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Ethnomedicinal Survey on Plants used by Tribals in Chitteri Hills

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Abstract

An ethnobotanical survey was conducted to collect information about medicinal plants used by Malayali tribes in villages located in the forest area of Chitteri Hills, Dharmapuri district Tamilnadu, India. Informations presented in this paper were gathered from tribal informants including practitioners using an integrated approach of botanical collections and interview schedules. A total of 12 informants with in the age group of 30 to 68 were interviewed, among them two were tribal practitioners. About 65 ethnomedicinal plant species distributed across 38 families have been documented in the present study. Results indicate that fresh plant materials were invariably preferred for treating ailments. Informations reveal that Malayaliø largely depend on medicinal plants to meet their primary healthcare needs. They use ethnomedicinal plants to treat ailments like cold, cough, fever, headache, stomachache, diarrhoea, dysentery, skin diseases, poison bites, cut/ wounds, diabetes and sexual disorders. Medicinal plants used by Malayaliø in Chitteri have been listed along with plant parts used with its ethnomedicinal significance.

Key words: Malayaliø; Chitteri Hills; Ethnomedicine; Traditional knowledge; Medicinal plants.

Introduction

A mounting body of research is hoisting the credibility of traditional knowledge in meeting the challenges of primary healthcare services and natural resource management globally (Ragupathy and Newmaster, 2009). However, societal domination of western medicine and lack of due recognition to the stakeholders of biological resources, place and value of traditional knowledge base has been impeding the entry of traditional medicine into mainstream healthcare services and its related field of human welfare such as nutrition, environmental assessment and natural resource management (Usher, 2000).

A study of WHO depicts that over 80% of world's population directly depends on the natural diversity and its associated traditional system of medicine for their primary healthcare demands (WHO, 2000). Though, traditional medical practices are empirical in nature, it has been estimated that over 200 million people in India with limited access to the organized primary healthcare service centers, depend on varietal aspects of traditional system of medicine to cater to their health care needs (Farnsworth, 1998). India holds a global credibility of having diverse social, cultural and regional convention of indigenous medical heritage with an unbroken tradition coming down across millennia. Though, medical heritage of such a kind is quite a few centuries old, several million people in rural/ remote places in this subcontinent still depend on traditional system of medicine to satisfy their healthcare demands (Jain, 1967).

Tribals dwelling in remote places depend on the forest that includes rich diversity of flora and fauna to meet their livelihood and healthcare needs (Chopra et al., 1986). Herbal medicines have been used by them since antiquity in treating diseases. However, valid scientific data on the usage of ethnomedicinal plants is rather obscure. Recently, Schmidt et al., (2009) experimentally proved that plants offer immense scope for researchers engaged in validation of traditional claims for the development of novel drugs. Since, interest in traditional medicine has been increasing world-over ethnobotanical studies have gained prominence to explore the traditional knowledge particularly in developing countries (Joshi and Joshi, 2000). Therefore, collection of ethnobotanical information and documentation of traditional knowledge has gained prominence from the perspective of drug development (Ragupathy et al., 2008).

India has more than 427 tribal communities with rich diversity of indigenous tradition. However, traditional knowledge base and practices have been marginalized due to political and social-economical reasons. Off late, interest in traditional medicine has been increasing and ethnobotanical studies have been initiated to explore the knowledge base from various tribal groups across the country (Pei, 2001; Jain and Patole, 2001; Sandhya et al., 2006; Ignacimuthu et al., 2006; Ragupathy and Newmaster, 2009). Several studies have revealed that tribal population in remote area, not only depend on plant based resources for medicines, food, forage and fuel, but also play a vital role in the management natural resources (Ignacimuthu et al., 2006; Ragupathy et al., 2008; Ragupathy and Newmaster, 2009). Tribal communities in Tamilnadu meet their healthcare needs by using non-timber minor forest produces and preparations based on traditional knowledge. Further, it has been established that

herbal drugs obtained from plants are safe with few side effects in treating various ailments (Ayyanar and Ignacimuthu, 2005).

