Documentation of Medicinal Tree Plants of Padma Kanya Multiple Campus area, Kathmandu, Nepal

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Abstract

The paper documents a Total 18 medicinal tree species belonging to 15 families within Padma Kanya Multiple Campus at Kathmandu district. The plants were surveyed through the direct visit of the field in different interval of time and identified their therapeutic values by using the help of secondary data such as available literatures and research papers. The plant parts most commonly used in medicine are roots, leaves, flowers, fruits, seeds, bark and whole plant. These plants are commonly used to cure diseases like cough, bronchitis, asthma, digestive problems and rheumatism etc. This study will be helpful to the students of this campus as a basic information for their research and practical works.

Keywords: Basic information, diseases, medicine, plant parts, therapeutic values

Introduction

Medicinal Plants can be defined as the plants that possess therapeutic properties or exert beneficial pharmacological effect on the Human or animal body. Medicinal plants have been discovered and used in traditional medicine practices since prehistoric times of Human civilization. The medicinal plants of Nepal were first published in 1970 as a bulletin of the Department of Medicinal Plants, No. 3. This dealt with 393 medicinal plants that were used in traditional as well as Ayurvedic medicine system and many of them were also included in the pharmacy of different countries (Malla et al., 1976).

Recently the study of some medicinal plants from Kathmandu Valley was conducted in which most of the plant species were herbs and shrubs (Paudel et al.,2018).

Padma Kanya Multiple Campus, established in 2008 B. S. and located at

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Bagbazar, Kathmandu, is only the government Girl's campus in Nepal that has a responsibility to educate and empower female students. "Quality Education for Women Empowerment " is the motto of the institution (PKMC, 2016). In the campus area, different kinds of tree species are grown. Medicinal values of these tree species were studied by secondary data such as books, journals, and other literatures like research reports, bulletins etc. (Adhikari et al. 2007, Paudel et al.,2018).

Materials and Method

Study was conducted in the mid-hill physiographic Region at Province Bagmati of Nepal inside Padma Kanya Multiple Campus area, Kathmandu, Nepal. The meteorological data indicated the average annual temperature of the study area becomes maximum (31.9º C) during June and minimum during December (2.0º C). The average relative humidity ranged 70 - 86 %. The average annual rainfall exceeds more than 1480.4 mm and about 80 % of rainfall occurs during the monsoon season (June to September). The study area is characterized with 4 distinct seasons, spring, summer, autumn and winter (Shrestha, 2016).

The main objective of the study is to document the medicinal uses of tree species of Padma Kanya Multiple Campus area. Tree species found within the campus area were surveyed through the direct visit at different seasons of the year and identified by using available literatures (Stainton,1972, Malla et al., 1976, Hara,et al., 1978, Stainton, 1988, Shrestha, 2001, Sharma, 2014). Medicinal values of these plants were studied and enumerated by the help of secondary data; that is, the method of finding the medicinal benefits of different tree species was based on a literature survey (Malla et al., 1976, Adhikari et al., 2007, Paudel et al., 2018) etc. The limitation of the study was that Laboratory tests of the medicinal benefits of the plant species were not done. The Total population of tree species in the campus area is 74 by counting in which the first dominant population is occupied by *Thuja orientalis* (Dhupi). The second dominant population is occupied by *Grevillea robusta* (Kangio Phool). Among these tree populations, 18 species of trees present in the campus area were taken as samples to document the medicinal uses.

Results

A Total 18 tree species belonging to 15 families among which 2 species are

gymnosperms and 16 species are angiosperms related to dicots. The plant parts most commonly used in medicine are roots, leaves, flowers, fruits, seeds, bark and whole plant. These are mainly used fresh. Correct botanical names of tree species are arranged alphabetically, followed by the family in parenthesis, vernacular names in apostrophes and English names in parenthesis (Shrestha, 2001). other details given are plant parts used for medicines and their uses for various diseases (Malla et al., 1976, Adhikari et al., 2007, Paudel et al., 2018) etc.

Acer oblongum Wall. ex DC. (Aceraceae) 'Firfire' (Maple)

Parts used: Leaves, flowers and fruits.

Uses: It is highly effective in the treatment of rheumatism, bruises, hepatic disorders, eye disease and pain. It is anti-inflammatory, anti-diabetic and anti-obesity.

Celtis australis L. (Cannabaceae) 'Khari' (Honey berry)

Parts used: Fruits and seeds.

Uses: Fruits are used in amenorrhoea and colic. Seeds yield fatty oils.

Cinnamomum camphora (L.) J. Presl (Lauraceae) 'Kapoor' (Camphor)

Parts used: The whole plant.

Uses: Plant is anodyne, antispasmodic, diaphoretic, anthelmintic, stimulant, carminative and used in insecticidal preparation, a white crystalline substance known as Japan camphor, obtained from leaves and twigs are used as a disinfectant.

Citrus maxima Merr. (Rutaceae) 'Bhogate' (Shaddock)

Parts used: Leaves and fruits.

Uses: Leaves are used in cholera, epilepsy and convulsive cough. Fruits are nutritious, cardio tonic and refrigerant.

