis*	Richo dola	Root	0.00090	-
188	*Lindernia crustacea*	Kachidnia	Root	0.00012	-
189	*Lindernia ruellioides*	Kausidarya	Whole Plant	0.00020	-
190	*Litsea cubeba*	Mejanka	Bark	0.00012	-
191	*Litsea salicifolia*	Dighloti	Root	0.00012	-

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
192	*Lobelia angulata*	Choakthi	Leaf, Fruit	0.00006	-
193	*Madhuca longifolia*	Mahua	Fruit, Fruit, Bark, Leaf	0.00341	√
194	*Mallotus nudiflorus*	Pindar, Wangphop	Root	0.00001	-
195	*Mallotus philippensis*	Loban	Root	0.00008	√
196	*Mallotus roxburghianus*	Lapakidn phum	Ariel Part, Leaf	0.00046	-
197	*Mappia foetida*	Ponong gaus	Leaf	0.00060	√
198	*Melastoma malabathricum*	Phutki	Root	0.00015	-
199	*Melocanna baccifera*	Muli Bans	Stem	0.00000	-
200	*Mentha arvensis*	Pudina	Leaf	0.00310	√
201	*Mikania micrantha*	Congress lota	Leaf	0.00001	-
202	*Mimosa pudica*	Gajjalu, Lajwanti	Leaf, Whole Plant, Root	0.00156	√
203	*Mimusops elengi*	Bokul	Bark	0.00009	√
204	*Molineria capitulata*	Palm Grass	Root/Tuber	0.00008	-
205	*Moringa oleifera*	Murungai, Sainja	Leaf	0.00150	√
206	*Morus alba*	Shatoot	Bark	0.00040	√
207	*Mucuna pruriens*	Krouch, Bidung, Konch	Leaf, Seed	0.09050	√
208	*Myrica esculenta*	Kaphud	Bark	0.00080	√
209	*Myristica fragrans*	Jaathikaai, Jaiphal	Seed, Fruit	0.00160	√
210	*Nardostachys jatamansi*	Jatamansi	Root/Rhizome, Whole Plant	0.04417	√
211	*Nelumbo nucifera*	Kamalkand	Rhizome	0.00240	√
212	*Neolamarckia cadamba*	Roghu, Kadamb	Bark	0.00012	√
213	*Nervilia aragoana*	Sthalapadma	Root	0.00004	√
214	*Nyctanthes arbor-tristis*	Ganga Siuli, Singar kali, Harsingar, Sewati dheu	Root/Rhizome, Leaf	0.00700	√
215	*Ocimum tenuiflorum*	Thulasi	Leaf, Leafy Twigs, Root	0.00622	√
216	*Oldenlandia corymbosa*	Jarpajihba	Leaf	0.00006	√
217	*Oldenlandia diffusa*	Bonmlu	Whole Plant	0.00009	-
218	*Oldenlandia umbellata*	Inbooral	Whole Plant	0.00010	√
219	*Oldenlandia verticillata*	Mihkat hing	Leaf, Stem, Root	0.00027	-
220	*Operculina turpethum*	Teodi, Shivadi	Root/Bark	0.00450	√
221	*Opuntia dillenii*	Nag Phan	Leaf	0.00002	√
222	*Oroxylum indicum*	Panokai, Kutannat	Root (Powder), Root, Stem, Bark, Fruit	0.00366	√
223	*Oxalis corniculata*	Tengari	Stem	0.00009	√
224	*Paederia foetida*	Lokolast, Bhadai lota	Leaf, Stem, Root	0.00152	√
225	*Panax pseudoginseng*	Ginseng	Root Powder	0.00100	√
226	*Pandanus amaryllifolius*	Kea kothal	Tender twig	0.00012	-
227	*Pandanus odorifer*	Kewada, Ketaki	Stem/Root	0.00003	√
228	*Paris polyphylla*	Satuaa	Root Powder	0.00100	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
229	*Pedalium murex*	Yaanai nerunji	Whole Plant	0.00050	√
230	*Pergularia daemia*	Utierudi	Aerial Parts	0.00040	√
231	*Phyllanthus acidus*	Makham	Bark	0.00280	-
232	*Phyllanthus amarus*	Keezhaa nelli, Bhui aonala	Whole Plant	0.10340	√
233	*Phyllanthus emblica*	Aonla, Nelli	Fruit	0.40741	√
234	*Phyllanthus niruri*	Ban Aam Lekhi, Bhui aonla	Whole Plant	0.00418	-
235	*Phyllanthus urinaria*	Hajarmani, chakpa-heikru	Whole Plant	0.00029	√
236	*Picria fel-terrae*	Longritong	Leaf	0.00013	-
237	*Picrorhiza kurroa*	Kutki, Hongbu	Root, Leaf	0.05170	√
238	*Piper longum*	Pipli	Flower, Fruit, Seed	0.45552	√
239	*Pistacia integerrima*	Kakar singhi	Flower	0.00160	√
240	*Plantago major*	Bon lopha	Leaf, Whole Plant	0.00044	√
241	*Plantago ovata*	Isobgol	Husk, Seed	0.13600	√
242	*Plumbago zeylanica*	Kodiveli, Chitramulam, Agachita	Root, Leaf	0.00972	√
243	*Pogostemon benghalensis*	Sukloti	Root	0.00519	-
244	*Pongamia pinnata*	Karanji	Root, Fruit	0.00606	√
245	*Prunus cerasoides*	Padam	Bark, Stem	0.00102	√
246	*Prunus dulcis*	Mahum long	Leaf	0.00002	√
247	*Pseudodrynaria coronans*	Awmvel	Root	0.00001	-
248	*Pterocarpus marsupium*	Bijasal	Bark	0.00180	√
249	*Pterocarpus santalinus*	Rakta chandan	Wood	0.02500	√
250	*Pueraria tuberosa*	Vidharikhand	Tuber	0.01000	√
251	*Quercus leucotrichophora*	Banjh	Gum	0.00007	-
252	*Ranunculus sceleratus*	Dhaniya ghas	Root	0.00002	-
253	*Rauvolfia serpentina*	Sarpagandha, Sivanmelpodi	Root/Tuber	0.01414	√
254	*Rheum australe*	Revanchini, Dolu	Stem	0.00001	√
255	*Rhododendron arboreum*	Burans	Flower	0.00055	√
256	*Rhododendron formosum*	Tiewsaw	Stem	0.00001	-
257	*Rhus chinensis*	Boi-Song	Seed/Powder	0.00011	-
258	*Rhynchostylis retusa*	Kuphal	Root	0.00009	-
259	*Ricinus communis*	Aamanakku, Arand	Root, Seed, Bark	0.00243	√
260	*Rubus buergeri*	Jalulipok	Root	0.00012	-
261	*Rubus ellipticus*	Hisalu	Root, Fruit	0.00015	-
262	*Rubus hawaiensis*	Akala Bindu	Root	0.00060	-
263	*Rubus niveus*	Kala hisalu	Leaf/Fruit	0.00200	-
264	*Ruellia prostrata*	Padachchi chedi	Leaf	0.00024	-
265	*Rumex nepalensis*	Jangli palak	Rhizome	0.00070	-
266	*Sagittaria sagittifolia*	Coldanikochu mahudi	Tender Stem	0.00009	-

