



Ethnobotanical studies on agricultural weed plants of Nirmal District, Telangana State, India

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Abstract

In the present work, an attempt is made to document the Ethnobotanical studies on Agricultural Weed plants remedies for various ailments of the ethnic tribes inhabiting the Nirmal District of Telangana State, India. We reported 56 Ethnobotanical Common agricultural weed plants belonging to 25 families used by tribal people to alleviate diseases. Among these families, 53 are dicotyledons, and 3 are monocotyledons. The recorded weeds flora comprised 38 herbs, 6 creeping herbs, 2 climbers, 2 prostate herbs, and 2 shrubs. In addition, one species each was recorded under grass, sedge, twining herb, succulent herb, spiny herb, trailing herb categories. They are arranged in alphabetical order by scientific names for convenience, followed by family, local name in Telugu, habit, and Ethnobotanical use. Ethnobotanical weed medicine is the scientific term for healthcare practices in traditional methods. Weeds are generally considered undesirable plants in agricultural fields, but many possess significant medicinal, nutritional, fodder, and economic value. Nirmal district is rich in biodiversity and inhabited by tribal communities such as the Gonds, Lambada, Pradhans, Manne, Naikpods, Thoties, Yerikalas, and Kolams, who have preserved valuable traditional knowledge about the use of wild and common weed flora. Documenting this indigenous knowledge is essential for conserving biodiversity and promoting sustainable utilisation of plant resources. Ethnobotanical studies in and around Nirmal have documented extensive traditional use of wild plants, but the ethnobotanical importance of weed species specifically remains insufficiently explored. This area's forests are rich in biodiversity; many plants are traditionally used to prevent various infections and cure diseases.

Keywords: Ethnobotanical, weed flora, weed plants, medicinal plants, Nirmal District, Telangana State

Introduction

The evolution of human life and culture has directly or indirectly been associated with plants and influenced by the surrounding environment. Primitive man was closely associated with nature and directly depended on it for his survival, i.e., for food, fuel, medicine, ethnomedicine, and fodder. Human life and diet depended entirely on plants, which led him to acquire knowledge of the economic and medicinal properties of many plants through the gradual development of his thinking; later, he became enriched with knowledge that has been passed down from one generation to another without any written documents. Now, it is necessary that unwritten folklore uses of plants and plant products should be catalogued and preserved. The medical heritage of the tribal people must be documented and understood, lest it be lost forever amid rapid cultural and demographic changes. The medicinal knowledge of these tribes is so precious that some of the rare herbs/weeds known to them can serve as remedies for multiple health ailments. Weeds are generally considered undesirable plants in agricultural fields, but many possess significant medicinal, nutritional, fodder, and economic value. Nirmal District, Telangana, is rich in biodiversity and has been inhabited for centuries by tribal communities such as Lambadas, Pradhans, Gonds, Naikpods, Thotis, Yerikalas and Kolams, who have preserved valuable traditional knowledge about the use of wild and common weed flora. Documenting this indigenous knowledge is essential for conserving biodiversity and promoting sustainable utilization of plant resources. Ethnobotanical studies in and around Nirmal have documented extensive traditional use of weed plants, but the ethnobotanical importance of weed

species specifically remains insufficiently explored. Mulay JR and Sharma PP (2012) ^[13]. Some useful weeds of Ahmednagar district, Maharashtra, India. Hooker JD (1872 - 1897). The Flora of British India, London, VII Vols. Swarna, Sadarmat and kadam are some of the well-known natural forest ecosystems in the district, famous for their medicinal flora. Ravi Shanker. and Henry (1992) ^[26] published a report on the medicinal plant wealth of Adilabad district. Later, Prasanna, Vand Obulesu and Pullaiah (1998) reported on Ethnobotanical plants and the scientific and vernacular names of the district. Mubeen, R., Sadia Fathima, Atiya Khanum, Irfan Ali Khan, and S.Y. Anwar (2004 - 2005) ^[12, 21] studied medicinally important plants growing in the Adilabad district of Andhra Pradesh that are used in the treatment of various ailments. Swamy, NSNS (2008) ^[34] reported 366 ethnomedicinal plants and 44 ethnoveterinary plants used by tribes in the Adilabad district as part of a UGC Minor Research Project under plan. Mulay JR and Sharma PP (2012) ^[13]. Some useful weeds of Ahmednagar district, Maharashtra, India. Telangana Weed Flora Survey (2022) ^[37]. Zubair Shah, Ghulam Mujtaba Shah, Alia Gul, Aziz Ullah, Aminul Haq, Irshad Ullah, Mubarak Zeb, Fazli Rahim (2026) ^[23]. Phytotherapeutic and ethnobotanical relevance of weed flora: A quantitative assessment from the cultivated fields of District Bajaur, Pakistan. In the present work, we present interesting ethnomedicinal observations on Common Weed Flora recorded in the Nirmal district.

