

## Angiospermic trees used by local people of Rampur district to treat various diseases as primary health care system

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### Abstract

Medico-botanical study was conducted during 2018-2019 for the documentation of medicinal trees in Rampur district. A total of 67 angiospermic trees belonging to 57 genera under 35 families were recorded for the first time. More than 45 diseases treated by different parts of trees, such as bark (20%) followed by flowers (19%), fruits (15), seeds (7%), gum, roots and nuts (3%), pods, peel and latex (2%) were recorded respectively. The family Mimosaceae showed maximum representation with 6 species. *Acacia catechu* (L.f.) Willd., *Acacia farnesiana* (L.) Willd., *Butea monosperma* (Lam.) Taub., *Erythrina variegata* L., *Helicteres isora* L., *Holoptelea integrifolia* (Roxb.) Planch, *Kigelia africana* (Lam.) Benth., *Prunus persica* (L.) Batsch, *Terminalia bellirica* (Gaertn.) Roxb., *Terminalia chebula* Retz. and *Thespesia populnea* (L.) Sol. ex Corrêa are rare angiospermic trees in Rampur district.

**Keywords:** angiospermic trees, medicinal uses, diseases, rampur district

### Introduction

Medicinal trees have an important place in Ayurveda providing raw material for pharmaceuticals and drug industries. According to the world health organization, about 80% of the world's population rely on traditional medicine for their primary healthcare needs. Plant-based remedies are harmless and have great potential to cure many human diseases. (Brandis 1906, Chakraverty and Jain 1984, Bose *et al.* 1985, Survase and Raut 2001, Adhikari *et al.* 2003, Krishen 2006, Mao *et al.* 2009, Mishra and Pal 2010, Bajpai *et al.* 2016) [5, 6, 4, 21, 1, 14, 15, 16, 2] extensive work done on trees and their medicinal importance in India. Herbal medicines have great importance in the primary healthcare of rural people (Sheldon *et al.* 1997) [20]. There are about 1600 species of medicinal plants used traditionally in India (Uniyal *et al.* 2002) [24]. Industrial expansion, urbanization, population growth and overuse are major factors to decline tree species in the study area. Hence, it is necessary to document the medicinal trees and conserved them for future generations.

Rampur district is located between the longitude 79° 05' E and the latitude 28° 48' N, it extends on area of 2367 km. The height from sea level is 192 meters to the north and 167 meters to the south. District Rampur consists of 1173 villages under 6 tahsils: Bilaspur, Milak, Rampur, Shahabad, Suar and Tanda (Fig.-1). During summers, the temperature is usually 44 °C to 30 °C and in the winter 22°C to 5°C. The average annual rainfall is 855 mm., relative humidity is 20% in the dry period and increases by more than 90% in the monsoon season. The vegetation is mostly rain dependent, it is seasonal and irregular.

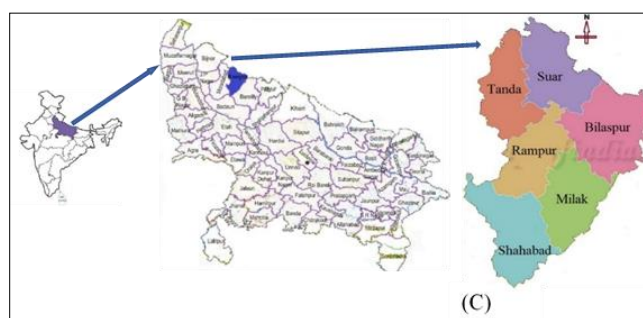


Fig 1: Map of Rampur district (C)