Elaeocarpus sphaericus (Gaertn.) K. Schum. (Elaeocarpaceae) 'Rudraksha' (Utrasum bead tree)

Parts used: Fruits and seed kernel.

Uses: Fruit stone is used as a liver tonic and is useful in the diseases of the head, epileptic fits and mental disorders.

Ficus elastica Roxb. ex Hornem (Moraceae) 'Rabar ' (Rubber plant)

Parts used: Fruits.

Uses: The fruit contains paste, which is also present in *Aloe vera* plant. It

is beneficial for stomach problems such as nausea, general pain, or digestive issues.

Ficus religiosa L. (Moraceae) 'Pipal' (Sacred fig)

Parts used: Bark, leaves, fruits, and seeds.

Uses: Bark is astringent and used in gonorrhea. Leaves, as well as the young shoots, are purgative. Fruits are laxative. Seeds are cooling and alterative.

Ginkgo biloba L. (Ginkgoaceae) 'Baal Kumari' (Maidenhair tree)

Parts used: Leaves and seeds.

Uses: *Ginkgo biloba* is used as a herbal remedy to treat many conditions. It may be best known as a treatment for dementia, Alzheimer 's disease, and fatigue. It is used to treat anxiety and depression. It is a good source of antioxidants.

Grevillea robusta A. Cunn. ex R. Br. (Proteaceae) 'Kangiyo Phool' (Silk oak)

Parts used: Leaves.

Uses: The plant is used to treat sore throat, earache, chest problems, flu and toothache.

Jacaranda mimosifolia D. Don (Bignoniaceae) 'Nilo Phool' (Blue Jacaranda)

Parts used: Leaves, bark and flowers.

Uses: It is used to treat hepatitis, neuralgia and varicose veins. Hot leaf baths treat wounds, skin infection and help in the treatment of acne.

Magnolia grandiflora L. (Magnoliaceae) 'Rukh Kamal' (Magnolia)

Parts used: Leaves and bark.

Uses: The bark is diaphoretic, stimulant and tonic. It is used to treat malaria and rheumatism. A decoction has been used as a wash and bath for prickly heat itching.

Morus alba L. (Moraceae) 'Kimbu' (Mulberry)

Parts used: Root, bark and fruits.

Uses: Ripe fruits are aromatic, cooling, laxative, allays thirst and useful in fever. Bark decoction is used as a gargle in inflammation of the vocal cord. The root is astringent and a decoction, which is given as an anthelmintic and bark paste, is applied to treat gingivitis.

Nyctanthes arbor-tristis L. (Oleaceae) 'Parijat' (Night Jasmine)

Parts used: The whole plant.

Uses: Leaves are antibacterial, anti-inflammatory, anthelmintic, expectorant, diuretic, laxative, which is used in inflammation, dyspepsia, helminthiasis, bronchitis, asthma, cough, grayish of hairs and baldness. Flowers are astringent, ophthalmic, stomachic, carminative and useful in inflammation, ophthalmopathy, and flatulence. Seeds are helpful in baldness, scurvy and affections of the scalp.

Persea americana Mill. (Lauraceae) 'Avocado' (Avocado)

Parts used: Leaves, bark and fruits.

Uses: The leaves are used against cough, high blood pressure, liver problems and gout. The bark is used against diarrhoea and dysentery. Fruits are used to lower blood cholesterol, promote hair growth, and soothe skin.

Phyllanthus emblica L. (Phyllanthaceae) 'Amala' (Gooseberry)

Parts used: Fruit, bark, root and flower.

Uses: Fruits are cooling, refrigerant, diuretic and laxative, useful in haemorrhage, diarrhoea and dysentery and also in anaemia, jaundice and dyspepsia. Its fruits are a good source of vitamin C. Dried and powdered fruit is one of the ingredients of Triphala (an Ayurvedic preparation). Flowers are cooling, refrigerant, and aperient. Root and bark are astringent. Seeds are used in asthma, bronchitis, and biliousness.

Prunus cerasoides D. Don (Rosaceae) 'Painyu' (Wild Cherry)

Parts used: Seeds, twigs and bark.

Uses: Seed oil is used for stone. Twigs and leaves are said to be abortive. The bark is used in swelling.

Thuja orientalis L. ex Franco (Cupressaceae) 'Dhupi' (Chinese Thuja)

Parts used: Wood and berries.

Uses: Oil from wood is used to cure chronic disorders of the urino-genital tract. A poultice made up of needles is applied to wounds. Berries are stomachic, diuretic, emmenagogue, carminative, stimulant. They are also used in skin diseases, Pulmonary catarrh and asthma.

Zizyphus incurva Roxb. (Rhamnaceae) 'Bayar' (Jujube)

Parts used: The whole plant.

Uses: The root cures biliousness. Bark cures diarrhoea and dysentery. Leaves are antipyretic and reduce obesity. Fruits are cooling, aphrodisiac, tonic, laxative, stimulating and useful in blood diseases.

