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Survey of medicinal plants in Jyoti Nivas College (Autonomous), Bengaluru, Karnataka, India

Priyadarshini Pillai^{1*}, A. Anusha², H. V. Banupriya², M. Chaithra²,
N. Manusha², B. S. Meghana² and R. Lavanya²

¹Faculty, Department of Botany, Jyoti Nivas College (Autonomous), Bengaluru- 560 034, Karnataka, India

²Students, Department of Botany, Jyoti Nivas College (Autonomous), Bengaluru- 560 034, Karnataka, India

*Corresponding author

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ABSTRACT

This paper was an attempt to assimilate the medicinal plant status of the Jyoti Nivas College Autonomous, Bengaluru, Karnataka by analyzing their diversity and conservation status. Jyoti Nivas College covering approximately four acres of open area in addition to lawns, garden, teaching and administrative blocks. Survey of medicinal plant diversity was carried out in Jyoti Nivas College campus. This survey was conducted based on the participatory observations and field visit to all places of our college campus. During survey visit a total of 27 medicinal plants species were identified. The main purpose of this survey is to collect data about medicinal plants available in our college campus in-order to preserve its valuable bioresources. All these plants having enormous medicinal properties including antibacterial, anticancer, antidiabetic, antiviral, antifungal, antidote, anthelmintic, anti-analgesic and they can cure cough, cold, ulcers, diarrhea, skin disorders, snake-bite etc. Due to these enormous medicinal properties of surveyed plants, some precious plants which are sensitive to these hazards are getting a place in the list of 'an endangered plants'. After few decades some valuable plants may be disappeared in our college campus because of those risks, so we hope that this survey will be helpful to the upcoming batches of Jyoti Nivas College students, through this they can get some ideas and information about medicinal plants of Jyoti Nivas College campus.

Introduction

Plants have been used both in the prevention and cure of various diseases of humans and their pets. With the advent of human civilization, many systems of therapy have been developed primarily based on plants. Ayurveda, Homeopathy, Sidda, Unani, etc. are our traditional systems of medicines. The plant-based traditional medical systems continue to provide the *primary health care* to more

than three-quarters of the world's populace. In India, the use of plants for medicinal treatment dates back to 5000 years. It was officially recognized that 2500 plant species have medicinal value while over 6000 plants are estimated to be explored in traditional, folk and herbal medicine. "Ethnobotany", the term coined by John Hershberger in 1895, is the study of "plants used by primitive and aboriginal people". The human society has developed close association with the plant life

since time immemorial. Ethnobotany is the study of the relationship between plants and people: From “ethno” - study of people and “botany” - study of plants. Ethnobotany is considered a branch of ethnobiology. Ethnobotany is a multidisciplinary science defined as the interaction between plants and people. The relationship between plants and human culture is not limited to use of plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care (Jain and De, 1966; Pei, 2001; Rao, 1996).

Since time immemorial, mankind has used plant extracts from different plants to cure many diseases and thus relieve him from physical agony (Mukul et al., 2007). In our country, the traditional system of medicine plays an important role in health care of rural people for all types of ailments. The healing power of traditional herbal medicines have been realized and documented since Rigveda and Atharbaveda (Bhattacharjya and Borah, 2008). The traditional knowledge of herbal medicine is undocumented and has been transferred orally since from generations. In India since from ancient times usage of traditional herbal medicine for treatment had gained importance. India is known as botanical garden of the world and Herbal Drug House (Seth and Sharma, 2004).

In recent years plant based drugs are gained importance around the world, this is because they are natural, safe and dependable, compared to costly modern drug that may have adverse side effects. In India due to deforestation, rapid industrialization, urbanization and other human activities has resulted in the extinction of both medicinal plants as well as traditional medicinal knowledge. Hence documentation of all available ethno-botanical knowledge of different ethnic communities is at most important and it is a necessary to initiate the process of conservation of traditional knowledge and the plant species (Das and Tag, 2006; Udayan et al., 2005; Umapriya et al., 2011).

Medicinal Plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for functions including defense against insects, fungi, diseases, and herbivorous mammals. Numerous phytochemicals with potential or established biological activity have

been identified. Medicinal plants are widely used in non-industrialized societies, mainly because they are readily available and cheaper than modern medicines. Medicinal and aromatic plants form a numerically large group of economically important plants which provide basic raw materials for medicines, perfumes, flavours and cosmetics. These plants and their products not only serve as valuable source of income for small holders and entrepreneurs. Medicinal plants are those plants which are rich in secondary-metabolites and are potential source of drugs. These secondary metabolites include alkaloids, glycosides, steroids, etc.