Study area

The Nirmal district is situated at latitude 19.096413° N and longitude 78.342972° E, on the east, Manchiryal district; to the north, Adilabad; to the south, Utnoor divisions, Jagithyala and Nizamabad districts and on the west by

Nanded district of Maharashtra State (Fig. 1). The most important river that drains the divisions is Godavari, which is the largest river in peninsular India. The Kadam Vagu is a tributary of the Godavari. Besides these,

Swarna Vagu and Sudda Vagu drain the division. The average annual normal rainfall of the Nirmal district is 1107.2 mm, and the average number of rainy days in the year is 55 – 63 days.

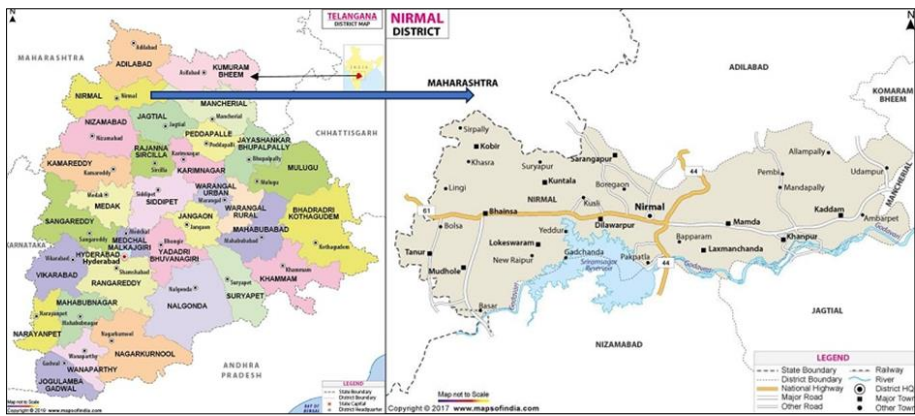


Fig 1: Location of Study area Map

Methodology

Data on Agricultural Weed plants were collected in Tribal dominated villages during August 2024-July 2026. Data were collected through frequent interviews with tribes, elders and local doctors in places where the informants were most comfortable. Specimens of Ethnobotanical weed plants were collected, and species were identified using the Floras (Gamble & Fischer, 1915-1935; Subba Rao & Kumari, 2003). The plant species are enumerated alphabetically and kept at the Department of Botany, Government Degree College, Echoda, District Adilabad, for further reference.

Results and Discussions

Data pertaining to 56 Ethnobotanical weed plant species belonging to 25 families are reported. Among these, 53 dicotyledonous and 3 monocotyledonous families are arranged in alphabetical order. For each plant species given in (Table -1), the following enumeration details on the scientific name, botanical family, local name and use are provided along with the parts harvested for treatment

various diseases like Jaundice, Dysentery, Foot-mouth, Cough, Asthma, Arthritis, Fever, Bone fracture, Paralysis, etc. by using whole plant, leaf pastes, juices, Root, Root bark, Stem bark, Seeds, etc. Some plants are useful to treat more than one disease. Basis on habitat, the identified agricultural weed plants were categorized into different growth forms. The recorded weeds flora comprised 38 herbs, 6 creeping herbs, 2 climbers, 2 prostate herbs, and 2 shrubs. In addition, one species each was recorded under grass, sedge, twining herb, succulent herb, spiny herb, trailing herb categories (Fig – 1). This study will help preserve traditional knowledge that is gradually disappearing, demonstrate the ecological and medicinal importance of weed plants, and provide baseline data for biodiversity conservation, ethnopharmacology, and sustainable rural development. Previous studies from Nirmal and adjoining regions show that local communities continue to depend on wild and agricultural weed plants for healthcare and nutrition, highlighting the value of such documentation.

