



MEDICINAL ANGIOSPERMS DIVERSITY OF ROHILKHAND REGION (U.P.) TO CURE SOME COMMON HUMAN DISEASES

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Abstract

Medicinal plants play an important role in human life from ancient times. Rohilkhand region is rich in the plant diversity and the plants are used for treatment of various diseases. This study showed that many people in the studied parts still continue to depend on medicinal plants at least for the treatment of primary healthcare. The investigation revealed that, the traditional healers used 104 species of angiosperms belonging to 49 families to treat various human diseases. Majority of herbs (48) were used followed by trees (22) and shrubs (20). A total of 15 species (3 trees, 3 shrubs, 7 herbs and 2 climber) have been identified for future monitoring, which are important from conservation point of view.

Keywords: Medicinal Angiosperms, Human diseases, Rohilkhand region

I. INTRODUCTION

India is one of the twelve mega-biodiversity countries of the world having rich vegetation with a wide variety of plants with medicinal value. There are more than two thousand five hundred plant species in India having documented medicinal value (Verma & Chauhan, 2006). These medicinal plants and their raw materials are used in the prevention, treatment and cure of health disorders by rural people of India. Generally they have a strong belief in the efficacy and success of wild plants. They collect and preserve locally available wild plant species. They often use their own herbal system to cure several diseases or ailments (Punjwani & Patel, 2006). Attempts have been made by various workers such as Nayar (1964), Singh & Maheshwari (1983), Singh & Maheshwari (1992), Singh & Singh (2005), Jain *et al.* (2005), Katewa & Galav (2005), Tomar (2007), Singh (2008), Pattantaik *et al.* (2008), Rajendran *et al.* (2008) and Malik *et al.* (2009) to collect information on the medicinal plants used for treatment of various diseases in different areas of India. There is no report published on medicinal plants diversity in Rohilkhand region of Uttar Pradesh. Therefore it is necessary to collect the information about the knowledge of medicinal plants, their uses to treat various diseases, preserved in rural areas of study area before it is permanently lost. In such a way, the present study denoted that angiosperms used as medicine by rural people in the study area.

II. STUDY AREA

Rohilkhand is a region of north-western Uttar Pradesh state of India. It lies between latitudes 27°35' to 29°58' N and 78°0' to 80°27' E longitudes. The name Rohilkhand was given by Ahmad Shah Abdali in 1748. The entire plain comprises of nine districts namely Bareilly, Budaun, Shahjahanpur, Pilibhit, Bijnore, Moradabad, Rampur, Sambhal and J.P. Nagar (fig. 1) and has an area of about 25,000 km² (10,000 square miles). Rohilkhand region has witnessed extraordinary growth in urban population. Growth of human population, heavy impact of economic activity, rapid industrialization and

enormous increase in pollution has been causing habitat destruction. Rohilkhand Region is predominantly subtropical, but weather conditions change significantly with location and seasons.

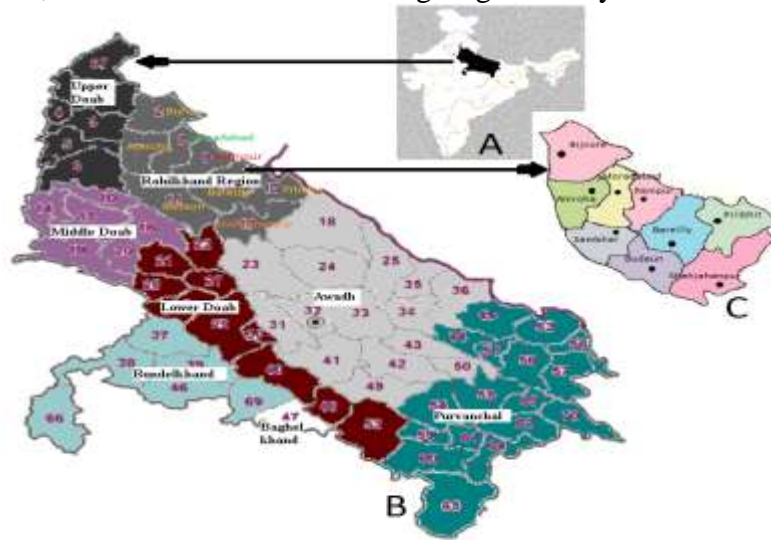


Figure. 1- Map of Rohilkhand region (C)