### Materials and methods

Field study was carried out during 2018-2019 for documentation of medicinal use of different parts of trees in Rampur district. The medicinal value and mode of preparation have been evaluated by interviews with local people, traditional healers and vaidhyas. The plant specimens were collected and photography was also done during the study period. The tree species were identified with the help of regional floras and existing literature (Chopra *et al.* 1956, Chatterjee and Pakrashi 1994, Basu 1975, Gogte 2000, Kirtikar and Basu 2001, Santapau 2008, Mishra and Pal 2010, Kishor *et al.* 2011, Prasanna *et al.* 2012, Chaudhary *et al.* 2014, Rai 2016) [9, 7, 3, 10, 12, 19, 16, 13, 17, 8, 18] and online databases such as- The Plant List, The International Plant Name Index and e-floras etc. were used to ascertain the nomenclature of tree species and the author's citations. The collected tree specimens were arranged according to standard herbarium method given by (Jain and Rao 1977) [11] and deposited in the Herbarium, Department of Botany, Hindu College, Moradabad (U.P.) for future use.

### Results and Discussion

The present study focused on medicinally important tree species in Rampur district. A total of 67 tree species belonging to 57 genera

Under 35 families were recorded. About 45 diseases such as asthma, bleeding gums, bronchitis, cardiac troubles, cold, constipation, cough, dengue, diabetes, diarrhoea, digestive problems, dysentery, eczema, epilepsy, eye infections, fever, gastric-troubles, gonorrhoea, gout, hair-fall, heartburn hypertension, jaundice, joint pain, kidney stone, leprosy, leucorrhoea, liver problems, menstrual disorders, miscarriage, paralysis, piles, pimples, rheumatism, sciatica, scorpion bite, sexual disorders, skin eruptions, snake bite, toothache, ulcer, urinary disorders, weakness, worms and wounds were treated. Parts of the tree used by the residents of Rampur district to cure many diseases were bark (20%), flowers (19%), fruits (15%), seeds (7%), gum, roots and nuts (3%), pods, peel and latex (2%) respectively (Fig.-3). The family Mimosaceae exhibits maximum

representation with (6 spp.) followed by Rutaceae, Moraceae, Caesalpiniaceae each has (5 spp.), Papilionaceae has (4 spp.), Myrtaceae, Meliaceae, Combretaceae, Apocynaceae each has (3 spp.), Annonaceae, Bignoniaceae, Rubiaceae and Sapotaceae each has (2 spp.) remaining all other families have single species. (Fig.-2). *Acacia catechu* (L.f.) Willd., *Acacia farnesiana* (L.) Willd., *Butea monosperma* (Lam.) Taub., *Erythrina variegata* L., *Helicteres isora* L., *Holoptelea integrifolia* (Roxb.) Planch, *Kigelia africana* (Lam.) Benth., *Prunus persica* (L.) Batsch, *Terminalia bellirica* (Gaertn.) Roxb., *Terminalia chebula* Retz. and *Thespesia populnea* (L.) Sol. ex Corrêa are rare angiospermic trees of Rampur district. A complete outcome described in Table-1, Table-2, Fig.-2, Fig.-3 and Plate-1 photographs.