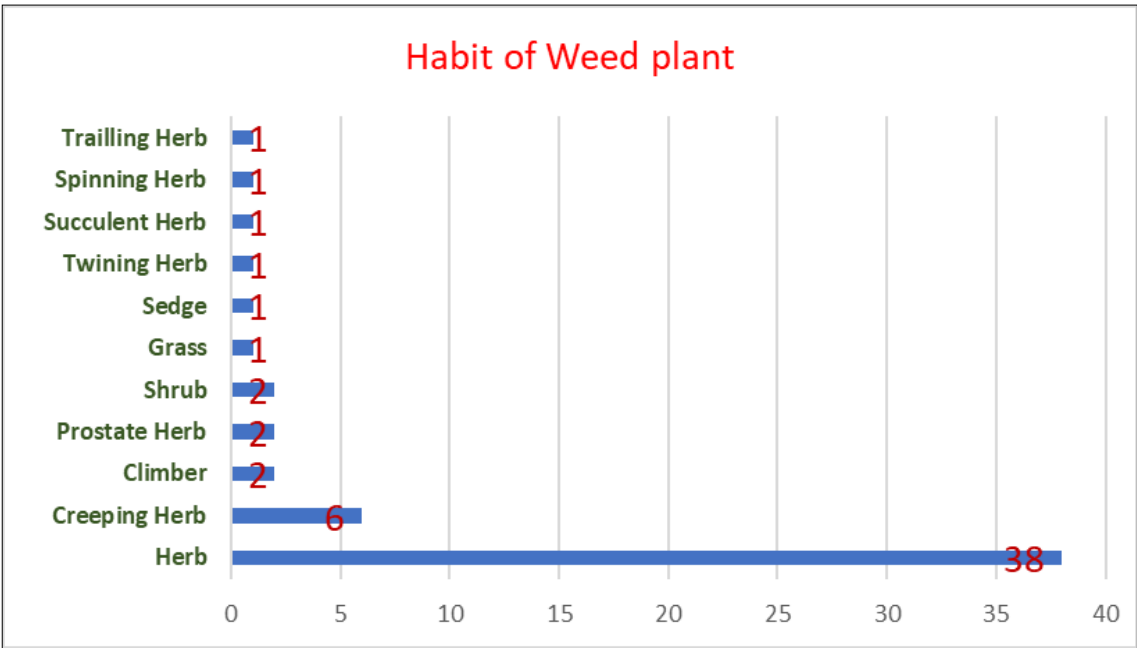


Fig 2: Habitation of Weed plants

Table 1: Checklist of Agricultural Weed plants with their Family, Local names and Utility/ Uses