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
267	*Sansevieria roxburghiana*	Mokya	Leaf	0.00770	√
268	*Santalum album*	Sweta chandan	Wood	0.01900	√
269	*Sapindus mukorossi*	Reetha	Fruit	0.00194	√
270	*Saraca asoca*	Ashok	Bark, Leaf	0.06030	√
271	*Saurauia napaulensis*	Goganda, Singkrang	Shoot	0.00001	-
272	*Saussurea costus*	Rauta	Root	0.03500	√
273	*Schima wallichii*	Chilauni, Makria	Fruit, Bark (Stem)	0.00014	-
274	*Scoparia dulcis*	Ya-hang-an	Root/ Whole Plant	0.00336	-
275	*Scurrula parasitica*	Pavetta	Leaf	0.00001	-
276	*Senna alata*	Khorpat	Leaf	0.00011	√
277	*Senna alexandrina*	Sona patta, Sonamukhi, Senna, Svarnapatri	Whole Plant, Leaf	0.02350	√
278	*Senna auriculata*	Avarai	Whole Plant	0.00300	√
279	*Senna tora*	Oosi thagarai, Nimgang	Root, Leaf	0.00684	√
280	*Sida cordata*	Bisakhapuri	Aerial Parts	0.00040	√
281	*Sida cordifolia*	San borial	Root	0.00490	√
282	*Smilax glabra*	Chobchini, Lokhandi	Whole Plant, Tender Shoot, Root/Bulb	0.00172	√
283	*Solanum aculeatissimum*	Hathi bhikuri	Fruit	0.00100	-
284	*Solanum anguivi*	Karimulli	Fruit, Root	0.00075	√
285	*Solanum ferox*	Bnjamin	Fruit/Root	0.00012	-
286	*Solanum nigrum*	Makoh, Sokhssi	Leaf, Whole Plant, Root, Flower	0.00148	√
287	*Solanum spirale*	Thukalap	Leaf	0.00084	-
288	*Solanum torvum*	Bhuitita	Stem, Leaf, Root	0.00021	√
289	*Solanum viarum*	Tilabhakuri	Leaf/Fruit	0.00003	-
290	*Solanum virginianum*	Akranti	Root, Seed	0.01050	√
291	*Sonerila maculata*		Leaf	0.00001	-
292	*Spermacoce neohispida*		Root/Leaf	0.00006	-
293	*Sphaeranthus indicus*	Kotta karanthai	Root	0.00100	√
294	*Sphaerostephanos unitus*	Pakutphet	Leaf	0.00014	-
295	*Sphagneticola calendulacea*	Bhim raj	Tuber	0.00010	-
296	*Spondias pinnata*	Amora	Bark, Fruit, Leaf, Stem, Bark	0.00032	√
297	*Stemona tuberosa*	Sural, Bilaikand, Bharda	Leaf/Bulb	0.00001	-
298	*Stephania rotunda*	Purha	Root/Bulb	0.00059	-
299	*Sterculia urens*	Kulu	Resin	0.00320	√
300	*Sterculia villosa*	Udol hing	Bark	0.00120	-
301	*Stereospermum chelonoides*	Padal fali	Stem Bark	0.00059	√