Medicinal plants have provided mankind a large variety of potent drugs to alleviate or eradicate infections and suffering from diseases in spite of advancement in synthetic drugs, some of the plant derived drugs still retained their importance and relevance. There have been records of advances made in the modern medicine there are still a large number of ailments or infection (diseases) for which suitable drugs are yet to be found. These have brought an urgent need to develop safer drugs (both for man and his environment) for the treatment of inflammatory disorders, diabetes, liver diseases, and gastrointestinal disorders. Plants can be described as a major source of medicines, not only as isolated active principles to be dispensed in standardized dosage form but also as crude drugs for the population. The use of plants for treating diseases is as old as the human species.

The present work is an attempt to know the distribution of plant diversity on campus of Jyoti Nivas College, Bengaluru covering approximately four acres of open area in addition to lawns, garden, teaching and administrative blocks. The Campus houses a good number of plants and the perusal of literature reveals that there is no published record on the flora of this campus which represents an interesting floristic composition. The findings of the study may be helpful for further research in Botany or allied disciplines.

Materials and methods

Study area

The study area of a botanical survey of medicinal plants was conducted in the Jyoti Nivas College

campus and the information gathered was noted in a field note book (Fig. 1). All buildings and blocks are surrounded by different types of vines, trees and ornamental plants. Field study was carried out over a period of two months from December-2018 to January - 2019. In the scope of this study, medicinal plant species and other relevant information were collected. (Fig. 1).

Jyoti Nivas College has a garden and green cover covering up to 45% of the total area of the campus. Approximately the college campus measures around

9.5 acres in dimension i.e., 38,445.1 sq.m out of which nearly 4.275 acres i.e., 17,300.31 sq.m is under green cover. It has thick greenery both as canopy cover and ground cover and thus maintains a good ecosystem balance. The diversity of plants introduced and maintained on our campus include vast varieties such as perennial plants, exotic(introduced), indigenous natural plant varieties, flowering plants, avenue trees, succulents, xerophytes, Pteridophytes, creepers, climbers, ornamental shrubs, timber yielding and resin/latex yielding trees, medicinal plants, sacred plants, etc.

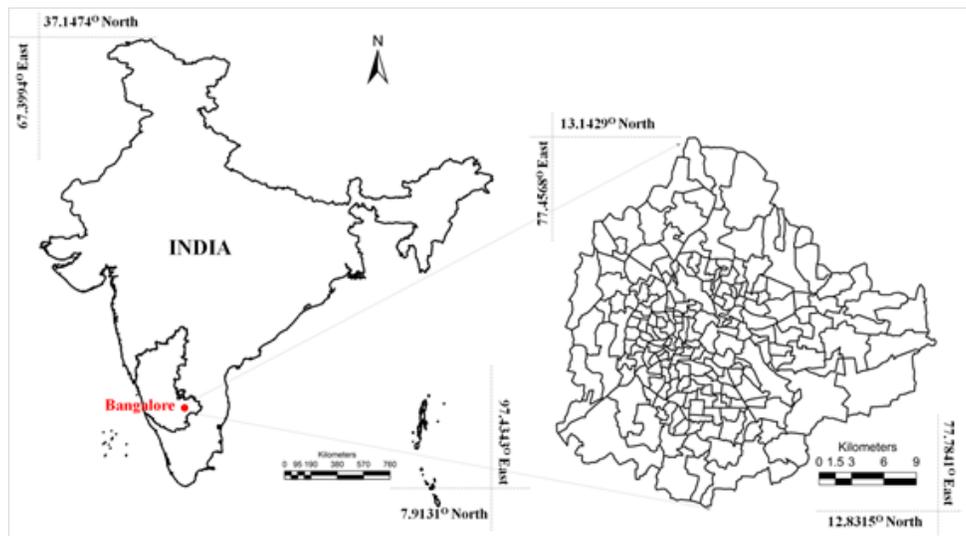


Fig. 1: Map showing the study area with GPS data.

Plant collection

The plant specimens were collected in polythene bags to prevent desiccation. The field data regarding their habit, habitat, phenology and flower colour, etc. were noted down in field note book.