S.No.	Botanical Name of the Weed plant	Name of the Family	Local name	Habit	Ethnobotanical use
1	<i>Abrus precatorius</i> L.	FABACEAE	Guruvinda	Climber	Centipede bite: Seed paste mixed with goat's milk and applied on bitten area. Scorpion sting: Seed paste mixed with goat's milk and applied on stinged area.
2	<i>Abutilon indicum</i> (L.) Sweet.	MALVACEAE	Thuthura benda	Herb	Dysentery: Root decoction used with sugar candy in 2 spoonfuls twice a day about 3 days.
3	<i>Acalypha Indica</i> L.	EUPHORBIACEAE	Muripinda	Herb	Common Skin diseases: Leaves ground with turmeric and fine paste applied on effected areas. Emetic: A spoonful of leaf juice is given to children in 1 or 2 doses. Jaundice: Leaves crushed with sugarcandy and curd taken orally early in the morning for 3 days
4	<i>Achyranthes aspera</i> L.	AMARANTHACEAE	Uttareni	Herb	Body Swellings: Whole plant extract administered in 3 spoonfuls twice a day for about 3 days. Foot-mouth: Entire plant ground with jaggery and the paste administered twice a day for one week.
5	<i>Aerva lanata</i> (L.) Juss.	AMARANTHACEAE	Pindikoor	Herb	Gall bladder kidney and urethral stones: 10g of shade dried plant powder taken along with the barley water thrice a day for about 45 days to dissolve stones. Also plant decoction used for the same. Tooth infection: Leaf paste applied on gums and branches used as tooth brush.
6	<i>Ageratum conyzoides</i> L.	ASTERACEAE	Picchi patri	Herb	Anti Septic: Steam bark paste is applied on cuts and wounds. Asthma: Bark dicaction administered orally in 2 spoonfuls thrice a day about one month. Bronchitis: Bark decoction administered in 2 spoonfuls twice a day for 3 weeks.
7	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	AMARANTHACEAE	Ponnaganti koora	Herb	Bone fracture: Whole plant paste is mixed with egg albumin and plastered till cure.
8	<i>Amaranthus spinosus</i> L.	AMARANTHACEAE	Nalla Doggata	Herb	Dyspepsia: Roots ground with rhizomes of <i>Zingiber</i> and the paste given orally after meals daily for a week.
9	<i>Amaranthus viridis</i> L.	AMARANTHACEAE	Thota Koora	Herb	Purgative: Leaves cooked with <i>Sesamum</i> oil and taken as vegetable
10	<i>Boerhavia diffusa</i> L.	NYCTAGINACEAE	Tella garijelu	Herb	Anaemia: Whole plant extract mixed with cow milk and sugarcandy and administered orally in a spoonful twice a day for a month. Jaundice: Whole plant extract mixed with sugar and curd and administered once early in the morning for 7 days.
11	<i>Cassia occidentalis</i> L.	FABACEAE	Kasinta	Herb/ Shrub	Cough: Leaf juice given in 2 spoonfuls thrice a day for 3 days. Eczema: Leaf paste applied on effected areas till cure.
12	<i>Cassia tora</i> L.	FABACEAE	Tantepu/Kukkaboberi	Herb	Ringworm: Root rubbed on stone with lime juice and the poultice applied on effected areas till cure. Skin eruptions: Seeds ground and the paste mixed with buttermilk and applied on effected areas till cure.
13	<i>Centella asiatica</i> (L.) Urban.	APIACEAE	Saraswati Aku	Creeping herb	Blood purification: Leaf paste taken in a spoonful once in morning for a month. Memory power: Leaves ground with jaggery and taken in morning for 30-45 days. Mouth ulcers: Whole plant ground with turmeric and black pepper and the extract is gargled till cure. Nervous weakness: Leaf paste administered in 2 spoonfuls twice a day for 40 days.
14	<i>Chenopodium album</i> L.	AMARANTHACEAE	Taraka Mokka	Herb	Anthelmintic Branches: Made into paste with jaggery and given at bed time in 10g for 3-4 days. Appetite: Branches and seeds of <i>Coriandrum</i> boiled and the decoction given in 1 glassfull one hour before the meal for 3-4 days.
15	<i>Cleome gynandra</i> L.	CLEOMACEAE	Vaminta	Herb	Ear ache: Leaf juice poured in 2-3 drops thrice a day till cure.
16	<i>Cleome viscosa</i> L.	CLEOMACEAE	Kukka Vaminta	Herb	Anthelmintic: Seeds ground with jaggery and the paste taken once at bed time for 3-4 days.
17	<i>Commelina</i>	COMMELINACEAE	Venna Veduru	Creeping	Boils: Leaf juice mixed with turmeric powder and