The main objective of this study was to assess the diversity of ethnomedicinal plants used by Malayali \AA s and document the traditional medical practices followed in healing ailments. Similar ethnobotanical studies have been reported in several parts of India to document the traditional knowledge that has been vanishing (Rajan et al., 2002; Ganesan et al., 2004; Sandhya et al., 2006; Ignacimuthu et al., 2006). Therefore, documenting indigenous knowledge through ethnobotanical studies is important for the conservation of biological resources and their sustainable utilization.

Malayali tribes

Aboriginal people of the study area called Malayali \AA s are the inhabitants of Sherveroyan hill ranges of Salem, Dharmapuri, Villupuram and Vellore districts. Malayali \AA s are the largest tribal group constituting 47.6% of ST population in the state of Tamilnadu. It is claimed that they are descents of Vellalas of Kancheepuram and following invasion they fled to Sherveroyan Hill ranges (Thurston and Rangachari, 1909). In Sherveroyan, they dwell at an altitude of up to 1700m. Malayali \AA s are generally illiterate and speak a local dialect of Tamil, physically they resemble to the Semong of Malaya. It has been well established that tribal communities have survived on their traditional knowledge base. Traditional medicines are the primary healthcare resources for the Malayali tribes to protect/ maintain their health. Tribal practitioners within the community are curators of their society and have good knowledge of medicinal plants, diseases and treatment modalities. Besides, they have served as the custodians of biodiversity in this region. However, there are only a few reports available on ethnomedicinal aspects of plants used by Malayali \AA s (Rengalakshmi, 2005; Viswanathan, 1987). Therefore, present investigation has been taken up in Chitteri.

Materials and methods

Description of study area

Eastern Ghats, a broken chain of mountains in the Indian peninsular extends from Coromandal in West Bengal to Kanyakumari in Tamil Nadu, is about 1600 km long in North-South direction (Fig. 1). The area of investigation approximately lies between 87°0' to 89°0' longitude and 28°0' to 37° 0' latitude. The study area Chitteri is located in Dharmapuri district Tamilnadu, India. The mean annual temperature in the study area ranges from 12°C to 35°C during Mar ó Jun and averages between 10°C to 25°C during Oct - Jan. The area receives an average rainfall of 200 mm annually. Present investigation was conducted in villages located very close to Chitteri forest area. Each of the villages had very few houses. Field trips were conducted Oct 2008 to Mar 2009. Places in Chitteri - Suryakadai, Mamparai, Nalamankadai, Paraivalavu, Chitteri, Pereri were visited.



Figure 1. Location of the area studied in Tamil Nadu, India

Ethnobotanical survey

Field investigations were conducted in several villages of the study area in Chitteri, Dharmapuri. During the study, daily activities of the local inhabitants were closely observed and interpersonal contacts were established by participating in their functions. There were 12 informants with in the age group of 30 to 68. Among them two were tribal practitioner. Ethnobotanical data were collected according to the methodology suggested by Jain and Goel (1995). The ethnobotanical data were collected using questionnaire, interviews and discussions in their local dialect.

Plant collection

The medicinal plants used by the tribal people were collected following standard protocols and preserved using herbarium techniques. Specimen collected from the field were tagged and taken to lab. Flora of Presidency of Madras (Gamble, 1935) and Flora of Tamil Nadu Carnatic (Matthew, 1983) were used for identification and authentication of the plants collected. Herbarium collections have been voucher numbered and deposited in the Herbarium at Government Arts College, Dharmapuri.

Results and discussion

Table 1, enumerates the data obtained during the investigation. A total of 65 plant species belonging to 38 families have been recorded. Many plant species belonging to families of apocyanaceae, caesalpiniaceae, euphorbiaceae, liliaceae and solanaceae were more frequently used by the tribal practitioners in treating ailments. Plant species belonging to families Alagiaceae (1), Amaranthaceae (1), Anacardiaceae (1), Apiaceae (1), Araceae (1), Aricaceae (1), Asclepiadacea (1), Bombacaceae (1), Braccaceae (1), Cucurbitaceae (1), Gesneriaceae (1), Lythraceae (1), Malvaceae (1), Meliaceae (1), Mimosaceae (1), Musaceae (1), Nymphiaceae (1), Papavaraceae (1), Poaceae (1), Punicaceae (1), Sapindaceae (1), Ulmaceae (1), Verbanaceae (1), Zygophyllaceae (1), Acanthaceae (2), Convaluvaceae (1), Myrtaceae (2), Piperaceae (2), Verbenaceae (2), Fabaceae (3), Lamiaceae (3), Moraceae (3), Rutaceae (3), Apocyanaceae (4), Caesalpiniaceae (4), Euphorbiaceae (4), Liliaceae (4), and Solanaceae (4) were used by the people in the region. Family wise distribution of the ethnomedicinal plants used by tribals of Chitteri is shown in Fig. 2.