III. MATERIALS AND METHODS

The project area was visited several times for collection of data during the year 2015-2016. During fieldwork, direct interviews and group discussion were conducted with the local inhabitants, selected informants, the herbalists Vaidyas (local physicians of eastern system of medicine), Pansaries (medicinal plants sellers in the local markets). Questionnaires were adopted for this purpose. The data obtained was analysed carefully. Herbarium specimens were collected and respective high-resolution digital photographs were taken and used for the identification of the species of interest. Available literature were consulted for identifying species and their medicinal uses (Hooker (1872-1897); Maheshwari (1963); Babu (1977); Jain (1991); Vardhana (2013).

IV. OBSERVATIONS

Family - Acanthaceae

Adhatoda vasica Nees (Ashwagandh) Shrub: Leaves are ground with the flowers of (Gurhal) *Hibiscus rosa-sinensis* and taken orally to treat asthma.

Andrographis paniculata (Burm. f.) Wallich ex Nees (kalmegh) Herb: Leaf paste is applied topically at the bitten site of snake, beetle and scorpion. Powdered leaf is mixed with cow or goat's milk and taken orally to treat diabetes.

Peristrophe paniculata Burm (Chirchiri) Herb: Whole plant and root are used to treat wounds, gout and rheumatism.

Family - Aizoaceae

Trianthema portulacastrum L. (Santhi) Herb: Decoction of roots is taken internally to treat Constipation and asthma.

Family - Amaranthaceae

Alternanthera sessilis (L)R Br.(Gaitewar) Herb: Leaf juice is given in stomach-ache.

Achyranthes aspera L.(Latjeera) Shrub: Leaf paste is applied topically to treat cuts and Wounds.

Amaranthus spinosus L.(Kanteli-chauli) Herb: Root paste is applied on eczema.

Amaranthus viridis L.(Jungli Chaulai) Herb: Whole plant is used to cure vermifuge, centipede bite and Scorpion bite.

Celosia argentea L. (Gadrya) Shrub: Seeds are boiled with water and taken as blood purifier and to stop bleeding. Leaves are chewed in dysentery, diarrhoea and sore mouth.

Family - Anacardiaceae

Mangifera indica L. (Aam) Tree: The latex from leaf and stem bark is used to treat heel cracks.

Family - Apiaceae

Centella asiatica L.(Brahmi-booti) Herb: Whole plant is used in fever.

Family – Apocynaceae

Alstonia scholaris (L.) R.br. (Chatiyan) Tree: Bark is used to cure malarial fever and diarrhoea. Latex is applied on leprosy wounds.

Catharanthus roseus G. Don. (Sadabahar) Shrub: Whole plant is powdered and mixed with cow's milk and taken orally to treat diabetes.

Nerium oleander Sol. (Gulabi kaner) Shrub : Juice prepared from the stem bark is boiled with gingerly oil and two drops are poured into ear to treat ear pain.

Rauwolfia serpentina (L)Benth. ex Kurz.. (Sarpghandha) Shrub: Paste of the whole plant is mixed with castor oil and applied topically to treat skin diseases.

Thevetia peruviana Merrill (Pili kaner) Tree : Root and bark are used to cure cough, bronchitis and , bronchita leprosy.

Family - Asclepiadaceae

Calotropis procera (Willd) Drey.(Akua) Shrub : Flowers are orally used to remove constipation.

Calotropis gigantea (L) R.Br.(Akua, Madar) Shrub : Powder of root bark is given in dysentery.

Asclepias curassavica L.(Kakatundi) Herb : Latex is used in gonorrhoea. Root powder is given in ulcer and piles.

Family – Asteraceae

Acanthospermum hispidum DC.(Gondhichedi) Herb: Whole plant is used to cure Skin diseases and fever.