Plant identification

The collected plant specimens were dried and herbarium sheets were prepared and deposited in the Department of Botany, Jyoti Nivas College Autonomous, Bengaluru. The binomials of the specimens were identified with the help of the existing Floras, the Flora of Presidency of Madras, and books on Plant Taxonomy (Gamble and Fischer, 1967; Dharmachandra Kumar and Pullaiah, 1999; Pullaiah, 2010). The identity is authenticated by matched with type specimens available in the herbarium of Botanical Survey of

India, Kudremukh Colony, Koramangala, Bengaluru.

Results and discussion

The traditional knowledge system in India is fast disappearing. So there is an urgent need for inventorying and recording all ethnobotanical information among the diverse ethnic communities. In this project work on ethnobotanical uses of plants belonging to Jyoti Nivas College campus, Bengaluru has been documented for their medicinal and therapeutic properties for various ailments. In view of seeing the exploitation of the biodiversity, traditional knowledge in developing countries like India is eroding at a faster rate. Therefore, it is felt as an urgent need to inventories and record all ethnomedicinal information available into diverse ethnic communities before the traditional culture is completely lost.

Table 1. List of medicinal plants in Jyoti Nivas College Campus, Bengaluru, Karnataka.

S. no.	Botanical name	Family	Local name	Parts used	Therapeutic uses
1.	<i>Aloe vera</i>	Asphodelaceae	Aloe vera	Leaves	It helps in reducing itchininess and inflammation. Also used in treating constipation
2.	<i>Artocarpus heterophyllus</i>	Moraceae	Jack fruit	Leaves, roots	Helps in curing mental stress, skin diseases, prevents anaemia, and prevents indigestion.
3.	<i>Asclepias curassavica</i>	Asclepiadaceae	Tropical milkweed	Stem, roots	The milky sap of the stems has been used to treat warts and skin parasites. The roots are prepared in decoction for kidney stones, asthma and cancer.
4.	<i>Bacopa monnieri</i>	Plantaginaceae	Herb of grace	Leaves	It is used for improving memory, anxiety and attention.
5.	<i>Brunfelsia americana</i>	Solanaceae	Nightshades	Fruit	It is used as a tonic to cure chronic diarrhoea and stomach problems
6.	<i>Cissus quadrangularis</i>	Vitaceae	Veldt grape, Devils backbone	Ash of the plant	Used for obesity, diabetes, a cluster of heart disease risk factors called "metabolic syndrome" and high cholesterol.
7.	<i>Costus igneus</i>	Costaceae	Spiral flag	Leaves	Consumption of leaves are believed lower blood glucose levels
8.	<i>Euphorbia milii</i>	Euphorbiaceae	Crown of thorns	Flowers	It is used for breathing disorders including asthma, bronchitis.
9.	<i>Jatropha pandurifolia</i>	Euphorbiaceae	Nettle spurge, Physic nut	Root bark, latex, leaves	Latex and leaf juice are used to treat ulcer, skin diseases and gum infection. Root bark is used for sores, dysentery and jaundice.
10.	<i>Leucaena leucocephala</i>	Fabaceae	Lead tree	Seeds	The seeds are used to control stomach ache, as contraception and abortifacient.
11.	<i>Leucas aspera</i>	Lamiaceae (Labiatae)	Thumbai	Flower	It helps in reducing fever. The juice of the flower is used to treat sinusitis, headache and intestinal worm infection in children.
12.	<i>Musa paradisiaca</i>	Musaceae	Banana	Leaves, flowers	The sap is used to treat wide variety of ailments, including leprosy, fever, digestive disorders and insects bite.
13.	<i>Sterilizia reginia</i>	Paradisaeidae	Birds of paradise	Leaves, fruits	It is used in herbal medicine to relive itching and to treat swollen glands.
14.	<i>Azadirachta indica</i>	Meliaceae	Neem	All parts of plant	Used for healthy hair, to improve liver function, detoxify the blood and balance blood sugar levels. Also used to treat skin diseases.
15.	<i>Crossandra infundibuliformis</i>	Acanthaceae	Kanakambaram	Leaves	Leaf is used for fever, stomach trouble, asthma, heart diseases, paralysis
16.	<i>Ficus elastica</i>	Moraceae	Rubber fig	Fruits	It is very helpful with a host of stomach problems such as nausea, general pain or digestive problems.