**Table 1:** Medicinally important angiospermic trees recorded in Rampur district

S. No.	Botanical Name	Family	Local name	Fl. & Fr.	Part (s) Used	Medicinal uses
1.	<i>Acacia catechu</i> (L.f.) Willd.	Mimosaceae	Khair	Apr-Aug	Bark	The bark decoction is given in ulcer and dysentery.
2.	<i>Acacia farnesiana</i> (L.) Willd.	Mimosaceae	Babool	Apr-Sep	Bark	The bark is useful in cough and bleeding gums.
3.	<i>Acacia nilotica</i> (L.) Delile subsp. <i>indica</i> (Benth.) Brenan	Mimosaceae	Babool	Aug- Apr	Bark, gum	The decoction bark is beneficial in dysentery, skin problems and diarrhoea. Gum is useful in the treatment of diabetes and the healing of wounds.
4.	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Bel	Apr- July	Fruits, leaves	The fruit is beneficial in heartburn and digestive problems. Leaves are beneficial in diabetes and fever.
5.	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Mahanim	Feb-Apr	Bark	The paste of bark is externally applied on wounds and skin eruptions.
6.	<i>Albizia lebbek</i> (L.) Benth.	Mimosaceae	Siris	Mar- June	Flowers, bark, seeds	The flowers are beneficial in diarrhoea, snake-bite and asthma. Stem bark is given for the treatment of cough and cold. Seeds are taken in piles.
7.	<i>Albizia procera</i> (Roxb.) Benth.	Mimosaceae	Safed siris	June-Aug	Bark	The decoction of bark is beneficial in ulcer and stomach problems.
8.	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Satyanasi	Nov- June	Bark, leaves	Bark powder is beneficial in rheumatism and ulcer. Juice of fresh leaves is given in the treatment of dysentery and cardiac troubles.
9.	<i>Annona squamosa</i> L.	Annonaceae	Sharifa	Apr- Jan	Fruit, leaves, flowers	Fruits are beneficial in gastric- troubles and urinary disorders. Leaves and flowers used to cure asthma, jaundice and rheumatism.
10.	<i>Averrhoa carambola</i> L.	Oxalidaceae	Kamrakh	Feb-Sept	Fruits	Fruits are beneficial in diabetes, fever and skin diseases.
11.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Neem	Mar- July	Bark, leaves, seeds	Bark is beneficial in liver and urinary troubles. Juice of fresh leaves is beneficial in skin diseases, ulcers, eczema and in malaria. Seeds oil is externally applied in leprosy.
12.	<i>Bauhinia purpurea</i> L.	Caesalpiniaceae	Kachnar	Sept-Nov	Leaves, flowers	Decoction of leaves is taken to cure fever, cold and cough. Crushed flowers are used in eye infections.
13.	<i>Bauhinia variegata</i> L.	Caesalpiniaceae	Kachnar	Feb- May	Bark, flowers	The decoction of the bark is given in syphilis, ulcer and skin problems. Dried flowers are beneficial in piles.
14.	<i>Bombax ceiba</i> L.	Bombacaceae	Semal	Jan- May	Fruits, gum	Fruits are beneficial in ulcer and urinary problems. The gum is given in diarrhoea and dysentery.
15.	<i>Butea monosperma</i> (Lam.) Taub.	Papilionaceae	Dhak	Mar-June	Leaves, flowers	Dried flowers are beneficial in ulcers and piles. Leaf extract is given in scorpion bite and joint pain.
16.	<i>Carica papaya</i> L.	Caricaceae	Papita	Throughout the year	Leaves, fruits	Juice of fresh leaves is given in dysentery and dengue fever. The unripe fruit is beneficial in bleeding piles and liver problems.
17.	<i>Cascabela thevetia</i> (L.) Lippold	Apocynaceae	Peela kaner	Most part of the year	Seeds	Seeds are beneficial in rheumatism.
18.	<i>Cassia fistula</i> L.	Caesalpiniaceae	Amaltas	Mar-Dec	Leaves, fruits	Leaves juice is beneficial in paralysis and rheumatism. Fruit cures leprosy and cardiac troubles.
19.	<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Jangli Saru	Mar- July	Bark	Bark is beneficial in cough, asthma, dysentery and diarrhoea.
20.	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Rutaceae	Kagazi-nimbu	Apr-Sept	Fruits	Juice of fruits is useful in cough, cold, diarrhoea and dysentery.
21.	<i>Citrus maxima</i> (Burm.) Merr.	Rutaceae	Chakotara	Mar- Apr	Fruits, peel	Fruit juice is given in cold, cough and digestive problems. Fruit peel is beneficial in sores and pimples.