Ageratum conyzoides L.(Gundrya) Herb: Flowers are used to cure skin ailments, cuts and sores. Seeds are used in kidney stone, diarrhoea, leprosy, uterine disorders and snake bite.

Bidens pilosa L.(Kumra) Herb : Whole plant is used to treat cough and bronchitis.

Eclipta prostrata L.(Bhangra) Herb : Leaf powder is mixed with coconut oil & applied on the hair regularly for healthy and black hair.

Sphaeranthus indicus L.(Mundi) Herb : Leaf, flower and seeds are ground into paste and applied topically to treat skin diseases and piles.

Tridax procumbens L.(Kanphuli) Herb : Leaf paste is applied topically on cuts and wounds.

Xanthium strumarium L.(Gokhuriya) Shrub: Whole plant is used to cure malaria, piles, rheumatism, scrofula, ringworm, urinary complaint, ulcer and toothache.

Family- Bombacaceae

Adansonia digitata L. (Balam kheera) Tree: Fruits are powdered and take orally to dissolve kidney stones.

Family – Boraginaceae

Trichodesma indicum (L.) Br. (Chhota-Kulpha) Herb : Leaf paste is applied on wounds, sores, boils, eczema pyorrhoea and swellings on joint. Fruits are as vermifuge.

Family – Caesalpiniaceae

Bauhinia racemosa Lamk. (Kachnal) Tree: Bark and fruit are used to treat dysentery and diarrhoea.

Cassia fistula L.(Amaltas) Tree: Its fruits are used to cure jaundice, liver problem, ringworm, stomach ache, tooth ache, swell of throat, pimples and indigestion.

Cassia occidentalis L. (Taror) Herb: Leaf paste is applied topically to treat scabies and to heal bone fractures.

Cassia tora L.(Chakunda,) Herb: Leaf paste is applied on eczema, cuts and as antiseptic. Root powder is given in jaundice.

Family - Cannabinaceae

Cannabis sativa L. (Bhang) Herb: Leaf paste is applied on wounds and sores. Seeds are used to cure paralysis of tongue.

Family -Commelinaceae

Commelina diffusa Burm.f.(Kanshura) Herb : Root powder is used as antidote to snake bite.

Family – Caryophyllaceae

Stellaria media (L.)Vill. Herb : Whole plant paste is applied on bone fracture.

Family – Chenopodiaceae

Chenopodium album L.(Bathua)Herb : Leaves are used in skin disease and seed powder in urinary complaints.

Chenopodium ambrosioides L. (Bathua) Herb: Whole plant is given in dysentery, pneumonia and piles.

Chenopodium murale L. (Bathu) Herb: Leaves are eaten raw to control asthma.

Family - Combretaceae

Terminalia arjuna Roxb.Ex. Dc Wight & Arn.(Arjun) Tree : Fruit paste is applied topically on wounds. Bark powder is boiled with water and inhaled to cure headache and to kill worms in teeth.

Family - Convolvulaceae

Evolvulus alsinoides L.(Sankhpuspi) Herb : Whole plant and leaves are used to cure fever, cough and cold, stomach- ache, ulcer, dysentery, asthma and bronchitis.

Ipomoea carnea (Mart ex choisy)Austin. (Behaya) Shrub: Leaf are heated with mustard oil and then placed on swelling.

Family - Cucurbitaceae

Coccinia grandis (L.) J. Voigt. (Kanduri) Climber: Leaf Juice is mixed with butter and applied topically to treat skin diseases.

Momordica dioica Roxb. ex Willd.(Jangli-Karela) Climber : Root powder is mixed with gur is used to cure fever, injuries, piles, asthma, bronchitis, dysentery and diphtheria.

Mukia maderaspatana (L.) M. Roemer (Ban Kakhri) Climber: Leaf powder is mixed with boiled rice and taken orally to treat cold and cough. Seed powder is given in malarial fever, urinary disorder and vomiting.