	<i>benghalensis</i> L.			herb	applied on effected areas till cure.
18	<i>Cynodon dactylon</i> (L.) Pers.	POACEAE	Gariki gaddi	Grass	Dysmenorrhea: Plant decoction mixed with seed powder of <i>Sesamum</i> and jaggery and administered in ½ glass twice a day for about 15 days.
19	<i>Cyperus rotundus</i> L.	CYPERACEAE	Tunga Gaddi	Sedge	Dyspepsia: Tuber extract taken orally in 2 spoonfuls once into morning for 3-4 days. Jaundice: Tubers ground with triphal (Fruits of <i>Tgerminalia chebula</i> , <i>T. bellirica</i> <i>Embllica officinalis</i>) and the extract administered in 2 spoonfuls twice a day about 5 days.
20	<i>Desmodium triflorum</i> (L.) DC.	FABACEAE	Munta Manda	Creeping herb	Asthma: Root decoction given in 2 spoonfuls twice a day for about 10 days. Bronchitis: Root decoction given 2 spoonfuls twice a day for 7 days.
21	<i>Digera muricata</i> (L.) Mart.	AMARANTHACEAE	Chenchu Koora	Herb	Constipation: Leaves cooked and eaten as leafy vegetable for 7 consequent days.
22	<i>Eclipta prostrate</i> (L.) L. Mant.	ASTERACEAE	Gunta galagara	Herb	Alopecia: Whole plant paste applied on effected areas till growth of hair. Blisters and Boils: Leaf paste applied externally till cure. Hair fall/graying: Leaves ground with the leaves of <i>Lawsonia inermis</i> and the extract applied on head and taken bath after 1-2 hours.
23	<i>Emilia sonchifolia</i> (L.) DC.	ASTERACEAE	Pisa pathri	Herb	Ear sores: Leaf Juice poured in 2-3 drops thrice a day for 3-4 d or till cure. Night Blindness: Leaf extract poured in 1-2 drops thrice a day till cure. Ophthalmia: Leaf extract poured in 1-2 drops thrice a day for 5-7 days.
24	<i>Euphorbia hirta</i> L.	EUPHORBIACEAE	Reddivari Nanubalu , Chukkabottala chettu.	Herb	Jaundice: Leaf extract in combination with leaf extract of <i>Phyllanthus amarus</i> , sugar and curd is administered in 2 spoonfuls thrice a day for 2-3 days. Lip cracks: Latex applied externally till cure.
25	<i>Evolvulus alsinoides</i> (L.) L.f.	CONVOLVULACEAE	Vishnu Krantha	Herb	Memory power: Whole plant dried and ground into powder and 1 spoonful is taken daily for about 30 days. Mental disorders: Dried plant powder administered in 2 spoonfuls twice for a day about 2
26	<i>Heliotropium indicum</i> L.	BORAGINACEAE	Naga danti	Herb	Centipede bite: Leaves ground with turmeric and the paste applied on bitten area.
27	<i>Hyptis suaveolens</i> (L.) Poit	LAMIACEAE	Sima Tulasi	Herb	Head ache: Leaf paste applied on forehead.
28	<i>Leucas aspera</i> (Willd.) Link.	LAMIACEAE	Tella tummi	Herb	Body swelling: Leaf paste mixed with warmed <i>Sesamum</i> oil and applied Extremally. Cold and cough: Flowers ground into paste and mixed with honey and given in 2- 3 times for week. spoonful twice or thrice a day for 3-4 days.
29	<i>Leucas cephalotes</i> Spreng.	LAMIACEAE	Tummi	Herb	Cold and cough: Flowers ground with jaggery and administered in 2 spoonfuls twice a day for 5 days. Worm killing: 1 spoonful of leaf Juice given for 3 days at bed time.
30	<i>Mimosa Pudica</i> L.	FABACEAE	Atti patti	Creeping Herb	Common skin diseases: Leaf juice rubbed on the body to prevent itches.
31	<i>Mollugo pentaphylla</i> L.	MOLLUGINACEAE	Verri Chatarasi.	Herb	Ear ache: Leaves heated and mixed with castor oil and applied on head for 3-4 days. Head ache: Leaf paste with castor oil and warmed and applied to head for 3-4 days. Sores: Plant poultice applied externally till cure.
32	<i>Oldenlandia croymbosa</i> L.	RUBIACEAE	Chiru veru	Herb	Body pains: The plant boiled in <i>Sesamum</i> oil and massaged on painful parts.
33	<i>Oxalis corniculata</i> L.	OXALIDACEAE	Nela chinta	Creeping Herb	Bone fracture: Whole plant paste mixed with egg albumin and plastered on effected parts till cure. Jaundice: 2-3 spoonfuls of leaf extract given with a glass of buttermilk once early in the morning for about one week.
34	<i>Passiflora foetida</i> L.	PASSIFLORACEAE	Tella Jumiki	Climber	Emetic: Tender fruit juice given in 2-3 spoonfuls once or twice. Giddiness: Leaf paste applied on head as remedy for 2-3 days.
35	<i>Pergularia daemia</i>	APOCYNACEAE	Dustapa teega	Twining	Asthma: Leaf decoction taken in 2 spoonfuls 2-3

