Ethnobotanical Survey of Sariska and Siliserh Regions from Alwar District of Rajasthan, India

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Abstract

The aim of present survey is to identify and document the plants used amongst the indigenes of Sariska and Siliserh regions of Alwar district from Rajasthan, India. A total of 110 species of plants representing 88 genera and 43 families employed in the literature as traditional medical practice have been recorded from the studied regions. Ailments such as fever, diorrhoea, dysentery, skin-problems, jaundice, rheumatism etc. are mostly treated with the different medicinal plants. Due to overgrazing, encroachments, unsustainable utilization and other developmental activities in the regions, several persistent medicinal plant species are on the verge of extinction. Due to lack of awareness and research on these groups of plant in this area, people of this region are unaware of the wealth of this heritage. The survey provides a veritable source of information for traditional medical practitioners and medicinal plant researchers and help in developing strategies for future conservation. **Keywords:** Ethnomedicinal survey, Sariska and Siliserh, Alwar District, Rajasthan.

Introduction

The World Health Organization (WHO) Traditional Medical Programme (Farnsworth *et al.*, 1985) has provided the evidence that ethnomedical information can lead to valuable

drug discovery. A total of 122 compounds, 80% of which were used for the same or related ethnomedical purposes, were derived from 94 species of plants (Ajibesin *et al.*, 2008).

Several active compounds have been discovered from plants on the basis of ethnomedical information and used directly as patented drugs. Maprouneacin isolated from *Maprounnea africana* is used as an antidiabetic agent (Carney *et al.*, 1999), taxol, obtained from *Taxus breviflora*, is used as an antitumor drug (Samuelsson 1992) and artimisinin, discovered from *Artemisia annua*, is used as a potent antimalarial compound (Klayman 1993). In Rajasthan State, many ethnobotanical studies on medicinal plant resources have been carried out by Kirtikar and Basu (1984), Joshi (1995), Katewa and Guria (1997), Singh and Pandey (1998), Katewa *et al.* (2001, 2004), Jain *et al.* (2004) but the serial documentation of various areas is still lacking.

The aim of present study is to document properly the biodiversity of medicinal flora of targeted regions to provide safety and efficacy information to encourage the preservation of culture, tradition, conservation and sustainable utilization of plant wealth occurring in the area.

Study areas

Alwar District is situated in the north-eastern part of Rajasthan at 27.57° N and 76.6° E. It has an average elevation of 271 metres (889 feet). The length of the district is 137 km² while its breadth is 110 km² approx. The district is surrounded by Bharatpur district in the north-east, Jaipur in the south-west, Gurgaon (Haryana) in the north, Mahendragarh district (Haryana) in the north-west and Sawai-Madhopur district in the south. As of 2001 India census, Alwar had a population of 160,245. Males constitute 53% of the population and females 47%. Alwar has an average literacy rate of 73%, higher than the national average of 59.5%; with 59% of the males and 41% of females literate. The district has a dry climate with hot summer, a cold winter and a short monsoon season. During summers the maximum temperature is around 41°C and minimum is around 28°C and in winters maximum temperature is ~ 23°C and minimum ~ 8°C. The normal annual rainfall in the district is 57.77 cms with 70% average humidity. The sandy soil and bright sunlight are the two important natural resources abundantly

available in this region which are responsible for for the development of the desert vegetation having variable medicinal properties.

Sariska National Park is located in Alwar district (27°35'N and 76°39'E) in the eastern part of the State of Rajasthan. The park covers an area of 800 km² including 480 km² in the core area and 320 km² in the buffer zone. Sariska National Park, which is a Project Tiger reserve, also boasts of many other species, including rare birds and plants. Being located on the desert land of Rajasthan, the flora and fauna of Sariska is characterized by scrubthorn arid forests, dry deciduous forests, rocks and scanty grasses spread over the hills and narrow valleys of the Aravalli hill range.

Enroute to Sariska, 12 km² south west of Alwar is the water places of Siliserh with a lake surrounded by low, wooded hills. The lake was built in 1845 A.D. by constructing an earthern dam between two hills to store the water of a small tributary of river Ruparel. When full, the total water spread covers an area of about 10 sq. km². Adorned with domed cenotaphs, Siliserh lake is picturesquely set amidst the forested slopes of Aravalli hills. Previously Singh (2002; Table 1) and Yadav (2005) worked on the ethnobotanical survey of the flora of different regions of Alwar district but this was the first attempt in these selected areas.

Methodology

For documentation of the available medicinal flora, ethnobotanical surveys were conducted in 2006-2008, randomly selected villages following the procedure as described by Jain (1967). These specimens were collected and identified by one of the author Prof. S. C. Jain and confirmed by Herbarium, Botany Department, University of Rajasthan, Jaipur and also with the help of published data (Jain, 1991; Kirtikar and Basu, 1984; Shetty and Singh, 1987). Using the standard protocol (Muthu *et al.*, 2006), collected voucher specimens were pressed, dried, mounted, prepared and preserved for further reference. Questionnaires were used during field surveys to collect information from the villagers. A total of 100 inhabitants, of which 70 were men and 30 were women were interviewed. For traditional uses of medicinal plants questions were asked to elder and key informants. Repeated

queries were made to get the data confirmed. Results from the field surveys were rechecked and compared with literature.