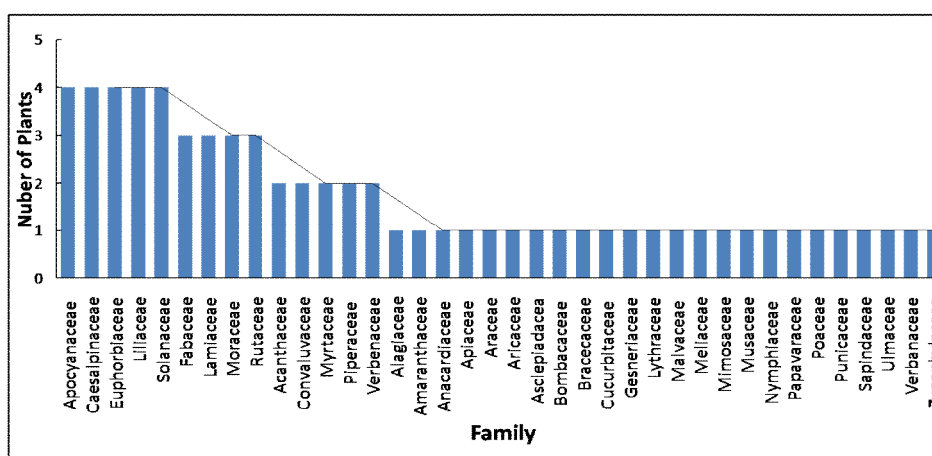


Figure 2. Family wise distribution of ethno medicinal plants used by Malayaliç in Chitteri

Tribals use plants to alleviate ailments such as antiperiodic, antiseptic, appetizer, asthma, astringent, body ache, cold, cough, heel crack, diabetes, digestion, dysentery, edema, erysipelas, eye infection, fever, gum infection, headache, jaundice, joining of bones, joint pain, laxative, menstrual, mouth fresher, mouth ulcer, mouth wash, nail infection, never disorders, piles, pimples, saliva secretion, skin disease, snake bite, sperm production, stomach ulcer, throat infection, tooth ache and promote wound healing. However, for ailments such as diabetics, cut/ wounds, cold, cough and asthma and skin diseases more number of medications is used. On the other hand, few ailments were used as antiperiodic, antiseptic, appetizer and astringent. The ethnomedicinal usage of plants documented during the study is provided in Table 2.

The usage of plant part Bark ó 4, Bulb ó 2, Flower ó 3, Fruit ó 8, Latex ó 5, Leaf ó 30, Root ó 1, Seed ó 8, Stem ó 1, Tuber ó 2, Whole Plant ó 2 (Fig. 3). From the data, it could be inferred that for more number of remedies fresh leaf materials (45%) is used followed by seeds and the fruits. Informations gathered during this study are in agreement with the previous reports (Pushpangadan and Atal, 1984, Kala, 2005; Jain, 2001; Ayyanar and Ignacimuthu, 2005; Sandhya et al., 2006; Ignacimuthu et al., 2006). For instance, tribals of Chitteri people use *Andrographis* to treat poisonous bites; this observation and many more are similar to that of reported by Ayyanar and Ignacimuthu (2005). Healers diagnose ailments based on symptoms but sometime they may also associate it to spirit. Therefore, preparation of medicines and treatment of diseases are sometimes accompanied by rituals.