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Commercial Trade
302	*Strychnos nux-vomica*	Etti, Kuchada	Seed	0.00500	√
303	*Swertia chirayita*	Chiretta	Whole Plant, Aerial Parts	0.09677	√
304	*Symplocos racemosa*	Lodhra	Leaf	0.00030	√
305	*Syzygium cumini*	Naaval, Borjamin, Jamun	Bark, Leaf, Seed	0.00295	√
306	*Tabernaemontana divaricata*	Kathane	Root, Stem, Bark	0.00401	√
307	*Taxus wallichiana*	Chalira patra	Leaf	0.00410	√
308	*Tephrosia purpurea*	Kozhinji	Root/Leaf	0.00050	√
309	*Terminalia arjuna*	Marudham, Arjun	Bark (Stem)	0.02616	√
310	*Terminalia bellirica*	Thandrikaai, Beheda	Fruit	0.54660	√
311	*Terminalia chebula*	Kadukkaai, Harda	Seed, Fruit	0.54162	√
312	*Terminalia citrina*	Citrine myrobalan, Hillika	Fruit	0.00002	-
313	*Terminalia elliptica*	Saja, Sain	Bark	0.00200	√
314	*Tetrameles nudiflora*	Thitpok	Stem Latex, Bark (Stem)	0.00012	-
315	*Tetrastigma serrulatum*	Wanmak hing	Rhizome	0.00136	-
316	*Thladiantha cordifolia*	Bili poka	Root, Leaf	0.00007	-
317	*Thottea tomentosa*	Thottea	Root/Rhizome	0.00007	-
318	*Thunbergia alata*	Black-Eyed Susan Vine	Stem	0.00007	-
319	*Thunbergia coccinea*	Chonga lota	Stem	0.00004	-
320	*Thunbergia grandiflora*	Kukua loti, Neel Lata	Stem	0.00001	-
321	*Tinospora cordifolia*	Giloe, Amruthvalli, Seendhil, Iraking phum	Stem, Root, Leaf	0.29808	√
322	*Tribulus terrestris*	Gokuru, Seru nerunjil	Whole Plant	0.00040	√
323	*Trichosanthes cucumerina*	Peipudal	Root	0.00005	√
324	*Tridax procumbens*	Thaatha thalavetti poo	Leaf, Root	0.00290	√
325	*Trillium govanianum*	Nagchatri	Rhizome	0.00300	√
326	*Tylophora indica*	Nanju murichaan	Whole Plant	0.00005	√
327	*Urena lobata*	Konkinsin	Root/Shoot	0.00029	-
328	*Urtica parviflora*	Bichu ghas	Leaf	0.00005	-
329	*Valeriana jatamansi*	Tagar ganth, Sugandhbala, Asaroon, Laungpanpos	Root	0.00050	√
330	*Verbena officinalis*	Seng-sai-banru	Root	0.00280	-
331	*Vitex negundo*	Nochi, Poshothia	Leaf, Seed	0.00157	√
332	*Vitex peduncularis*	Kaktikta	Bark	0.00024	-
333	*Withania somnifera*	Amukkuraa, Ashwagandha	Root	4.37300	√
334	*Woodfordia fruticosa*	Thaathiri	Root	0.00060	√
335	*Xanthium strumarium*	Agora	Root	0.00012	-
336	*Zanthoxylum armatum*	Timru, Aerma yer	Seed	0.00250	√
337	*Zanthoxylum nitidum*	Tegmui	Root	0.00421	√
338	*Zehneria hookeriana*	Bdipoka	Leaf/Rhizome	0.00009	-