Results

A total of 110 species of medicinal plants representing 88 genera and 43 families employed in the literature as traditional medical practice have been recorded from the studied regions (Plate 1), that are used to treat a variety of human and animals (Table 2). The highest number of medicinal plant species belong to the families Euphorbiaceae and Fabaceae (9 species); Amaranthaceae, Asteraceae and Malvaceae (7 species) and Convolvulaceae and Solanaceae (5 species). These plants have different growth habits which include herbs (63.63%), shrubs (20.90%) and trees (10.90%). This study established that many different parts of the medicinal plant species are used as medicine (root, stem, leaves, whole plant, flowers, bark, etc.) but the most commonly used plant part was leaf (23.02%), followed by whole plant (17.98%), root (17.26%) and seed (12.23%). These plants have been used as medicine more because leaf, root and whole plant may contain more active principle (s) in comparison to wood, twigs, pods, berries, and latex. In total 99, medicinal plants were found to be used to wounds, menstrual trouble, urinary complaints, dysentery, inflammation, asthma, ulcers, rheumatism, skin-diseases, gonorrhea, fever, scabies, gastric disorder, malaria, elephantiasis, etc.

Discussion

In drug discovery, ethnobotanical and ethnomedical information has been found to be one of the reliable approaches and several active compounds have been discovered from plants on the basis of this information (Carney *et al.*, 1999; Fabricant and Farnsworth, 2001; Ajibesin *et al.*, 2008). This knowledge is however dwindling rapidly due to changes towards a more western lifestyle, overexploitation of plant resources, modern agricultural practices,, cultural changes within the community, construction of new small dams, rapid shift towards the allopathic medicine, and the spread of housing colonies and modern education lead to the destruction of not only the habitats of medicinal plants but also vanishing of traditional knowledge and medicinal plant species are threatened day by day in the area.

This survey and lack of information obtained about traditional uses of plants exhibited that rural people in the studied area are not using the plants to treat various diseases. This indicates that the use of traditional plant-based medicine is losing rapidly. People are practicing traditional medicine based on what they currently understand about the system and there is also a possibility that people will use this knowledge in the future even in remote areas. Many plant species have become threatened due to habitat loss as a result of rapid urbanization. During the survey, it was observed that people were hesitant in disclosing their knowledge. It is this knowledge that provides them recognition in the society and hence they do not want to share it. In many cases, it was also found that a bit of this knowledge has been lost during transmission in folklore from one generation to other. The villagers themselves said that, compared to them their forefathers knew much more. Due to recent global shift towards herbal medicines, the pressure on the plant resources in nature have increased and the market is also fast expanding. Therefore, the results of this survey can be incorporated into future conservation management plans for threatened medicinal plants. Further, the local people should participate in problem formulation and decision making process for the conservation strategies.

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	Table 1: Medicinal plants reported from Sariska National Park by Singh (2002) during the survey done in 1989-1992									
S. No.	b. Botanical name Family Vernacular name Ha									
1.	Abrus precatorius L.	Papilionaceae	Chirmthi, ghumchi	C						

2.	Acacia catechu Willd.	Mimosaceae	Khair	T
3.	Acanthospermum hispidum DC.	Asteraceae	Dokata, kanti	Н
4.	Achyranthes aspera L.	Amaranthaceae	Chirchitta	Н
5.	Aegle marmelos Correa. Bel	Rutaceae	Bel	Т
6.	Arachis hypogaea L.	Papilionaceae	Mungphali	Н
7.	Argemone mexicana L.	Papavaraceae	Kateli, satyanashi	Н
8.	Asparagus racemosus Willd.	Liliaceae	Satawari, satawar	Н
9.	Balanites roxburghii Planch	Simaroubaceae	Hingot	Т
10.	Barleria cristata L.	Acanthaceae	Bajardanti	Н
11.	Barleria prionitis L.	Acanthaceae	Bajardanti	Н
12.	Bauhinia variegata L.	Caesalpiniaceae	Kachnar	Т
13.	Blainvillea latifolia (L.f.) DC.	Asteraceae	Kalajari	Н
14.	Boerhaavia diffusa L.	Nyctaginaceae	Sathi	Н
15.	Butea monosprerma (Lamk.) Taub.	Papilionaceae	Palas, dhak, cheela	Т
16.	Calotropis procera (Ait.) R.Br.	Asclepiadaceae	Aak, akhra	S
17.	Cassia fistula L.	Caesalpiniaceae	Amaltas, karmala	Т
18.	Cayratia carnosa Gagnep.	Vitaceae	Kalitripanni	S
19.	Centella asiatica L.	Umbelliferae	Brahmibuti	Н
20.	Cissampelos pariera L.	Menispermaceae	Heir, jaljamni	S
21.	Cleome gynandra L.	Capparaceae	Hulhul, bagro	Н
22.	Clerodendrum inerme (L.) Gaertn	Verbenaceae	Arni	S
23.	Commelina benghalensis L.	Commelinaceae	Bokhna	Н
24.	C. khurzii Cl.	Commelinaceae	Bokhna	Н
25.	Commiphora wightii (Arn.) Bhandari	Burseraceae	Guggal	S
26.	Crinum defixum Ker-Gawl	Amaryllidaceae	Sukhdarshan	Н
27.	Dioscorea bulbifera L.	Dioscoreaceae	Paharikan, suarkand	С
28.	Elytraria acaulis (L.f.) Engl.	Acanthaceae	Patharchatta	Н
29.	Emblica officinalis Gaertn.	Euphorbiaceae	Amla, awla	Т
30.	Euphorbia hirta L.	Euphorbiaceae	Dudhi bichujari	Н
31.	Ficus carica L.	Moraceae	Anjir	Т
32.	Gardenia florida L.	Rutaceae	Midola	S
33.	Holarrhena antidysenterica (L.) Wall	Apocynaceae	Kero, kutaj, kura	S
34.	Holoptelea integrifolia (Roxb.) Planch	Ulmaceae	Papri, bastedun	Т
35.	Indigofera cordifolia Heyne. ex. Roth	Papilionaceae	Jhajhru, bekar	Н
36.	Leptadaenia pyrotechnica (Forsk.)Decne.	Asclepiadaceae	Khimp	S
37.	Leucas aspera Wild.	Labiatae	Gumma, gomo	Н
38.	Melhania futteyporensis Munro ex Masat.	Stercualiaceae	Basni	S
39.	Momordica dioica Roxb. ex Willd	Cucurbitaceae	Janglikarela, bankarela	C