22.	<i>Cordia dichotoma</i> G. Forst.	Boraginaceae	Lassora	Mar-July	Leaves, fruits	Decoction of leaves is given in bleeding piles. Mucilage of fruits is beneficial in urinary troubles.
23.	<i>Delonix regia</i> (Hook.) Raf.	Caesalpiniaceae	Gulmohur	Apr- Feb	Leaves, Bark	Decoction of fresh leaves is taken in cough and cold. The decoction of bark is useful in ulcer and stomach problems.
24.	<i>Dalbergia sissoo</i> DC.	Papilionaceae	Shisham	Mar-Nov	Bark, leaves	Bark decoction is given in dysentery and diarrhoea. Juice of fresh leaves used to cure gonorrhoea.
25.	<i>Erythrina variegata</i> L.	Papilionaceae	Parijat	Mar- July	Bark	The bark is useful in fever and rheumatism.
26.	<i>Eucalyptus camaldulensis</i> Dehnh.	Myrtaceae	Safeda	Mar- Sept	Leaves	A decoction of leaves is used to cure bronchitis and asthma.
27.	<i>Ficus benghalensis</i> L.	Moraceae	Bargad	Apr-Oct	Bark, latex	Bark decoction is given to cure dysentery and diabetes. Latex is useful in toothache and rheumatism.
28.	<i>Ficus carica</i> L.	Moraceae	Anjeer	Most part of the year	Fruits	Fruit's pulp taken in general weakness and digestive troubles.
29.	<i>Ficus racemosa</i> L.	Moraceae	Goolar	Mar- Nov	Fruits	Fruit extract is beneficial in diarrhoea, dysentery and diabetes.
30.	<i>Ficus religiosa</i> L.	Moraceae	Pipal	Apr- Sept	Bark, seeds	Decoction of bark is taken in snake bite and gonorrhoea. Seeds are taken for the treatment of sexual disorders in women.
31.	<i>Grewia asiatica</i> L.	Tiliaceae	Falsa	Mar- Aug	Fruits, bark	The fruit is taken for the treatment of diarrhoea and heart disorders. Root bark is beneficial in rheumatism.
32.	<i>Helicteres isora</i> L.	Sterculiaceae	Marodphali	Oct- June	Fruits	Dried fruit powder is given in constipation, dysentery and diarrhoea.
33.	<i>Holoptelea integrifolia</i> Planch.	Ulmaceae	Papri	Feb- Mar	Leaves	Crushed leaves are externally applied on skin eruption and wounds.
34.	<i>Kigelia africana</i> (Lam.) Benth.	Bignoniaceae	Balamkhira	Mar- Dec	Fruits	Fruit powder with lukewarm water is taken in gastric-troubles and constipation.
35.	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Jarul	May- Nov	Flowers	The decoction of flowers is given orally to treat urinary disorders.
36.	<i>Limonia acidissima</i> Groff	Rutaceae	Kaith	Feb-Dec	Leaves	The leaves decoction is taken in ulcer, urinary disorders and jaundice.
37.	<i>Madhuca longifolia</i> (J. Koenig ex L.) J.F. Macbr.	Sapotaceae	Mahua	Feb- July	Bark, flowers	The paste of bark and flowers is externally applied for wounds healing and cure skin disorders.
38.	<i>Magnolia champaca</i> (L.) Bill. ex Pierre	Magnoliaceae	Champa	Apr- Sept	Bark	Bark and flowers are beneficial in gout, diabetes and cardiac disease.
39.	<i>Mangifera indica</i> L.	Anacardiaceae	Aam	Feb-Jul	Bark, leaves	Bark powder is given in bleeding piles, dysentery and diarrhoea. The infusion of leaves is beneficial in diabetes.
40.	<i>Melia azedarach</i> L.	Meliaceae	Bakain	Mar- June	Leaves, flowers	Leaves and bark are beneficial in leprosy and rheumatism. The paste of flowers is externally applied in leprosy.
41.	<i>Mimusops elengi</i> L.	Sapotaceae	Maulsari	Apr- June	Bark, seeds	Bark decoction is useful in fever and dysentery. Seeds are useful in constipation.
42.	<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Rubiaceae	Kaim	Mar-Dec	Leaves	Decoction of leaves is given to cure leucorrhoea and piles.
43.	<i>Moringa oleifera</i> Lam.	Moringaceae	Sahjan	Feb- July	Leaves, roots, pods	Fresh leaves and roots are beneficial in gout, fever and rheumatism. Pods are given in liver problems.
44.	<i>Morus macroura</i> Miq.	Moraceae	Shatoot	Feb-July	Fruits	Fruits are beneficial in dyspepsia and digestive troubles.
45.	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Curry patta	Feb- Nov	Leaves	Juice of tender leaves is given orally in digestive problems and hair fall.
46.	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Rubiaceae	Kadamba	May-Dec	Bark	The paste of bark is externally applied in the treatment of wounds and skin problems.
47.	<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Harshingar	Sept- Mar	Leaves	Decoction of leaves is beneficial in fever, rheumatism and sciatica.
48.	<i>Phoenix sylvestris</i> (L.) Roxb.	Arecaceae	Khajur	Apr- June	Fruits	Fruits are beneficial in stomach problems and good for heart.
49.	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Amala	Feb-Dec	Fruits	Fresh fruits are useful in fever, digestive problems and diabetes.
50.	<i>Plumeria rubra</i> L.	Apocynaceae	Lal Golachin	Apr-Aug	Bark, latex	Root's bark is taken in fever and gonorrhoea. Latex is applied as a rubefacient in rheumatism.
51.	<i>Polyalthia longifolia</i> (Sonn.) Thwaites	Annonaceae	Ashok	Apr- Sept	Bark, flowers	The stem bark is useful in diabetes, fever and cardiac troubles. Flowers is beneficial in bleeding piles.
52.	<i>Pongamia pinnata</i> (L.) Pierre	Papilionaceae	Karanja	Apr- July	Seeds	Seed oil is applied in the treatment of eczema and skin disorders.
53.	<i>Prosopis juliflora</i> (Sw.) DC.	Mimosaceae	Vilaiti Keekar	Aug- Apr	Pods, flowers	Pods is useful in rheumatism. Dried flowers are given against miscarriage.
54.	<i>Prunus persica</i> (L.) Batsch	Rosaceae	Adoo	Apr-Sept	Flowers, fruits	The flowers are taken internally in menstrual disorders and constipation. Fruits are beneficial in cough and