Family - Cuscutaceae

Cuscuta reflexa Roxb. (Amar-bel) Climber: Whole plant is used to treat Skin diseases, eye diseases, body ache, cuts and wounds. Stems are anthelmintic and carminative.

Family - Crassulaceae

Bryophyllum pinnatum (Lamk) Oken. (Ajuba) Shrub: Leaf with mustard oil is heated for few seconds and then wrapped on swelling.

Family - Cyperaceae

Cyperus rotundus L.(Motha) Herb: Paste of dried tuber is applied on breast of women to secrete more milk and applied topically on bitten site of scorpion.

Family - Dioscoreaceae

Dioscorea bulbifera L.(Ratalu) Climber: Tubers are used to treat diabetes, dysentery, abdominal pain, jaundice, boils and piles.

Family - Euphorbiaceae

Euphorbia hirta L.(Dudhi) Herb: The milky latex is applied topically to treat wounds and lip cracks.

Euphorbia tirucalli L.(Kharsani) Tree: Latex is applied on eczema, wounds, toothache, earache, scabies, rheumatism and warts.

Jatropha curcas L.(Pahari-arand) Tree: Seeds are anthelmintic, rheumatism, pneumonia chest congestion, cough, inflammation and latex is applied on burns.

Phyllanthus fraternus Web. (Bhui-amla) Herb: Whole plant is used to cure boils, allergy, abortifacient diarrhoea, dysentery, drops genito urinary diseases and jaundice.

Phyllanthus emblica L.(Awanla) Tree : Fruit powder is mixed with cow's or goat's milk and taken orally to treat cold and cough.

Ricinus communis L.(Arandi) Shrub: The leaf juice is taken orally or washed leaves are tied on the breast to increase secretion of milk in women. The oil prepared from the seeds is applied on lower stomach to get relief from stomach ache.

Family - Fabaceae

Abrus precatorius L. (Ratti) Climber: Root powder is taken orally along with cow's milk to treat scorpion sting and snakebite.

Clitoria ternatea L. (Neelophar) Climber: Root powder is mixed with water and taken orally to treat indigestion, eye diseases and headache.

Desmodium gangeticum (L.) DC.(Salpalnu) Herb: Root is soaked in water and used as astringent, Root powder is taken orally to cure bronchitis, asthma, dysentery, vomiting and fever.

Pongamia pinnata (L.) Pierre. (Anar) Tree: Juice of root is mixed with equal amount of coconut milk, boiled and applied topically to cure wound and gastric trouble.

Family – Fumariaceae

Fumaria indica Pugsley (Pit-papra) Herb: Whole plant is used as blood purifier.

Family – Lamiaceae

Nepeta hindostana Haines (Billilotan) Herb: Whole plant is used to treat fever, gonorrhoea and cardiac problems.

Leucas aspera (Willd.) Link. (Gubba) Herb: A bunch of leaves is boiled and the vapors are inhaled to cure head ache and fever.

Ocimum basilicum L. (Murya) Herb: Leaves are used in cold, cough and fever. Seed powder is given in stone complaints, dropsy, cholera and to remove alcoholic intoxication.

Ocimum sanctum L.(Tulsi) Herb: Leaves are crushed with onion bulbs and the juice is taken orally to treat cough, cold and headache.

Family - Liliaceae

Aloe vera L.(Gheequar) Herb: Sap mixed with oil is heated and the mixture is applied on hair for hair growth and good sleep.

Family - Lythraceae

Lawsonia inermis L.(Menhdi) Shrub: Leaf powder is mixed with coconut oil and applied topically to treat cuts and wounds.

Family - Malvaceae

Abutilon indicum L.(Kanghee) Shrub: Leaf juice and root are taken orally to treat dental problems.

Malvastrum coromandelianum (L) Garcke.(Suchi) Herb: Leaf paste is applied on wounds and sores.

Sida acuta Burn.f. (Bala) Herb: Leaf paste is applied topically to heal cuts, wounds and to get relief from headache. Its fruits are taken in gastric diseases, vermifuge, stomach ache and gonorrhoea.