40.	Mucuna pruriens Baker	Papilionaceae	Kauch, kevach	H
41.	Ocimum americanum L.	Labiatae	Bantulsi	Н
42.	Ocimum basilicum L.	Labiatae	Dauna, mania	Н
43.	Ocimum sanctum L.	Labiatae	Tulsi	Н
44.	Peritrophe bicalyculata (Retz.) Nee.	Acanthaceae	Nil jhojhru, kakar	Н
45.	Salmalia malabarica (DC) Schot & Endl	Bombacaceae	Semel	Т
46.	Sarcostemma acidum (Roxb.) Voigt	Asclepiadaceae	Khir khimp	S
47.	Sida acuta Burm. f.	Malvaceae	Bal, kharsara	Н
48.	S. cordifolia L.	Malvaceae	Kharenti	Н
49.	Solanum nigrum L.	Solanaceae	Makoi	Н
50.	S. surattense Burm. f.	Solanaceae	Bhurangin, ringni	Н
51.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wt. & Arn.	Combretaceae	Arjuna	Т
52.	T. bellirica (Gaertn.) Roxb.	Combretaceae	Bahera, desibadam	Т
53.	Tinospora cordifolia (Willd.) Miers	Menispermaceae	Neem gilody	S
54.	Tribulus terrestris L.	Zygophyllaceae	Gokhru	Н
55.	Tridax procumbens L.	Asteraceae	Gorkh-mundi	Н
56.	Wrightia tinctoria R. Br.	Apocynaceae	Khirna, katira, dudhi	Т
57.	Zornia diphylla (L.) Pers	Papilionaceae	Gewani	Н
58.	Zornia gibbosa Span	Papilionaceae	Gewani	Н

C, Climber; T, Tree; H, Herb; S, Shrub



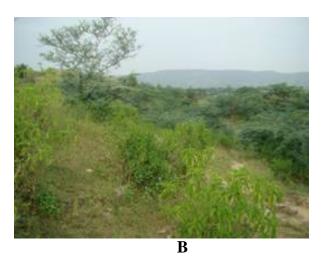




Plate 1: Photographs showing the study regions, conversation with tribals and data collection by author.

Plant name	Family & Habit	Herbarium number & availability in study area	Common name	Part used	Key ailments	Traditional preparations	References
1. Abutilon asiaticum G. Don	Malvaceae (H)	149 (+)	Kanghi	Rt	Tonic, piles	-	-
2. A. indicum (L.) Sw.	Malvaceae (H)	8 (+)	Kanghi	Lvs, Bk, Sd, Rt	Fever, laxative	Leaf and root juice are taken orally to treat dental problems	Muthu et al., 2006
3. <i>Acacia nilotica</i> (L.) Willd. ex Delile	Mimosaceae (T)	5 (++)	Babul	Gm, Bk	Diorrhoea, dysentery, diabetes	Powder of bark is applied externally in ulcers	Parveen et al., 2007
4. A. senegal (L.) Willd.	Mimosaceae (T)	11 (++)	Kumta	Gm	Burns, sore nipples, nodular leprosy	Gum is used internally in inflammation of intestinal mucosa and externally to cover inflamed surfaces as burns, sore nipples and nodular leprosy	Parveen et al., 2007
5. Acalypha ciliata Forssk.	Euphorbiaceae (H)	150 (++)	-	Wp, Lvs, Rt	Cuts and wounds, bronchitis, rheumatism	Leaf paste is applied to ulcers	Panda, 2000