						asthma.
55.	<i>Psidium guajava</i> L.	Myrtaceae	Amrood	Apr- Dec	Leaves, flowers	Tender leaves are beneficial in diarrhoea, ulcer and dysentery. Flowers are given in cough and cold.
56.	<i>Punica granatum</i> L.	Punicaceae	Anar	Apr-Sept	Fruits	Juice of fruits is taken internally in fever, urinary infection and kidney stone.
57.	<i>Putranjiva roxburghii</i> Wall.	Putranjivaceae	Putranjiva	Most part of the year	Nuts	The nuts are given in fever, rheumatism and menstrual disorders in women.
58.	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamun	Mar- Aug	Fruits, seeds	Juice of fruits is beneficial in fever, asthma and cough. Seed powder is taken in diabetes.
59.	<i>Tamarindus indica</i> L.	Caesalpinaceae	Imli	May- Apr	Leaves, bark	Decoction of fresh leaves given in jaundice and destroying worms. Dried bark is beneficial in diarrhoea and dysentery.
60.	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	Piliya	Most part of the year	Bark, Flowers	Bark decoction is useful in leucorrhoea and menstrual pain. Flowers are beneficial in digestive problems and snake bite.
61.	<i>Tectona grandis</i> L.f.	Verbenaceae	Sagaun	Jun-Dec	Bark, flowers	Bark paste is beneficial in relieving toothache and headache. The decoction of flowers given in bronchitis and urinary complaints.
62.	<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun	Apr- Mar	Bark	Decoction of bark given in cardiac issues and symptoms of hypertension
63.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Bahera	Apr-June	Bark	The bark is useful in sore throat and wound healing. Seeds power is beneficial in dysentery diarrhoea and constipation.
64.	<i>Terminalia chebula</i> Retz.	Combretaceae	Harad	Apr-June	Fruits	Fruits are popularly used in cough, jaundice, ulcer and epilepsy.
65.	<i>Thespesia populnea</i> (L.) Sol. ex Corrêa	Malvaceae	Paras Pipal	Aug- Jan	Seeds	Seeds are beneficial in skin eruptions and dysentery.
66.	<i>Toona ciliata</i> M. Roem.	Meliaceae	Toon	Mar- July	Bark	Bark is beneficial in dysentery, ulcer and cure fever.
67.	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Ber	Sept- Mar	Leaves, bark	The paste of fresh leaves externally applied on the wound. The bark is useful in diarrhoea and dysentery.