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)	Status in Comme--rcial Trade
339	*Ziziphus jujuba*	Ber	Leaf	0.00140	√
340	*Ziziphus oenopolia*	Kanta Marisa	Whole Plant	0.00040	-
			Total Consumption	**9.822846**	

Out of the 340 medicinal plant species documented in use by folk healers, 202 species are in active trade. Medicinal plants species used by folk healers in large quantities (≥ 0.050 MT per annum) are given in Table 5.

Table 4.5. Raw Drugs/ Medicinal Plant Species in High Collective Usage (≥0.050 MT) by 89 Sampled Folk Healers

S. No.	Botanical Name	Vernacular / Common Name	Part Used	Annual Consumption (MT)
1	*Withania somnifera*	Amukkuraa, Ashwagandha	Root	4.37300
2	*Aloe vera*	Gritkumari	Leaf	1.07720
3	*Terminalia bellirica*	Thandrikaai, Beheda	Fruit	0.54660
4	*Terminalia chebula*	Kadukkaai, Harda	Seed, Fruit	0.54162
5	*Piper longum*	Pipli	Flower, Fruit, Seed	0.45552
6	*Phyllanthus emblica*	Aonla, Nelli	Fruit	0.40741
7	*Tinospora cordifolia*	Giloe, Amruthvalli, Seendhil, Iraking phum	Stem, Root, Leaf	0.29808
8	*Aegle marmelos*	Bel	Bark, Fruit, Leaf	0.23329
9	*Alpinia galanga*	Perarathai, Kulanjan, Rasna	Rhizome, Root	0.22214
10	*Asparagus racemosus*	Shatawar	Root/Rhizome, Leaf, Stem	0.16628
11	*Plantago ovata*	Isobgol	Husk, Seed	0.13600
12	*Phyllanthus amarus*	Keezhaa nelli, Bhui aonala	Whole Plant	0.10340
13	*Swertia chirayita*	Chiretta	Whole Plant, Aerial Parts	0.09677
14	*Mucuna pruriens*	Krouch, Bidung, Konch	Leaf, Seed	0.09050
15	*Azadirachta indica*	Neem, Vaeppan, Maha Neem	Leaf, Whole Plant, Bark, Stem	0.06341
16	*Saraca asoca*	Ashok	Bark, Leaf	0.06030
17	*Barleria prionitis*	Daskaranta	Whole Plant	0.06000
18	*Picrorhiza kurroa*	Kutki, Hongbu	Root, Leaf	0.05170