6. A. indica L.	Euphorbiaceae (H)	154 (+++)	Kho-kali	Lvs, Wp	Bronchitis, pneumonia, asthma, skin disease	Decoction of leaves mixed with common salt is applied to scabies	Parveen et al., 2007
7. A. lanceolata Willd.	Euphorbiaceae (H)	156 (+)	-	Lvs, Wp	Antiseptic, vermicide, carminative	Leaf paste is applied externally on boils, sores and swellings	Chandel et al., 1996
8. Achyranthes aspera L.	Amaranthaceae (H)	7 (+++)	Latjira	Wp, Rt, Sd	Asthma, fever, cough	One teaspoon powder of whole plant is taken with warm water for pneumonia	Parveen et al., 2007
9. <i>Actiniopteris radiata</i> (SW.) Link.	Actiniopteridaceae (F)	164 (+)	Morphanki	Wp	Styptic, anthelmintic	Powdered whole plant along with seed of <i>Ocimum</i> <i>americanum</i> given for Antifertility	Asolkar et al., 1992
10. Adhatoda zeylanica Medic.	Acanthaceae (S)	133 (++++)	Adusa	Wp, Lvs, Rt	Fever, jaundice, whooping cough, glandular tumors	Leaf and wood ashes mixed with honey used for cough and asthma; Juice mixed with juice of <i>Feronia limonia</i> cures nose bleeding	Asolkar et al., 1992
 Aerva javanica (Burm. f.) Juss. ex Schult. 	Amaranthaceae (H)	10 (++)	Bui	Fl, Sd	Headache, rheumatism	Woolly seeds stuffed in pillows to relieve headache and protective against rheumatism	Parveen et al., 2007
12. Albizzia lebbeck Benth.	Fabaceae (T)	166 (+)	Siris	Lvs, Bk, Fl	Boils, eruption, leprous ulcers	Leaf juice is used as eye drops for night blindness	Parveen et al., 2007
13. Alternanthera pungens Kunth	Amaranthaceae (H)	167 (+)	Kunth	Wp	Diuretic	Decoction of whole plant is used in gonorrhea	Asolkar et al., 1992
14. Alysicarpus vaginalis DC.	Fabaceae (H)	168 (+)	Bela	Rt	Cough	Roots for treatment of irregular menses	Asolkar et al., 1992
15. Anisomeles indica (L.) Kuntze	Lamiaceae (H)	14 (++)	Rantil	Wp, Sd oil	Carminative, tonic, uterine affections	Crushed leaves applied to neck of bullock to cure inflammation caused by cart pulling	Asolkar et al., 1992
16. Anogeissus pendula Edgew.	Combretaceae (T)	169 (+)	Dhaunkra	Ар	Diuretic, cardiovascular	Decoction of bark is given for gastric disorder	Jain et al., 2005
17. Apluda mutica L.	Poaceae (G)	170 (+)	Tamtabheda	Wp	Skin-diseases	Poultice of whole plant is used to cure mouth sores of cattle	Katewa et al., 2001
18. Argemone mexicana L.	Papaveraceae (H)	135 (++)	Pilikateli	Lvs, rt, Sd	Skin diseases, cutaneous affections, snake-bite	Seeds are poured in 'Mahua oil' and are applied to eczema and itching	Parveen et al., 2007

19. Barleria prionitis L.	Acanthaceae (H)	138 (++)	Bajardanti	Lvs, Rt, Bk	Cough, toothache	Twigs as toothbrush; Decoction of whole plant as health tonic ; Leaves to relieve pain	Singh, 2004
20. Bidens biternata (Lour.) Merr. & Sherrif.	Asteraceae (H)	171 (+)	Chirchitta	Wp, Lvs, Rt, Fl, Sd	Leprosy, skin diseases, tumors, anthelmintic	Juice of leaves applied to heal ulcers and to cure eye and ear complaints	Asolkar et al., 1992
21. Blainvillea acmella (L.) Philipson	Asteraceae (H)	172 (+)	-	-	-	-	-
22. Boerhavia diffusa L.	Nyctaginaceae (H)	19 (+++)	Punarnava	Rt	Asthma	Leaves boiled with rice, garlic and water are rubbed on body for rheumatism	Parveen et al., 2007
23. Borreria articularis (L. f.) F. N. Williams	Rubiaceae (H)	17 (++)	Bagrakote jungle	Sd, Rt	Earache, blindness, dysentery, stimulant, kill tooth-worms	Crushed leaves used in stomach pain	Asolkar et al., 1992
24. B. stricta auct.	Rubiaceae (H)	173 (+)	-	-	-	-	-
25. Butea monosperma (Lamk.) Taub.	Fabaceae (T)	139 (++++)	Dhak	St, Bk, Fl, Gm, Lvs	Anthelmintic, astringent, dysentery, leucorrhoea	Stem paste is applied on the affected parts for cuts and wounds; Bark paste is applied locally on the affected portion of body	Katewa et al., 2004
26. <i>Calotropis procera</i> (Ait.) Ait. f.	Asclepiadaceae (S)	38 (+++)	Aakada	Rt, Lvs, Fl, Lt, Bk	Dysentry, cough, asthma	Decoction of root bark along with black pepper is used twice a day for 3 day for malarial fever	Parveen et al., 2007
27. Cardiospermum halicacabum L.	Sapindaceae (C)	174 (+)	Kanphuti	Wp, Rt, Lvs	Rheumatism, laxative, nervous diseases, earache	Powdered leaves used externally for healing wounds	Asolkar et al., 1992
28. Carissa carandas L.	Apocynaceae (T)	143 (+)	Karunda	Lvs, Rt, Ft	Insect repellent, hypotensive dropsy, anasarca madness	Paste of root bark useful in diabetic ulcer	Asolkar et al., 1992
29. Cassia alata L.	Caesalpiniaceae (S)	175 (++)	Datkapat	Lvs, Bk	Diuretic, insect repellant, laxative, anti- inflammatory	Leaves decoction is used for skin-diseases	Ajibesin et al., 2008
30. <i>C. tora</i> L.	Caesalpiniaceae (H)	140 (+++)	Chakunda	Lvs, Sd	Laxative, skin-disease, ring-worm	Powdered leaves boiled in water to make decoction and externally used for skin- diseases	Ajibesin et al., 2008