Table 1. List of Medicinal Tree species enumerated from Padma Kanya Multiple Campus area and their use parts and ailments

S. N.	Botanical Names	Family	local Names	Common Names	Parts used	Ailments
1	*Acer oblongum* Wall. ex DC.	Aceraceae	Firfire	Maple	Leaf,-flower, fruit	Hepatic disorders, rheumatism
2	*Celtis australis* L.	Cannabaceae	Khari	Honey berry	Fruit, seed	Ammenor-rhoea, colic
3	*Cinnamomum camphora* (L.) J. Presl	Lauraceae	Kapoor	Camphor	Whole plant	Helminthic diseases
4	*Citrus maxima* (Burm. f.) Merr.	Rutaceae	Bhogate	Shaddock	Leaf, fruit	Epilepsy, cholera
5	*Elaeocarpus sphaericus* (Gaertn.) K. Schum	Elaeocarpaceae	Rudrak-sha	Utrasum bead	Fruit, seed	Mental disorder
6	*Ficus elastica* Roxb. ex Hornem	Moraceae	Rabar	Rubber plant	Fruit	Stomach problems
7	*Ficus religiosa* L.	Moraceae	Pipal	Sacred fig	Bark, fruit	Gonorrhoea
8	*Ginkgo biloba* L.	Ginkgoaceae	Baal Kumari	Maidenhair tree	Leaf, seed	Dementia, fatigue
9	*Grevillea robusta* A. Cunn. ex R. Br.	Proteaceae	Kangiyo Phool	Silk oak	Leaf	Earache, toothache
10	*Jacaranda mimosifolia* D. Don	Bignoniaceae	Nilo Phool	Blue Jaca-randa	Leaf, flower	Hepatitis, neuralgia
11	*Magnolia grandiflora* L.	Magnoliaceae	Rukh Kamal	Magnolia	Leaf, bark	Malaria, rheumatism
12	*Morus alba* L.	Moraceae	Kimbu	Mulberry	Bark, fruit	Fever, in-flammation
13	*Nyctanthes arbor-tristis* L.	Oleaceae	Parijat	Night Jas-mine	Whole plant	Dyspepsia, bronchitis, asthma
14	*Persea americana* Mill.	Lauraceae	Avocado	Avocado	Leaf, fruit	High blood pressure
15	*Phyllanthus emblica* L.	Phyllanthaceae	Amla	Gooseberry	Bark, fruit	Jaundice, anemia
16	*Prunus cerasoides* D. Don	Rosaceae	Painyu	Wild Cher-ry	Twig, bark	Stone, swelling
17	*Thuja orientalis* L. ex Franco	Cupressaceae	Dhupi	Chinese Thuja	Wood, berry	Skin disease, asthma

18	*Zizyphus incurva* Roxb.	Rhamnaceae	Bayar	Jujube	Whole plant	Stomach disorders

Discussion

An inventory of some medicinal plants from Kathmandu Valley was conducted in which 12 plant species belonging to 12 families and 12 genera were described as their medicinal values and identifying characters (Paudel et al., 2018). Most of the plant species in this study were herbs and shrubs.

In the present study, medicinal value of Total 18 plant species of only trees belonging to 15 families and 18 genera found in Padma Kanya Multiple Campus area has been enumerated and described as their medicinal value in which two species namely *Ginkgo biloba* and *Thuja orientalis* are Gymnosperms. The remaining sixteen species of trees are Angiosperms belonging to dicots. The medicinal values of most of the tree species found in the campus area are to cure diseases like cough, bronchitis, asthma, digestive problems and rheumatism etc. The plant parts most commonly used in medicine are roots, leaves, flowers, fruits, seeds, bark and whole plant. The medicinal benefits described in this article are not based on Laboratory tests. The descriptions of medicinal values of plants were given by using available literatures. This enumeration of the medicinal values of tree species of Padma Kanya Multiple Campus will be helpful to the students of this campus as a basic information for their research and practical works.

Conclusion

Many medicinal plants are grown in the campus premises among which eighteen plant species are trees. These trees have different medicinal values and can be used for the study purposes specially by science students of Padma Kanya Multiple Campus. List of tree species, their use parts and ailments in Table. 1 shows the concise picture of result which is very helpful to students for their study purposes. At last it is recommended to conserve these medicinal plants in the campus area.

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Conclusion

The finding shows that there have been strengthened bilateral relations by tourism diplomacy and resource sharing between two countries. India-sharing water resources have been found cooperating Nepal in socio Economic sectors but the implementations of projects has been found lacking with efficient mechanisms. Whatever the Nepali and development partners have agreed for timely completing ongoing projects, the execution has not been effective. Economic cooperation for the welfare of the neighborhood countries has common agenda on both sides for future prosperity and development. In course of bilateral relations spread over such a long period, the politics, history, culture, religion and mythology, language and literature, trade and commerce, matrimonial linkage and migration have bound the two countries. Nepal and India have close proximity with open border and freedom of movements without any

restrictions. The increasing trade imbalance has created a problem in Nepal to have difficulty to promote tourism. Only the tourism diplomacy may contribute for Economic development in Nepal.

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