Urena lobata L.(Chatkura,) Shrub: Flowers are used to cure sore throat.

Family - Meliaceae

Azadirachta indica A. Juss. (Neem) Tree: Leaf paste is applied topically on the body to treat small pox, rheumatism and skin diseases. The young twigs are used as toothbrush to develop strong teeth.

Family - Menispermaceae

Cissampelos pareira L. (Parha) Climber: Leaves are antidote to snake and scorpion bite. Root is boiled in water and given in colic pain and diphtheria.

Tinospora cordifolia Miers.(Giloe) Climber: Leaf paste is applied topically to treat wounds and leprosy.

Fasmily -Mimosaceae

Albizia lebbbeck (L) Benth (Safed siris) Tree: Bark is boiled in water and used to cure piles.

Mimosa pudica L.(Chuimui) Herb: Pinch of leaf paste is applied topically to treat cuts and wounds.

Family – Moraceae

Artocarpus lakoocha Buch-Ham.(Barhal) Tree: Fruits are eaten raw to keep young and seeds are used in conjunctivitis.

Ficus benghalensis L.(Bargad) Tree: Stem latex is applied topically on heel cracks. Young stem is used as tooth brush .Leaf paste is applied on sores and boils. Powder of aerial roots is given in kidney disease and leucorrhoea.

Ficus religiosa L.(Peepal) Tree: Dried leaf powder is mixed with water and taken orally to get relief from body pain. Fruits are eaten to cure bronchitis, abortifacient, asthma, cholera and paste of bark is applied on toothache and small pox.

Family - Moringaceae

Moringa oleifera Lam.(Sahjan) Tree: The leaf is taken as food and it reduces body heat and to treat indigestion and eye diseases. Flower is taken as food and it gives chillness to eyes and increases sperm production in men.

Family – Myrtaceae

Psidium guajava L. (Amrood) Tree: Leaves are chewed in mouth sores and throat infections. Bark is used in diarrhoea.

Syzygium cumini (L.) Skeels (Jamun): Tree: Paste of stem bark is applied topically to treat swellings. The ripe fresh fruits are taken orally to reduce body heat, in anaemia, piles, diarrhoea, diabetes and digestive problem.

Family - Nyctaginaceae

Boerhaavia diffusa L.(Pundera) Herb; Root powder is given orally in jaundice. Whole plant is boiled with water and taken orally to cure constipation.

Family - Oxalidaceae

Oxalis corniculata L. (Khati-But) Herb: Whole plant is used in conjunctivitis, insect bites, appetite, diarrhoea, dysentery, piles, fever, jaundice, skin disease sand stomach ache.

Family - Papaveraceae

Argemone maxicana L. (Pili kateli) Herb: Root powder is taken orally to cure snake bite.

Family - Poaceae

Cynodon dactylon L. Pers. (Doob ghash) Grass: Decoction of whole plant is taken orally to keep the body cool. Leaf paste also used to cure cuts and wounds.

Desmostachya bipinnata (L.) Stapf. Herb: Whole plant is cooked as vegetable and eaten to cure dysentery.

Eleusine indica (L.) Gaertn.(Mandla) Herb: Whole plant is used to treat fever.

Imperata cylindrical (L.) Beauv. (Siru) Herb: Root powder is used in piles, intestinal and liver complaints.

Family - Polygonaceae

Polygonum plebejum R.Br. (Jayanti) Herb: Root powder is mixed with coconut oil and used in baldness.

Family - Portulacaceae

Portulaca oleracea L.(Kulfa) Herb: Whole plant is cooked as vegetable and eaten to cure constipation.

Family - Rhamnaceae

Zizyphus mauritiana Lam. (Beri) Shrub: Leaf and bark decoction is boiled and it is used to take bath to treat severe body pain. Dried bark powder is applied topically to treat wounds.

Family – Rubiaceae

Anthocephalus chinensis (Lamk.) Rich. Ex Walp. (Kadamb) Tree: Bark pastes with rose water applied on skin diseases and pimples. Fruit is used to cure dysentery, sores, fever, and snake bite.