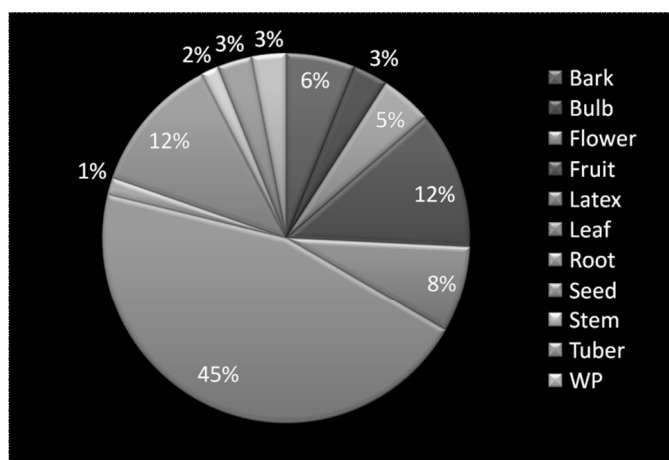


Figure 3. Percentage distribution analysis of remedies obtained from different plant parts

Tribal practitioner(s) use specific plant parts and dosages in treatment of specific ailments. Plant products are consumed fresh (raw) or made to paste/ juice, sometimes it is taken as decoction (juice)/ infusion (oral treatment). It was observed that paste forms of preparations were invariably used for external application (to treat cut/ wound, skin infection and poisonous bites). Decoction, juice, infusion were used to treat ailments internally (cold, cough, jaundice, ulcer and diabetics). Preparations made from fresh leaves, root and stem were preferred and more frequently used when compared to other plant parts. However, in most of the cases, it was recorded that oral consumption predominates external application. For topical application, paste preparation was sometimes mixed with oil. Preparations where more than one plant

was used as ingredients were more or less similar to Siddha formulations. However in such cases, detailed information on the role of individual components used in formulations was rather obscure.

The most important aspect of Malayali tribal medicine is that fresh plant materials is used in the preparation of medicine and if fresh plant materials are not available, dried plant materials are used. Alternatively, to circumvent the non availability of plants (especially annuals) several plants served as complimentary alternative source of medicine to cure a single disease. From this study it is clear that Malayaliø possesses an innate ability to discern plant characters and exploit them to meet their healthcare needs.

Conclusion

The study depicts that local people prefer folk medicine due to their socio-economical status, lack of modern healthcare facilities and inadequate transportation. Resource persons were invariably elderly people and the younger generation is reluctant to take up nattuvaithiyam. Therefore, documentation of traditional knowledge is the only way out to preserve the knowledge base conserve the plant resources endemic to this area.

Table 1. Ethnomedicinal plant species and plant parts used by Malayaliø in Chitteri Hills, Dharmapuri, India

Botanical Name of the plant	Family	Vernacular name	Part(s)Used
<i>Acacia arabica</i> (Lam.) Willd.	Mimosaceae	Karuvelai	Seed
<i>Adhatoda zeylanica</i> Medicus.	Acanthaceae	Adathodai	Leaf
<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Vilvam	Leaf
<i>Alangium lamarbi</i> Thwaites.	Alagiaceae	Alingi	Bark
<i>Allium cepa</i> Linn.	Alliaceae	Vengayam	Bulb
<i>Allium sativum</i> Linn.	Alliaceae	Pundu	Bulb
<i>Aloe vera</i> Tourn. ex Linn.	Liliaceae	Katralai	Leaf
<i>Amaranthus viridis</i> L.	Amaranthaceae	Thoia	Leaf
<i>Andrographis lineata</i> Wall. ex Nees.	Acanthaceae	Siriyanangai	Leaf
<i>Argemone mexicana</i> Linn.	Papaveraceae	Braman thandu	Latex
<i>Artocarpus hirsutus</i> Lam.	Moraceae	Kattupala	Fruit
<i>Asparagus racemosus</i> Willd.	Liliaceae	Thanervitankilangu	Leaf
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vembu	Leaf
<i>Betel piper</i> Linn.	Piperaceae	Vettilai	Leaf
<i>Bombax ceiba</i>	Bombacaceae	Elavampanchu	Seed
<i>Borassus flabellifer</i> L.	Arecaceae	Panai	Leaf
<i>Brassica juncea</i> (Linn.) Czern. & Coss.	Braceaceae	Kadugu	Seed
<i>Cajanus cajan</i> (Linn.) Millsp.	Fabaceae	Thuvarai	Seed
<i>Calotropis gigantea</i> (Linn.) R.Br. ex Ait.	Asclepiadacea	Erukku	Latex
<i>Cardiospermum halicacabum</i> (Linn.)	Sapindaceae	Mudakathan	Leaf