Habit-wise analysis of medicinal plants consumed by folk healers (Fig. 4.5) reveals that about 39% of these are herbs, 31% are trees, 21% are shrubs and 9% are climbers. This habit-wise distribution of medicinal plants used by the folk healers is very similar to the habit-wise distribution of medicinal plants used by the rural households. This similarity aptly demonstrates that the major

proportion of the medicinal plants in use by both the local households and the folk healers is sourced from the nearby forests and habitats outside forests.

340 medicinal plants recorded in use by folk healers under this study for their daily dispensation belong to 114 plant families, with Asteraceae, Fabaceae, Lamiaceae, Euphorbiaceae, Malvaceae, Apocynaceae and Solanaceae each represented by more than 10 plant species, being the dominant families (Fig. 4.6).

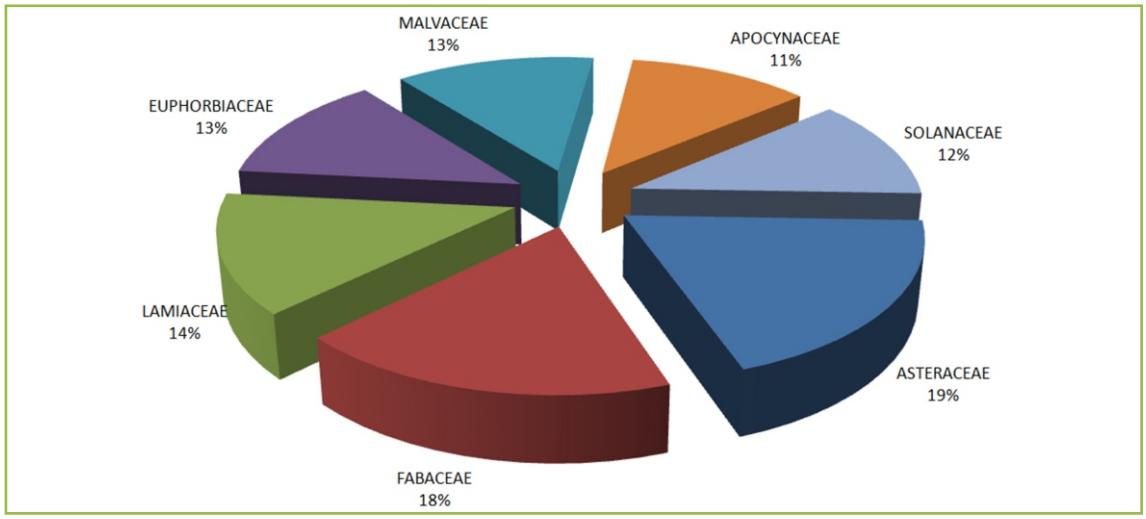

Fig. 4.6. Dominant Families of Medicinal Plants used by Folk Healers

More than one part of most of the 340 plant species recorded under the study is used for treating different ailments. In all, a total of 517 herbal raw drug entities corresponding to 340 medicinal plant species have been documented in use by the 90 respondent folk healers. Part-wise distribution of these herbal raw drug entities reveals that leaf (24%) and root (17%) are the major raw drug parts, followed by whole plant (11%), stem and bark (9%), fruit (8%), seeds (6%), with remaining entities being flower, latex / gum / exudates, wood, gall and root bark (Fig. 4.7). This part-wise distribution also makes it evident that 46% of the herbal raw drug entities in use by folk healers pertain to whole plants, roots, stem and bark, and as such their wild collection involves destructive harvesting.