Family - Rutaceae

Aegle marmelos Corr.ex.Roxb (Bel patra) Tree: Leaf paste is applied topically to heal wounds.

Murraya koenigii (L.) Sprengel. (Kadipatta) Tree: Juice of tender leaves is taken orally to arrest vomiting.

Family – Scrophulariaceae

Lindenbergia indica (L.) Ktze. (Karpurya) Herb: Leaf paste is applied on cuts and wounds. Leaf powder is taken orally to cure bronchitis.

Veronica anagallis-aquatica L.(Sadevi) Herb: Whole plant is used in healing burns.

Family - Solanaceae

Datura metel L.(Datura) Shrub: Few drops of leaf juice is poured into ear to treat earache.

Physalis minima L. (Dampfu) Herb: Fruits are eaten to cure dropsy.

Solanum nigrum L.(Makoi) Herb: Whole plant parts are taken as food to treat cough.

Solanum surratense Burm.f.(Barkatali) Herb : Root powder is given in gum trouble and tooth decay. Flowers and fruits are used to cure migraine, dropsy, scorpion bites and urinary complains.

Family - Tiliaceae

Triumfetta rotundifolia Lam .(Chiryari) Herb: Paste of whole plant is applied on swelling parts of the body.

Family - Verbenaceae

Clerodendrum indicum (L.) Ktze (Bharangi) Shrub: Leaf is ground in water and the juice is taken orally to treat abortifacient, cholera and bronchitis.

Lantana camara L. (Kali makoi) Shrub: A handful of flower is ground with coconut oil and applied topically on the head to get relief from headache.

Phyla nodiflora (L.) A. Rich (Jal-butt) Herb: Paste of leaves is applied topically to treat swellings and wounds. Whole plant is boiled in water and taken orally as cooling agent and in menstrual complaints.

Family - Zygophyllaceae

Tribulus terrestris L. (Chhoto gokhru) Herb: The fruit and root are mixed with boiled raw rice, taken orally to prevent white discharge in women and to treat urinary diseases.

V. RESULTS AND DISCUSSION

The study area harbours 104 plants (70.88 % wild and 29.12 % palnted), of which were 22 trees (22.88%), 20 shrubs (20.80%), 48 herbs (49.92%), 9 climbers (9.36%), 4 grasses (4.6%) and 1 sedge (1.04 %) (Fig.2.). Most of the families (25) were represented by single species (Monospecific family). However, the families represented the maximum number of medicinal plants are in the following order: Asteraceae (7) > Euphorbiaceae (6) > Amaranthaceae, Apocynaceae (5 in each), and Fabaceae, Lamiaceae, Malvaceae, Poaceae, Solanaceae and Caesalpiniaceae (4 in each).

The plant parts used for various ailments is shown in Fig.3. Ecological monitoring is one of the essential strategy required for the conservation of biodiversity component as it not only provides baseline data, but also enable to track the changes due to climatic factors over a period of time by considering the reasons responsible for that and the probable consequences. Several changes in different habitats have been observed in the study area since long (>14 years) due to industrialization and urbanization.

The seasonal effects and manipulation of water course have changed habitats drastically, such as the long-term directional changes i.e. succession and nutrient cycling. A total of 16 species (3 trees, 4 shrubs, 7 herbs and 2 climber) have been identified for future monitoring, which are important from conservation point of view (Table 1.). By recognizing the status of various species growing in the study area, we can aware local people and promote cultivation of above plants for future generation.