	(Forssk.)Chiov.			herb	times a day for about 15 days. Bone fracture: Leaves ground with leaves of <i>Plumbago zeylanica</i> and the paste is plastered till cure. Dysmenorrhoea: Leaves ground with seeds of <i>Sesamum</i> and the extract taken by women in 2 spoonfuls twice a day for 10 days. Fever: Tender stem pieces ground with <i>Piper nigrum</i> and 5g of paste administered twice a day for 3-4 days.
36	<i>Phyllanthus amarus</i> Schum. et. Thonn	EUPHOREBIACEAE	Nela Usiri	Herb	Dyspepsia: Leaf extract mixed with <i>Carum copticum</i> and 2 spoonfuls taken after meal for about 10 days. Jaundice: Whole plant extract mixed with curd and given in 2 spoonfuls twice a day for a week. Worm killing: Leaf extract with <i>Carum copticum</i> administered in 2 spoonfuls before meal for about 15 days.
37	<i>Physalis minima</i> L.	SOLANACEAE	Budda Busara, Kupanti	Herb	Liver disorders: 1 spoonful of dried fruit powder taken without water twice a day for 15 days. Purgative: 1 spoonful of fruit juice mixed in a glass of milk is taken at bed time for 3-4 days.
38	<i>Polygala arvensis</i> Willd.	POLYGALACEAE	Rajuma	Herb	Centipede bite: Whole plant paste applied on bitten area. Head ache: Leaf paste tied in a cotton cloth and inhaled for relief. Typhoid: Whole plant paste applied on forehead till recovery.
39	<i>Portulaca oleracea</i> L.	PORTULACACEAE	Pappu koora	Succulent herb	Jaundice: Whole plant dried and made into powder and administered in 2 spoonfuls early in the morning for about 15 days.
40	<i>Portulaca quadrifida</i> L.	PORTULACACEAE	Sanna pappu koora	Herb	Asthma: Whole plant extract mixed with honey and administered in 2 spoonfuls thrice a day for about 20 days. Burns and scalds: Fresh leaf paste applied on effected areas.
41	<i>Ricinus communis</i> L.	EUPHORBIACEAE	Amudamu	Shrub	Jaundice: Leaf paste administered in 1 spoonful with buttermilk early in the morning for 5-7 days. Purgative: Seed oil mixed with milk in equal proportion and taken at bed time for 3-4 days.
42	<i>Sida acuta</i> Burm.f.	MALVACEAE	Parasu Kampa	Herb	Bone fracture: Leaf paste mixed with egg albumen and plastered on effected parts till cure. Rheumatic pains: Root paste mixed with <i>Sesamum</i> oil and applied on painful parts.
43	<i>Sida cordata</i> (Burm.f.) Borssum	MALVACEAE	Gayapaku	Herb	Dysentery: Whole plant juice mixed with butter milk is given 2-3 times a day till control. Scorpion sting: Leaf paste applied on stinged area.
44	<i>Sida cordifolia</i> L.	MALVACEAE	Chiru benda	Herb	Obesity: whole plant juice mixed with the fruit juice of <i>Borassus flabellifer</i> is taken in 2-3 spoonfuls early in the morning for about one month. Paralysis: Leaf poultice gently massaged on effected parts.
45	<i>Solanum nigrum</i> L.	SOLANACEAE	Kamanchi pandu	Herb	Ear ache: Leaf juice poured into ears twice or thrice a day till cure. Piles: Ripe fruit juice mixed with ghee and suger is administered in 2-3 spoonfuls twice a day for about one month.
46	<i>Solanum surattense</i> Burm.f.	SOLANACEAE	Mulla vankaya, Vankudu	Spiny herb	Anthelmintic: Tender fruits are cooked and eaten as vegetable and said to be effective. Asthma: Root decoction administered in 2-3 times a day for about one month. Bone fracture: whole plant ground with <i>Sesamum</i> oil and the paste plastered on effected parts of human and cattle. Muscular pains: Leaf paste applied externally to relieve the pain. Paralysis: Leaf poultice applied on effected parts and gently massaged till cure.
47	<i>Sphaeranthus indicus</i> L.	ASTERACEAE	Boda Saram	Herb	Cold and cough: Leaf paste applied on head for 2-3 days or till cure Diarrhoea: Leaf juice mixed with milk and suger given in 2 spoonfuls twice a day for 3 rd or till cure.