<i>Cassia auriculata</i> Linn.	Caesalpiniaceae	Aavaarai	Flower
<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Sarakkonrai	Leaf
<i>Cassia senna</i> Linn.	Caesalpiniaceae	Sennachedi	Leaf
<i>Catharanthus roseus</i> L. (G) Don.	Apocyanaceae	Nityakalyani	WP
<i>Citrus limon</i> (Linn.) Burm. f.	Rutaceae	Elumichai	Fruit
<i>Coccinia indica</i> W. & A.	Cucurbitaceae	Kovai	Fruit
<i>Colocasia esculenta</i> (Linn.) Schott.	Araceae	Shaepamkizhangu	Tuber
<i>Cuminum cyminum</i> Linn.	Apiaceae	Cheerakam	Seed
<i>Cynodon dactylon</i> Pers.	Poaceae	Arugan pullu	Leaf
<i>Erythrina indica</i> Lam.	Fabaceae	Kalyana murungai	Leaf
<i>Eucalyptus globules</i> Labill.	Myrtaceae	Neelagri	Leaf
<i>Euphorbia antiquorum</i> Linn.	Euphorbiaceae	Chzathura kalli	Latex
<i>Ficus benghalensis</i> Linn.	Moraceae	Alamaram	Bark
<i>Gymnema sylvestre</i> R.Br.	Apocyanaceae	Sakarai kolli	Leaf
<i>Haloptetea integrifolia</i> L.	Ulmaceae	Aauli	Bark
<i>Henckelia incana</i> (Vahl) Spreng	Gesneriaceae	Kalthamarai	Leaf
<i>Hibiscus rosa-sinesis</i> Linn.	Malvaceae	Sembaruthi	Leaf
<i>Ipomoea batatas</i> (Linn.)	Convolvulaceae	Sakarai valli	Tubers
<i>Jatropha glandulifera</i> Rox.	Euphorbiaceae	Adalai chedi	Latex
<i>Lantana camara</i> Linn.	Verbenaceae	Unni chedi	Leaf
<i>Lawsonia inermis</i> Linn.	Lythraceae	Marudu	Leaf
<i>Lucas aspera</i> Sprong.	Lamiaceae	Thumbai	Leaf
<i>Mangifera indica</i> L.	Anacardiaceae	Ma	Seed
<i>Momordica charantia</i> L	Cucurbitaceae	Pavai	Fruit
<i>Murraya koeingii</i> (L.) Spreng.	Rutaceae	Karuvepalai	Leaf
<i>Musa parasidiaca</i> L.	Musaceae	Valai	Stem
<i>Nelumbo nucifera</i> Gaertn.	Nymphiaceae	Alli	Flower
<i>Ocimum basilicum</i> L.	Lamiaceae	Tirunirippachai	Leaf
<i>Ocimum santum</i> L.	Lamiaceae	Thulasi	Leaf
<i>Phyllanthus amarus</i> Schum. & Thonn.	Euphorbiaceae	Kizhaanelli	Leaf
<i>Phyllanthus niruri</i>	Euphorbiaceae	Kelanelli	WP
<i>Piper nigrum</i> L.	Piperaceae	Milagu	Fruit
<i>Plumeria obtuse</i> L.	Apocynaceae	Thevarali	Latex
<i>Plumeria rubra</i> L.	Apocynaceae	Arali	Flower
<i>Punica granatum</i> L.	Punicaceae	Madulai	Fruit
<i>Solanum nigrum</i> L.	Solanaceae	Manathakkali	Leaf
<i>Solanum surattrense</i> Burm. f.	Solanaceae	Kandankathiri	Fruit
<i>Solanum trilobatum</i> L	Solanaceae	Thoodhuvalai	Leaf
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Naval	Seed
<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puliamaram	Bark
<i>Ficus</i> sp.	Moraceae	Athi	Root
<i>Tribulus lanuginosis</i> L.	Zygophyllaceae	Nerungi	Fruit
<i>Trigonella foenum-graecum</i> L.	Fabaceae	Vendhyem	Seed
<i>Vitex negundo</i> L.	Verbanaceae	Nochi	Leaf
<i>Withania somnifera</i> (L.) Dunal.	Solanaceae	Amakalan	Leaf