31. Cayratia carnosa (Wall.)Gagnep.ex Wight	Vitaceae (S)	176 (+)	Amar-bel	Ap, Rt	Depressant	Root given in anaemic conditions	Asolkar et al., 1992
32. Celosia argentea L.	Amaranthaceae (H)	177 (+)	Sufaid murgha	Sd	Mouth sores, eye diseases, diarrhoea	20 g crushed seeds is taken orally for ovarian and uterus diseases	Katewa et al., 2004
33. Citrullus colocynthis (L.) Schrad.	Cucurbitaceae (H)	28 (+)	Indrayan	Rt, Ft	Purgative, jaundice, rheumatism	Root paste and Ashgandh mixed with honey is administered orally for rheumatism	Parveen et al., 2007
34. Cleome viscosa L.	Capparaceae (H)	178 (++)	Hulhul	Wp, Lvs	Headache, boils	Leaf paste is applied topically to heal wounds	Muthu et al., 2006
35. Coccinia cordifolia Cogn.	Cucurbitaceae (H)	179 (+)	Kanduri	Lvs, Rt	Skin-eruption	Juice of rots and leaves is used to treat diabetes	Akhtar et al., 2007
36. Cocculus hirsutus (L.) Diels	Menispermaceae (C)	180 (+)	Jamti-ki-bel	Lvs, Rt, St	Fever, rheumatism, cooling, laxative	Powdered leaves mixed with water and applied to eyes giving cooling effect	Asolkar et al., 1992
37. Commelina forskali L.	Commelinaceae (H)	33 (+++)	-	-	-	-	-
38. Corchorus aestuans L.	Tiliaceae (H)	181 (++)	-	Wp, Sd	Anticancer, cardiotonic	Paste of seeds is given with warm cow milk to relieve congestion in chest	Prusti and Behera, 2007
39. Crotalaria medicaginea Lam.	Fabaceae (H)	32 (+++)	Gulabi	Wp, Sd	Scabies, impetigo	Seed decoction is given toxaemia	Trivedi, 2002
40. Croton bonplandianum Baill.	Euphorbiaceae (H)	46 (++)	Ban-tulsi	Wp, Lvs, Lt	Itch, scabies	Latex used to heal cuts and wounds	Asolkar et al., 1992
41. Datura fastuosa L.	Solanaceae (S)	54 (+++)	Datura	Wp, Lvs, Sd	Insanity, fever, cerebral complications, skin- diseases, swellings	Leaves smoked to cure cough	Asolkar et al., 1992
42. Digera muricata (L.) Mart	Amaranthaceae (H)	52 (++)	Latmahuria	Lvs	Laxative, urinary discharges, boils	Leaf paste is applied locally to prevent the pus formation	Katewa et al., 2004
43. Dipteracanthus prostratus (Poir.) Nees	Acanthaceae (H)	49 (++)	Kalighavani	Wp, Fl	Hypoglycaemic, anticancer, ear-diseases	Plant decoction is used as ear maladies	Chandel et al., 1996
44. Eucalyptus camaldulensis Dehnh.	Myrtaceae (T)	57 (+++)	Safeda	Lvs, oil	Antibacterial, cuts, skin- diseases, diarrhoea	Leaf essential oil can be gargled for sore throat	Chevallier, 1996