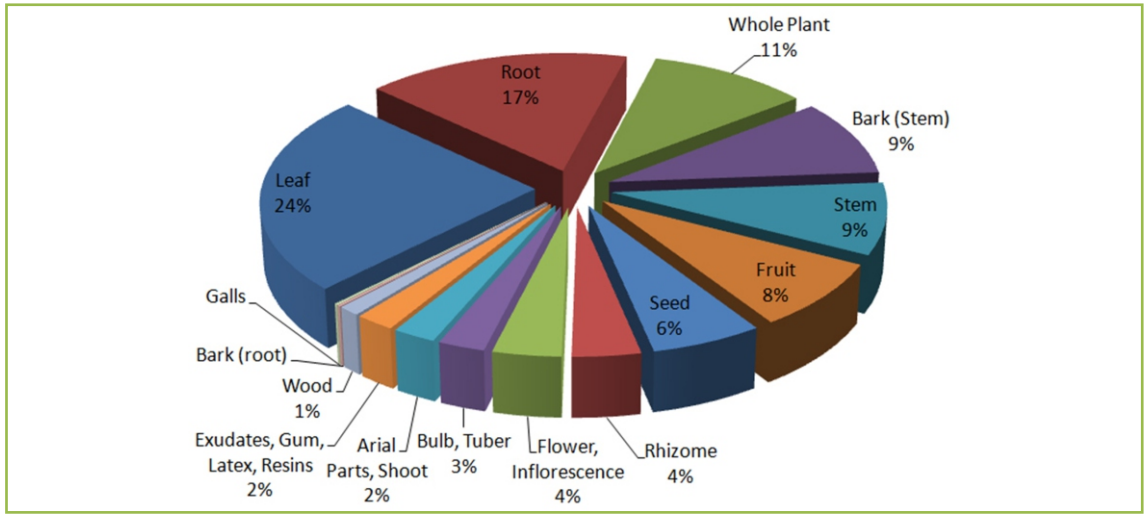

Fig. 4.7. Part-wise distribution of Herbal Raw Drugs used by Folk Healers

Survey of folk healers brought out that some folk healers were using different parts of the same plant under different names for treating different ailments. For example, different parts of 'neem' (*Azadirachta indica*) viz. 'neem chaal', 'neem beej', 'neem patti' were used to treat different ailments. Similarly, 'amaltas' (*Cassia fistula*) is used by them in number of medicinal recipes. Decoctions of its stem, leaves, bark, fruit (pods), seeds and roots are used as a diuretic, laxative, tonic and abortifacient, as well as in treatments for other abdominal ailments. 'Sohanjan' (*Moringa oleifolia*) was also recorded in use for treating various ailments like joint pains, asthma, stomach related ailments, kidney stones, aphrodisiac, skin problems, to reduce swellings, thyroid, constipation, etc. Some other similar plants widely used include *Aegle marmelos*, *Hibiscus rosa-sinensis* (flower and leaf), *Cinnamomum obtusifolia* (bark and leaves) and *Acacia catechu* (leaves, roots, wood paste). Cases of usage of a variety of plant entities in conjunction with each other also came to notice. In most of the cases, the folk healers were relying upon fresh material for their herbal preparations and thus preferred nearby local plants.

Teams gathering data from folk healers

Medicinal Plants in the Practice of Sowa Rigpa

An estimated 500 plant species are reported to be used in the practice of Sowa rigpa, an Indian System of Medicine prevalent in the trans-Himalayas. Many of these species are collected from the region. An interaction with Dr. Tsering Phunstog, Chief Amchi, LAHDC, Leh (09419887650/ 08493846494) revealed that the availability of most of the medicinal plants traditionally collected from the cold desert areas has declined over the years. Citing the example of one workshop conducted for Amchis in 2000, he informed that during a 2 hour field visit to slopes around South Pullu enroute Khardung La, the participating Amchis were able to collect about 70 medicinal plants species. The repeat of that exercise in 2016 has resulted in collection of merely 25-30 medicinal plant species from the same area over the same time. He opined that the major reason for this decline was fast changing climatic conditions - the area was receiving much less winter snow and negligible summer rains - and not over-harvesting by the Amchis. He said that Amchis were still following the principles of 'Ska sar Skei-wa' (right location), and 'Tus Su Turva' (right time) for making the wild collections. He further informed that the Swa Rigpa requires Amchis to follow 'Soma Ning Pa' i.e. the prescribed shelf life of the herbal raw drugs. This system assures against overharvesting during any year as the Amchis have to necessarily discard the herbal raw drugs that have completed their prescribed shelf life.