Table 2. Ethnomedicinal uses of plants and ailments cured by the Malayali tribes in Chitteri, Dharmapuri, India

Botanical Name	Ethnobotanical Use(s)
<i>Acacia arabica</i> (Lam.) Willd.	Seeds used to treat diabetics, alleviate headache.
<i>Adhatoda zeylanica</i> Medicus.	Root, bark, leaves, and flowers used for cough and asthma.
<i>Aegle marmelos</i> (L.) Corr.	Leaf powder mixed with cow's milk is taken to treat diabetes.
<i>Alangium lamarbi</i> Thwaites.	Bark paste is taken orally to remove snake bite poison.
<i>Allium cepa</i> Linn.	Leaf juice with milk is taken to treat diabetes.
<i>Allium sativum</i> Linn.	Leaf antihelmintic, antiasthmatic, anticholesterolemic, antiseptic, antispasmodic, diaphoretic, diuretic, stomachic and antidiabetic
<i>Aloe vera</i> Tourn. ex Linn.	Leaf gel is applied over the infected part to promote healing.
<i>Amaranthus viridis</i> L.	Leaf paste is applied over the infected area to cure erysipelas.
<i>Andrographis lineata</i> Wall. ex Nees.	Leaf powder mixed with cow's milk is taken orally to treat diabetics.
<i>Argemone mexicana</i> Linn.	Latex applied on infected parts to cure ringworm infection.
<i>Artocarpus hirsutus</i> Lam.	Fruits used as appetizer, seed with honey used to treat asthma.
<i>Asparagus racemosus</i> Willd.	Root - antispasmodic, aphrodisiac, demulcent, diuretic, treat infertility, loss of libido, menopausal problems
<i>Azadirachta indica</i> A. Juss.	Leaves -vermifuge, antiseptic, anti-diabetics, astringent, antiperiodic.
<i>Betel piper</i> Linn.	Leaf petiole mixed with calcium is applied on face to cure pimples.
<i>Bombax ceiba</i>	Leaf / Seed powder mixed with goat's milk is taken orally to treat diabetics.
<i>Borassus flabellifer</i> L.	Petiole juice cures all type of eye problem.
<i>Brassica juncea</i> (Linn.) Czern. & Coss.	Seed powder mixed with goat's milk is taken orally to treat diabetics.
<i>Cajanus cajan</i> (Linn.) Millsp.	Seeds cooked and taken along with food to treat diabetics.
<i>Calotropis gigantea</i> (Linn.) R.Br. ex. Ait.	Latex is applied over insect bite to reduce the effect of insect poison.
<i>Cardiospermum halicacabum</i> (Linn.)	Leaf juice taken orally for a period of 2 days to arrest dysentery.
<i>Cassia auriculata</i> Linn.	Flower powder decoction (tea) reduces body tiredness and treat diabetics.
<i>Cassia fistula</i> Linn.	Fruit pulp is used as laxative. Bark of tree is rich source of tannin.
<i>Cassia senna</i> Linn.	Leaf extracts used as laxative and used to promote joining of bones.
<i>Catharanthus roseus</i> L. (G) Don.	Whole plant decoction taken to treat diabetics, leaf juice used to treat cancer,
<i>Citrus limon</i> (Linn.) Burm. f.	Fruit is used to cure nail infection, juice induces freshness to body.
<i>Coccinia indica</i> W. & A.	Fruit juice taken to treat diabetics.