45. Euphorbia caducifolia Haines	Euphorbiaceae (T)	157 (++)	Dandathor	Lt, rt	Cough, skin-blisters	Root decoction is used as effective abortifacient at initial stages	Ross, 2003
46. E. hirta L.	Euphorbiaceae (H)	58 (++)	Dudhi	Wp, Lt	Cough, ring-worm, injury	About 20 leaves are crushed and the extract is given orally with honey once a day in the morning for leucorrhoea	Parveen et al., 2007
47. E. thymifolia L.	Euphorbiaceae (H)	182 (+)	Choti-dudhi	Lvs, Sd	Laxative, bowel complaints	Extract of whole plant to cure small pox	Jadhav, 2006
48. Ficus carica L.	Moraceae (T)	183 (+)	Anjir	Wp, Ft, Lt	Laxative, anticancer, anaemia, anthelmintic	Exudates are applied externally on ringworm thrice daily	Trivedi, 2002
49. Gisekia pharnaceoides L.	Aizoaceae (H)	64 (+)	Balu ka sag	Wp	Female diseases, defective semen, destroys fat, malfunctioning of sex organs	Plant extract to kill roundworms	Singh, 2004
50. Gloriosa superba L.	Liliaceae (H)	188 (+)	Kalihari	Tbs, Rt	Gonorrhoea, snake-bite	Paste of dried tuber powder is applied locally for wounds	Katewa et al., 2004
51. Gomphrena celosioides Mart.	Amaranthaceae (H)	65 (++)	-	Lvs	Diuretic	Leaf paste is used to treat malaria	Weniger et al., 2004
52. Grewia damine Gaertn.	Tiliaceae (S)	184 (+)	-	Wd	Cough	Whole plant is used to treat diarrhea and dysentery	Jayasinghe et al., 2004
53. G. flavescens A. Juss.	Tiliaceae (S)	185 (+)	Kali-siali	Lvs, Rt, Ft	Increase male strength	Rot powder and decoction is used for bleeding of urinary tract, leucorrhoea, spermatorrhoea	Jain et al., 2005
54. G. tenax (Forssk.) Fiori	Tiliaceae (S)	186 (+)	Gango	Rt, St	Antitumor, skin-diseases	Decoction of bark for cough and muscular pain	Singh, 2004
55. Heliotropium marifolium Koen. ex Retz.	Boraginaceae (H)	69 (+)	Choti-santri	Wp	Emetic, ulcer, snake-bite	-	-
56. <i>Hibiscus lobatus</i> (Murray) Kuntze	Malvaceae (S)	187 (+)	-	Wp	Debility, spermatorrhoea	-	-
57. H. micranthus L. f.	Malvaceae (S)	68 (++)	Chanak bhindo	Wp, Lvs, St	Febrifuge	-	-

58. Indigofera linnaei Ali.	Fabaceae (H)	72 (+++)	Latahai	Wp, Rt	Diuretic, antiscorbutic	Plant decoction is used in epilepsy and insanity ; Plant boild in oil is applied on burns ; Juice of plant is used as an alternative, diuretic and in venereal affections	Satyavati et al., 1987
59. I. tinctoria <u>L.</u>	Fabaceae (H)	189 (++)	-	Ap, Lvs, Rt	Anti-hepatotoxic, hypoglycaemic	Root paste is given in fever	Asolkar et al., 1992
60. <i>Ipomoea carnea</i> Jacq.	Convolvulaceae (S)	163 (+++)	Beshram	Lvs, St, Ft, Sd	Skin-diseases, leucoderma, muscle relaxant	Paste of a single seed is given in filaria	Prusti and Behera, 2007
61. <i>I. dichroa</i> (Roem. & Schult) Choisy	Convolvulaceae (S)	191 (+)	-	Sd	Purgatve, fever	-	-
62. I. eriocarpa R. Br.	Convolvulaceae (S)	190 (+)	Hara	Lvs, Sd oil	Skin-diseases, arthritis, rheumatism	Plant paste is externally applied to treat rheumatism and leprosy	Singh et al., 2002
63. I. pes-tigridis L.	Convolvulaceae (H)	71 (+++)	Kamalata	Wp, Lvs, Rt	Dog-bite, purgative, boils	Plant paste is locally applied to treat carbuncles and boils	Singh et al., 2002
64. I. turbinata Lag.	Convolvulaceae (C)	192 (+)	Balkauri	Lvs, St, Sd	Skin-diseases, cuts, laxative	Plant juice used as an insecticide and laxative	Chandel et al., 1996
65. Lantana camara L.	Verbenaceae (S)	81 (+++)	Jharmari	Wp	Tetanus, tonic, rheumatism, malaria	About half cup of plant decoction with a little quantity of 'kala namak' is taken twice a day till relief tetanus	Parveen et al., 2007
66. <i>Leucas cephalotes</i> (Roth) Spreng.	Lamiaceae (H)	193 (+)	Goma	Wp, Fl	Scabies, cough, cold, scorpion-sting	Plant decoction is used for malaria, headache, eye complaints	Satyavati et al., 1987
67. L. urticaefolia (Vahl.) R. Br.	Lamiaceae (H)	194 (+)	Panihari	Lvs	Fever	Boiled leaves mixed with jaggery are given to cows and buffaloes to expel placenta after delivery	Sharma et al., 1992
68. <i>Lindenbergia muraria</i> (Roxb.) Brühl	Scrophulariaceae (H)	77 (+)	Chatti	Wp, Lvs	Fever, skin-infection	Paste of leaf is applied on snake-bite and scorpion-sting	Trivedi, 2002
69. Lycium barbarum L.	Solanaceae (S)	195 (+)	Morali	Wp	-	Fresh plant decoction is used as diuretic; Stem bark against bronchitis for horses	Singh, 2004
70. Martynia annua L.	Martyniaceae (H)	84 (+)	Bichu	Wp, Lvs, Ft	Sore throat, epilepsy, tuberculosis-glands	Paste of nut is considered to have beneficial effect when applied to the bites of venomous insects	Satyavati et al., 1987