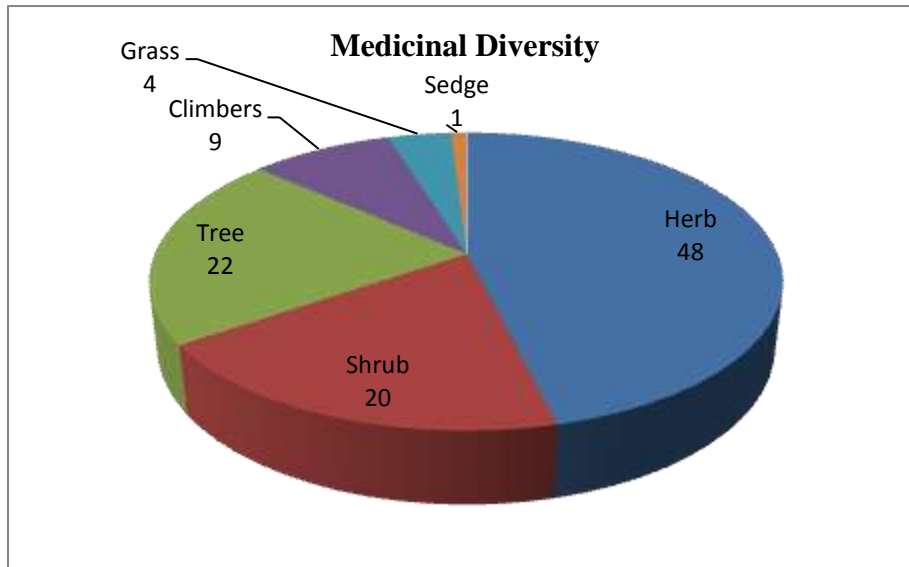


Figure 2. Angiosperm diversity of the study area used as medicine.

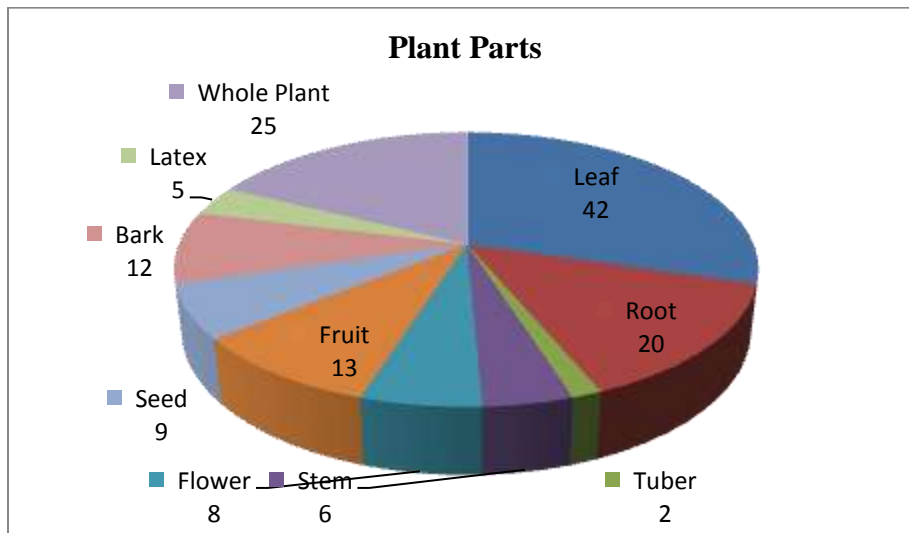


Figure 3. Plant parts used to treat various human diseases.

Table 1. Important medicinal plants for monitoring in the study area.

Species	Habit	Status
<i>Abrus precatorius</i>	Climber	Occasional
<i>Achyranthes aspera</i>	Herb	Common
<i>Adhatoda vasica</i>	Shrub	Rare
<i>Amaranthus viridis</i>	Herb	Common
<i>Asclepias curassavica</i>	Herb	Occasional
<i>Boerhaavia diffusa</i>	Herb	Occasional
<i>Calotropis gigantea</i>	Shrub	Occasional
<i>Centella asiatica</i>	Herb	Occasional
<i>Euphorbia tirucalli</i>	Tree	Rare
<i>Emblica officinalis</i>	Tree	Common
<i>Jatropha curcas</i>	Tree	Rare

<i>Nepeta hindostana</i>	Herb	Occasional
<i>Peristrophe paniculata</i>	Herb	Occasional
<i>Rauwolfia serpentina</i>	Shrub	Occasional
<i>Tinospora cordifolia</i>	Climber	Common

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