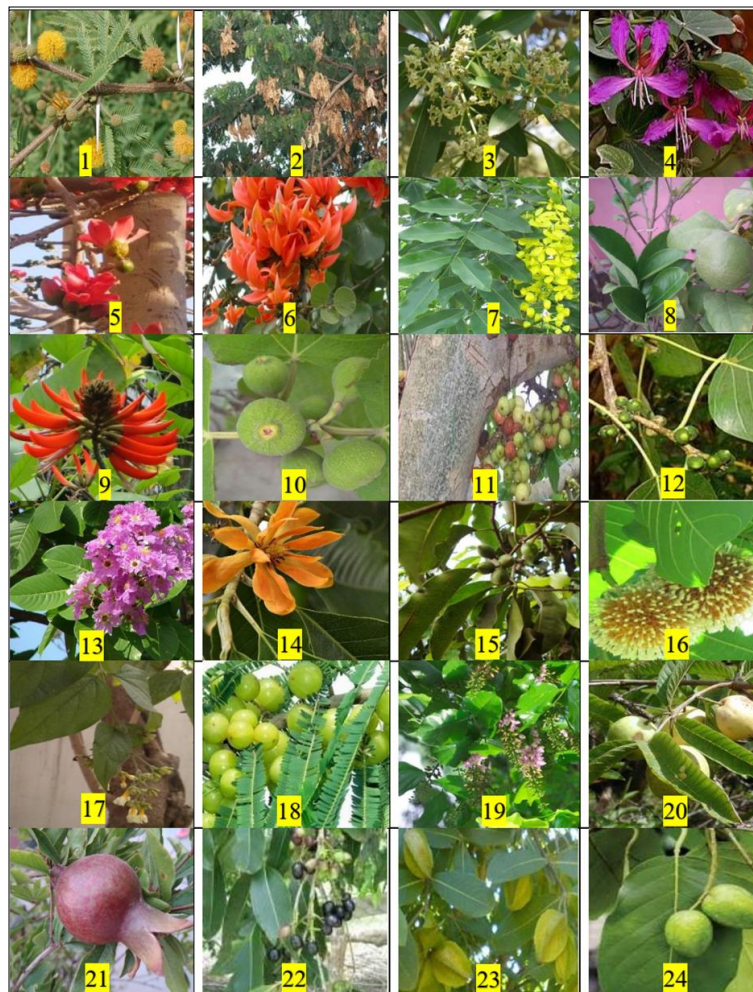


Plate 1: Photographs of trees

(1). *Acacia farnesiana* (L.) Willd. (2). *Albizia lebbek* (L.) Benth. (3). *Alstonia scholaris* (L.) R. Br. (4). *Bauhinia purpurea* L. (5). *Bombax ceiba* L. (6). *Butea monosperma* (Lam.) Taub. (7). *Cassia fistula* L. (8). *Citrus aurantiifolia* (Christm.) Swingle (9). *Erythrina variegata* L. (10). *Ficus carica* L. (11). *Ficus racemosa* L. (12). *Ficus religiosa* L. (13). *Lagerstroemia speciosa* (L.) Pers. (14). *Magnolia*