71. Melhania hamiltoniana Wall.	Sterculiaceae (H)	204 (+)	-	-	-	-	-
72. <i>Mollugo nudicaulis</i> Lamk.	Mollugoniaceae (H)	87 (+)	-	Wp, Lvs	Bitter, whooping cough	Leaves are macerated in water to which some lime juice has been added and drunk as a warm-expeller	Iwu, 1993
73. <i>Momordica dioica</i> Roxb. ex Willd.	Cucurbitaceae (C)	160 (+)	Kakoda	Ft, sd, Tb	Elephantiasis, anthelmintic, jaundice	Root paste is applied on snake- bites for three times daily	Trivedi, 2002
74. Nerium oleander L.	Apocynaceae (S)	88 (+)	Kaner	Wp, Lvs, Rt, Bk, Oil	Leprosy, skin-disease, poisonous, chanceres and ulcers of the penis	Root paste with water and are applied externally chancre, ulcers and leprosy	Parveen et al., 2007
75. Ocimum canum Sims.	Labiatae (H)	90 (+++)	Kali-tulsi	Wp, Lvs	Skin-disorder, cold, carminative, dysentery	Leaf paste is used in parasitical diseases of the skin and also applied to the finger and toe nails during fever when extremities of cold	Satyavati et al., 1987
76. Parthenium hysterophorus L.	Asteraceae (H)	95 (++)	Gajar ghas	Rt, St	Tonic, febrifuge, rheumatism	Plant decoction is externally used for skin-diseases	Dominguez and Sierra, 1970
77. Pedalium murex L.	Pedaliaceae (H)	94 (++)	Bara gokhru	Wp, Lvs, Rt, St, Fl	Antiseptic, aphrodisiac, leucorrhoea	Mucilaginous infusion of the fruit is given in incontinence of urine, spermatorrhoea, nocturnal emission and impotence	Satyavati et al., 1987
78. Pergularia daemia (Forsk.) Chiov.	Asclepiadaceae (H)	105 (++)	Sagovani		Gastric ulcer, emetic, anthelmintic	Leaf decoction is an utrine tonic and is taken orally up to 20 ml per day	Singh et al., 2002
79. Peristrophe paniculata (Forsk.) Brummitt	Acanthaceae (H)	145 (++)	Atrilal	Wp	Snake-poison	Whole plant macerated in an infusion of rice, is taken orally in a large quantity as an antidote to snake-poison	Singh et al., 2002
80. Portulaca suffruticosa Wt.	Portulacaceae (H)	102 (+)	Khurfa	Lvs, St	Fever, polydipsia, headache	Fresh juice of plant for burning micturation	-
81. <i>Phyllanthus nirurii</i> Sensu Hook. f.	Euphorbiaceae (H)	196 (+)	Bhuian anvala	Wp, Rt, Shoot	Diuretic, jaundice, dysentry	Leaves mixed with salt applied locally to skin affections	Parveen et al., 2007
82. Physalis minima L.	Solanaceae (H)	197 (+)	Pipat	Wp	Tonic, purgative, joint pain	Fruit eaten and leaf juice used in earache	Singh, 2004
83. Prosopis cineraria (L.) Druce	Mimosaceae (T)	159 (+++)	Khejari	Fl, Infl	Boils, skin-diseases	Flowers are pounded, mixed with sugar and eaten by women during pregnancy as a safe guard against miscarriage	Parveen et al., 2007