Dr. Phunstog also informed that the LSTM (Ladakh Society for Traditional Medicine), an NGO, was helping the local communities in conservation of medicinal plants through awareness campaigns and community organisation. One Medicinal Plant Conservation Area (MPCA) was also established due to these efforts at Sinmo Ralpa, near Mahe in Changthang for *in situ* conservation of *Dactylorhiza hatageria*, *Aconitum heterophyllum*, *Dracocephalum* spp., and *Arnebia euchroma*. Two community reserves-cum-sustainable harvesting areas were also demarcated at Rangdom Village in Zanskar and at Sapi Village in Kargil. The local village committees to manage these reserves were regulating the collections from these areas. The two community reserves, he informed, have gained prominence as medicinal plant rich areas and Amchis from far off areas come to these areas for making collections of medicinal plants after paying fee to the village committees.

Dr. Tenzin Thaye, visiting physician of H.H. the Dalai Lama, also corroborates the declining availability of species like *Meconopsis aculeata*, *Dactylorhiza hatageria*, and *Aconitum heterophyllum*. He informed that getting authentic material in respect of other 200 odd medicinal plant species regularly used by them was becoming a challenge. About 90% of their estimated annual requirement of 15-20 MT of the herbal raw drugs was being met through market purchases from Majith Mandi, Amritsar and Khari Baoli, Delhi. It was only a few high-Himalayan herbs that were required in non-

commercial quantities that were being got collected directly from the wild.

There are about 250 reported Amchis in Ladakh and another 70 in Himachal Pradesh. Each of these Amchis uses an average of (40) 50 (100) medicinal plant species, with annual consumption of all herbs by each Amchi varying from 40-50 kg. Each Amchi has an average flow of 3-5 patients per day. A few Amchis were also reported to be preparing medicines on larger scale for which they were using an average of 4-5 MT of raw herbs per year. The Ladakh Amchi Sabha has also initiated a Manjor Khang (Preparation Centre) where medicines are prepared for other practitioners. This unit uses an average of 10 MT of herbal raw drugs annually for making medicines. A part of this requirement is met from purchases from Delhi / Amritsar.

Some Interesting Highlights about Medicinal Plants from the Field Survey

The field survey in Himachal Pradesh, in addition to recording usage of herbal raw drugs, resulted in documentation of interesting information about the belief and myths around medicinal plants. At many places gathering and use of medicinal plants is linked to some rituals. For example, some plants are to be collected only at certain times of the day, in a certain month or from a specific location.

- In Surd village of Rampur Forest Division, the 'chora' (*Angelica glauca*) roots are collected only on one day during May in the entire year. Permission is sought from the local deity and a day is fixed when the villagers move together into the forest to collect their yearly supply of 'chora'.
- In the remote Janglik village of Rohru, the collection of 'karu' (*Picrorhiza kurroa*) is regulated by the local deity and a time is fixed when the village folk move to camp in the higher altitudes for collection/ harvest of 'karu'. The area for collection and time is also specified for conservation of the species.
- In the Baspa Valley of Kinnaur, the 'Brahmkamal' (*Saussurea obvallata*) is collected after the third week of July and that too by the unmarried youth of the village. It is a ceremonial affair and first the village deity is consulted, a day is fixed and then the youth move into the higher alpine slopes for collection. On return the flowers are first offered to the local deity.
- In Lahaul, it is believed that no male member of a household can uproot the plant of 'bajar bhang' (*Datisca cannabina*) unless he is the only male member in the household.

Moreover, in the NW Himalayas, as a general rule, most of the medicinal plants are collected after 'bees bhadon' (end August). The folk healers and locals believe that the medicinal properties are less active if they are gathered earlier. The timing and manner in which plant medicines are collected determine their medicinal power. Also, there is a general belief that the medicinal plants that are collected from deep inside the forest are more powerful and effective.

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