<i>Colocasia esculenta</i> (Linn.) Schott.	Boiled root tubers consumed to cure piles.
<i>Cuminum cyminum</i> Linn.	Leaves consumed to alleviate body ache, feel fresh, and treat diabetics.
<i>Cynodon dactylon</i> Pers.	Dry leaf powder made to juice to cure menstrual problem in women.
<i>Erythrina indica</i> Lam.	Leaves relive body pain; headache, fever, cold, fruits treat diabetics.
<i>Eucalyptus globules</i> Labill.	Latex is applied on the skin to alleviate body pain & never disorders.
<i>Euphorbia antiquorum</i> Linn.	Bark paste applied on cut/ wounds and fruit taken to treat diabetics.
<i>Ficus benghalensis</i> Linn.	Seed soaked in water and the water is taken to treat diabetics.
<i>Gymnema sylvestre</i> R.Br.	Tender fresh leaves and dried powder are used to cure diabetes. Cooked leaves may also be used.
<i>Haloptetea integrifolia</i> L.	Bark is tied over wound infected area to reduce pus formation.
<i>Henckelia incana</i> (Vahl) Spreng	Leaf ground in water is mixed with salt taken orally to treat fever.
<i>Hibiscus rosa-sinesis</i> Linn.	Leaf juice is taken to treat diabetics, alleviate headache.
<i>Ipomoea batatas</i> (Linn.)	Tubers boiled and taken to treat diabetics.
<i>Jatropha glandulifera</i> Rox.	Latex is used as a mouth wash to cure teeth and gum infection.
<i>Lantana camara</i> Linn.	Leaf juice improves digestion in children and fruits - treat diabetics.
<i>Lawsonia inermis</i> Linn.	Leaves applied on foot to cure etching and healing of the crack.
<i>Lucas aspera</i> Sprong.	Leaves used to relive tooth ache and prevents tooth/gum infection.
<i>Mangifera indica</i> L.	Dry seed powder with cow's milk cures dysentery and treat diabetics.
<i>Momordica charantia</i> L	Fruit juice is taken to treat diabetics.
<i>Murraya koeingii</i> (L.) Spreng.	Leaf juice is taken to treat diabetics.
<i>Musa parasidiaca</i> L.	Stem extract reduces the effect of snake poison and treat diabetics.
<i>Nelumbo nucifera</i> Gaertn.	Flowers made to juice and taken to treat diabetics.
<i>Ocimum basilicum</i> L.	Leaves chewed to induce saliva secretion, keeps mouth fresh, headache.
<i>Ocimum santum</i> L.	Dry leaf powder honey is used to cure dry cough and diabetics.
<i>Phyllanthus amarus</i> Schum. & Thonn.	Leaf paste mixed with buffalo urine, taken internally to cure jaundice.
<i>Phyllanthus niruri</i>	Whole plant juice given to treat jaundice, alleviate headache.
<i>Piper nigrum</i> L.	Seeds taken orally to reduce throat infection, cold and cough.
<i>Plumeria obtuse</i> L.	Latex is used as a mouth wash, and used to cure mouth ulcer.
<i>Plumeria rubra</i> L.	Flowers tied over the infected area reduce pus formation.
<i>Punica granatum</i> L.	Fruit scure gastrointestinal problems and treat diabetics.

<i>Solanum nigrum</i> L.	Leaf juice taken orally cures stomach ulcer and digestion.
<i>Solanum surattrense</i> Burm. f.	Fresh fruits kept in fire and the smoke is inhaled to reduce toothache.
<i>Solanum trilobatum</i> L.	Juice of leaves is taken orally to cure asthma and cold.
<i>Syzygium cumini</i> (L.) Skeels	Seed powdered and used to treat diabetics and reduce the level of sugar in the blood.
<i>Tamarindus indica</i> L.	Bark powder in coconut oil is used to cure skin disease.
<i>Ficus</i> sp.	Root extract in water applied over the joints reduces joint pain, latex applied on the skin to cure skin infections.
<i>Tribulus lanuginosus</i> L.	Seed powder used to increase fertility and sperm production.
<i>Trigonella foenum-graecum</i> L.	Seed soaked in water and used to treat diabetics
<i>Vitex negundo</i> L.	Leaves boiled in water; inhaled to relive headache, cold.
<i>Withania somnifera</i> (L.) Dunal.	Leaf paste in cow's milk used to treat asthma.

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