84. Pupalia lappacea (L.) Juss.	Amaranthaceae (H)	91 (++)	-	Wp	Antidote, dropsy, oedema, febrifuge	-	-
85. Rhynchosia minima (L.) DC.	Fabaceae (H)	107 (+)	Govindpalli	Lvs	Abortifacient	Seeds are roasted dehusked and used as pulses	Prusti and Behera, 2007
86. <i>Rhus mysorensis</i> Heyne ex Wight & Arn.	Anacardiaceae (T)	146 (+)	Dansara		Diarrhoea	Fruits for digestion	Satyanarayana et al., 2008
87. Ricinus communis L.	Euphorbiaceae (S)	38 (++)	Arandi	Lvs, Sd	Boil, carbuncle, rheumatism	Leaf infusion is used stomachache	Parveen et al., 2007
88. <i>Salvadora oleoides</i> Dcne. and Clarke	Salvadoraceae (S)	198 (+)	Kharojhal	Lvs, Ft	Antiinflammatory, analgesic, antiulcer	Leaf paste is used to cure cough and treatment of enlarged spleen and fever	Yadav et al., 2008
89. Sesamum indicum L.	Pedaliaceae (H)	200 (+)	Til	Lvs, Sd	Polyuria, pimples, ophthalmia	Decoction of the seeds with acorus, 'pippali' and 'gur' is given in amenorrhea	Parveen et al., 2007
90. <i>Setaria verticillata</i> (L.) P. Beauv.	Poaceae (G)	199 (+)	-	-	-	-	-
91. <i>Sida acuta</i> Burm.	Malvaceae (H)	112 (++++)	Bala	Wp, Lvs, Rt	Astringent, cut and wounds, diorrhoea	Leaf paste is applied topically to heal cuts, wounds and to get relief from headache	Muthu et al., 2006
92. S. cordifolia L.	Malvaceae (H)	109 (++)	Kungyi	Wp, Lvs, Rt, Sd	Aphrodisiac, snake-bite, gonorrhoea	Rot with cow's milk showed improvement in Parkinson patients	Nagashayana et al., 2000
93. S. rhombifolia L.	Malvaceae (H)	151 (+++)	Atibala	Rt, St, Lvs, Wp	Swelling, rheumatism, tuberculosis	Root infusion for the treatment of rheumatism and neurological complaints	Dhalwal et al., 2007
94. S. veronicaefolia Lam.	Malvaceae (H)	201 (+)	Bhiunli	Wp	Astringent, bitter, leucorrhoea, gonorrhoea	Leaves ground into a paste and applied for thorn poison	Siromoney et al., 1973
95. Solanum nigrum L.	Solanaceae (H)	113 (+)	Makoi	Wp, Lvs, Rt	Psoriasis, piles, dysentry	Roots with small amount of sugar are boiled in water and are given to women to enhancing fertility	Parveen et al., 2007
96. S. virginianum L.	Solanaceae (H)	108 (++)	Pili kateli	Rt, St, Fl, Ft	Cough, asthma, gonorrhoea	Decoction of plant with <i>Tinospora cordifolia, Zingiber</i> <i>officinale</i> , added with the powder of <i>Piper longum</i> was used for cough, asthma, anorexia, fever and indigestion	Khare, 2004
97. Tephrosia purpurea (L.) Pers.	Fabaceae (H)	122 (++)	Sarphonka	Wp, Rt	Blood purifier, tonic, colic, pain, tonsilitis	Decoction of the rots with ginger is comsumed to relieve headache	Parveen et al., 2007
98. T. uniflora Pers.	Fabaceae (H)	202 (+)	Bhaker	Wp, Lvs, Rt, Sd, Bk	Poisonous bites, diuretic, asthma, piles, syphilis	Whole plant is boiled in water and eaten for syphilis	Singh, 2004

99. Thevetia peruviana (Pers.) K. Schum	Apocynaceae (S)	123 (+)	Pila-kaner	Bk	Fever, psoriasis, skin- infection	A weak decoction of stem bark is used to treat intermittent fevers	Iwu, 1993
100. Trianthema portulacastrum L.	Aizoaceae (H)	120 (++)	Lal-sabuni	Lvs, Rt	Amenorrhoea	Decoction of root is taken internally to treat constipation and asthma	Muthu et al., 2006
101. Tribulus terrestris L.	Zygophyllaceae (H)	119 (+++)	Gokhru	Wp, St, Ft	Urinary trouble, kidney stones, gonorrhoea	Powdered fruits in doses of 18 g with sugar and black pepper for spermatorrhoea	Parveen et al., 2007
102. Trichosanthes cucumerina L.	Cucurbitaceae (H)	203 (+)	Jangli-chichonda	Wp, Lvs, St, Ft, Sd, Rt	Cardiac tonic, skin- disseases	Decoction of root is used for bronchitis and heart diseases	Jain et al., 2005
103. Tridex procumbens L.	Asteraceae (H)	117 (++)	Molyamehndi	Lvs	Kidney stones, boils, blisters, dysentery	Leaf paste is applied topically on cuts and wounds	Muthu et al., 2006
104. Triumfetta rhomboidea Jacq.	Tiliaceae (S)	116 (++++)	Bhurat	Wp, Rt	Jaundice, diarrhoea	Root extract is taken to cure urinogenital problem of male	Jadhav, 2006
105. Verbesina encelioides (Cav.) Benth. & Hook. f. ex Gray	Asteraceae (H)	126 (+++)	Nakli-Surajmukhi	Wp	Febrifuge, emetic, insecticide, anti- inflammatory	Infusion of whole plant for reduce swelling	Soumyanath, 2006
106. Vernonia cinerea (L.) Less.	Asteraceae (H)	25 (++)	Sahadevi	Wp, Lvs	Diaphoretic, piles, dropsy, conjunctivitis	Leaf decoction is given in fever	Jeeva et al., 2006
107. Vitex negundo L.	Verbenaceae (T)	124 (+)	Nirgundi	Lvs, Rt	Tonic, rheumatism, ulcers	Fresh leaves crushed along with salt and the extract is taken internally once a day for 7 days in night blindness	Prashantkumar and Vidyasagar, 2006
108. Waltheria indica L.	Sterculiaceae (H)	127 (+)	Nallabenda	Wp	Emollient, cough, cold	Decoction of whole plant for treatment of diarrhoea	Mathabe et al., 2006
109. Xanthium strumarium L.	Asteraceae (H)	155 (+++)	Bilawa	Sd	Febrifuge, skin- diseases, eczema, scabies, rheumatism	Fruit is considered cooling and effectious in the small pox and also useful in urinary diseases	Ahmad, 2003
110. Zizyphus nummularia (Burm. f.) W. & A	Rhamnaceae (S)	129 (++)	Boerjadi	Lvs, Ft	Cooling, scabies	Juice of the root bark is applied externally in rheumatism	Parveen et al., 2007