					Fertility: Inflorescence and roots ground with goat's milk and one of extract taken spoonful at night for sexual potency about one month.
48	<i>Tephrosia purpurea</i> (L.) Pers.	FABACEAE	Vempali	Herb	Arthritis: Root paste warmed and applied externally till cure. Fever: Roots ground with seeds of <i>Piper nigrum</i> and the extract given in 2 spoonfuls twice a day for 3 days. Rheumatic pains: Root poultice warmed and used for massage on painful parts.
49	<i>Tragia involucrata</i> L.	EUPHORBIACEAE	Durada gondi	Trailing herb	Cough: Root powder cigared with leaves of <i>Diospyros melanoxylon</i> and smoked for relief Fever: Plant decoction given in 2 spoonfuls twice a day for 3 days. Nervous weakness: Plant decoction with sugarcandy given in 2 spoonfuls twice a day for 20 days.
50	<i>Tribulus terrestris</i> L.	ZYGOPHYLLACEAE	Palleru,	Prostate herb	Diuretic: Plant poultice administered in 2 spoonfuls thrice a day for about 5 days. Gall bladder stones: 2 spoonfuls Leaf paste with ½ glass of cow milk twice a day for about 10 days is administered to dissolve stones. Gonorrhoea: Fruit and root decoction given in 2 spoonfuls twice a day for 15 days. Jaundice: Whole plant ground with <i>Amaranthus tricolor</i> and made into paste and 2 spoonfuls administered with ½ glass of cow milk once in early morning for 7 days.
51	<i>Tridax procumbens</i> L.	ASTERACEAE	Gaddi Chamanti	Creeping herb	Cataract: Whole plant ground with leaves of <i>Ocimum tenuiflorum</i> and the extract Administered in 2 spoonfuls twice a day for 5 -7 days. Cuts and wounds: Leaf juice applied on effected areas till cure. Dysentery: Leaf extract given in 2 spoonfuls with a glass of buttermilk twice or thrice a day. Haemorrhage: Leaf juice applied externally for cuts, sores, ulcers and wounds to arrest the bleeding.
52	<i>Trianthema portulacastrum</i> L.	AIZOACEAE	Ambali madu, Galijeru	Prostate herb	Amenorrhea: Roots ground with <i>Cuminum cyminum</i> and jaggery and made into paste. It is given in 2 spoonfuls twice a day for 7 days. Diurectic: Leaf juice given in 2 spoonfuls twice a day for about 15 days. Kidney stones: Leaf juice given to dissolve the stones in 2 spoonfuls twice a day for 15 – 20 days.
53	<i>Urena lobata</i> L.	MALVACEAE	Nalla benda	Shrub	Anthelmintic: Root juice in 1 spoonful twice a day for 3-4 days. Rheumatic pains: Whole plant poultice mixed with <i>Sesamum</i> oil and warmed to massage gently on painful parts 2-3 times a day till cure.
54	<i>Vernonia cinerea</i> (L.) Less	ASTERACEAE	Garita kami	Herb	Eczema: Leaf paste applied on effected areas till cure. Earache: 2-3 drops of root juice poured into ears for 3 days. Ringworm: Leaf paste applied externally till cure.
55	<i>Waltheria indica</i> L.	MALVACEAE	Nalla Benda	Herb	Blood pressure: Root bark decoction administered in 2 spoonfuls twice a day for about 20 days. Dog bite: Aerial parts applied on bitten area and also given orally with <i>Sesamum</i> oil in 2-3 spoonfuls once in morning for 3 days. Harshness of voice: Leaves and flowers are chewed and said to be effective.
56	<i>Xanthium strumarium</i> L.	ASTERACEAE	Marula matangi	Herb	Goiter: 50ml of root juice administered in the morning about a week. Leucorrhoea: Plant juice taken in 2 spoonfuls twice a day till cure.

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