*champaca* (L.) Bill. ex Pierre (15). *Mimusops elengi* L. (16). *Mitragyna parvifolia* (Roxb.) Korth. (17). *Nyctanthes arbor-tristis* L. (18). *Phyllanthus emblica* L. (19). *Pongamia pinnata* (L.) Pierre (20). *Psidium guajava* L. (21). *Punica granatum* L. (22). *Syzygium cumini* (L.) Skeels (23). *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. (24). *Terminalia chebula* Retz.

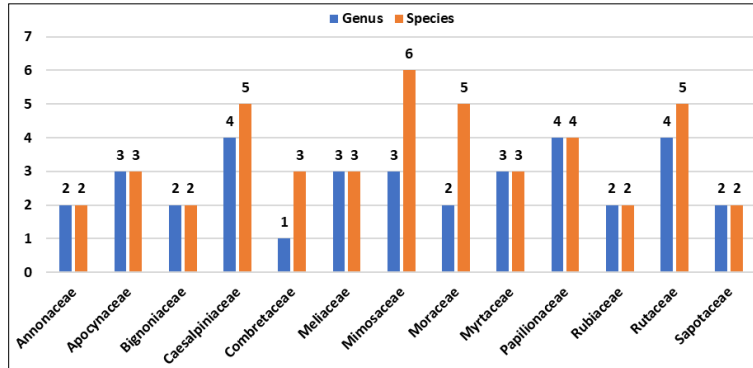


Fig 2: Families with their respective number of genus and species

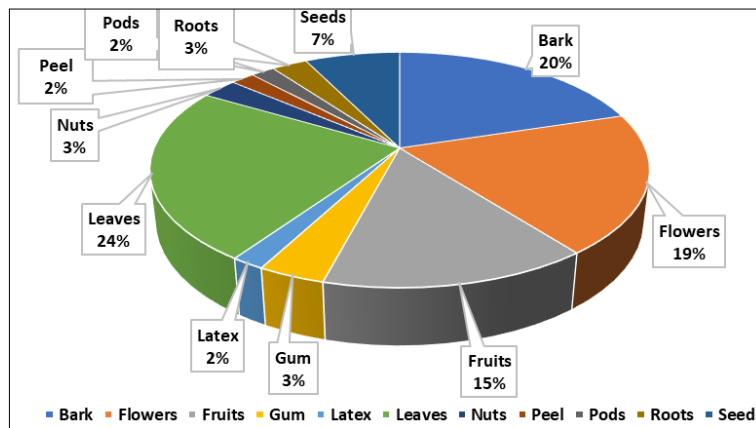


Fig 3: Different parts of trees are used in the treatment of many diseases

Table 2: Number of tree species used in the treatment of each disease

Diseases	No. of tree species used	Diseases	No. of tree species used
Asthma	6	Joint pain	1
Bleeding gums	1	Kidney stone	1
Bronchitis	2	Leprosy	4
Cardiac troubles	6	Leucorrhoea	2
Cold	6	Liver problems	5
Constipation	5	Menstrual disorders	3
Cough	11	Miscarriage	2
Dengue	1	Paralysis	1
Diabetes	9	Piles	8
Diarrhoea	14	Pimples	1
Digestive problems	6	Rheumatism	13
Dysentery	18	Sciatica	1
Eczema	2	Scorpion bite	1
Epilepsy	1	Sexual disorders	1
Eye infections	1	Skin eruptions	10
Fever	15	Snake bite	2
Gastric- troubles	2	Toothache	2
Gonorrhoea	3	Ulcer	11
Gout	2	Urinary disorders	8
Hair-fall	1	Weakness	1
Heart burn	1	Worms	1
Hypertension	1	Wounds	5
	Jaundice		4

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