S. no.	Botanical name	Family	Local name	Parts used	Therapeutic uses
17.	<i>Murraya koenigii</i>	Rutaceae	Curry leaves	Leaves	Curry leaves help our heart function better, fights infections and can enliven our hair and skin with vitality.
18.	<i>Ocimum tenuiflorum</i>	Lamiaceae (Labiatae)	Tulsi	Leaves	Used in insect bite, fever, cardiac disorders, respiratory disorders and skin disorders.
19.	<i>Solanum lycopersicum</i>	Solanaceae	Tomato	Fruit	Tomatoes in the diet can help to protect against cancer, maintain healthy blood pressure and reduce blood glucose in people with diabetes.
20.	<i>Tradescantia spathacea</i>	Commelinaceae	Rheo leaf	Leaves	It is used to treat fever, cough and bronchitis. Also used as remedy for headache, sprains.
21.	<i>Vinca rosea</i>	Apocynaceae	Rose periwinkle	Leaves	It is used to treat leukaemia, wound healing, childhood cancer and some non-cancerous conditions.
22.	<i>Carica papaya</i>	Caricaceae	Papaya	Leaves, fruits, bark	Papaya is high in fibre and in water content, both helps to prevent constipation and promote regularity in healthy digestive tract.
23.	<i>Magnifera indica</i>	Anacardiaceae	Mango	Leaves	Mango leaves are very useful for managing diabetic retinopathy.
24.	<i>Nelumbo nucifera</i>	Nelumbonaceae	Lotus	Seeds	Seeds are used for disorders of the digestive tract, including diarrhea.
25.	<i>Papaver somniferum</i>	Muntingiaceae	Poppy seeds	Seeds	The seeds are used in cough medicine and pain relievers and also used in ayurveda to treat skin disease.
26.	<i>Psidium guajava</i>	Myrtaceae	Guava	Roots, leaves	Root and leaves are used to treat dysentery and diarrhea.
27.	<i>Rosa indica</i>	Rosaceae	Rose	Petals	Rose petals are antiseptic, anti-inflammatory and anti-parasitic, and a good supportive tonic for heart.

The ethnobotanical information, besides listing the traditional uses of plants, helps ecologists, taxonomists, watershed and wildlife managers in their efforts for improving the wealth of the area. Since the area has good ethno botanical potential for medicinal plants, it could be a suitable place for further ethno botanical and ethno pharmacological studies. We are aware that this study was not extensive, but only a first contribution to the ethnobotany of this region, focusing on medicinal plants. The plant parts used widely to treat human and live stock

problems included root, stem, leaves, seed, fruit, etc. Herbal medicines prescribed by the tribal healers are either preparation based on single plant part or a combination of several plant parts to cure respective diseases rapidly. Generally fresh part of the plant is used for preparation of medicine. When fresh plant parts are unavailable, dried parts are also used. The information gathered from the Jyoti Nivas College Campus, Bengaluru is useful for further research in the field of ethnobotany, taxonomy and pharmacology (Table 1 and Fig. 2).



Fig. 2: Some snapshots of medicinal plants in the study area.

The information could also be useful for the industry, pharmacologists, physicians, phytochemists, botanists, and alike interested in the development of alternative therapies. For lesser known plant species, such a secret treasure trove of information could prove beneficial in phyto-pharmacological research for the discovery of new therapeutic drugs. Further clinical trials are required to test their efficacy and the study could be of help to develop new drugs based on herbal medicine for effective remedy of different ailments.

Popular knowledge of plants used by humans is based on thousands of years experience. By “trial and error”, people learnt how to recognise and use plants, including those with a magic-religious function. The folk ‘phytotherapy’ is ‘aging’ in the sense that knowledge of medicinal plants persists in elderly rural people with little schooling knowledge. The transmission of this type of knowledge from generation to generation is now threatened in this region and tends towards disappearance.

The information generated from the present study regarding the medicinal plants could help in creating mass awareness regarding the need for conservation of such plants and also in the promotion of ethno-medico-botanical knowledge within the college campus. There are a lot to be done in this promising field with the active support of Students, Teachers and so that importance of these economically important plants could be rejuvenated for the benefits of our future generation and also need to improve healthcare condition.

Conclusion

This study shows that processing and consuming medicinal plants are still practiced in all states of India. Due to an increasing health service facility, herbal medicines are mostly used to prevent diseases than cure. From this survey we concluded that Jyoti Nivas college campus is enriched with very precious and medicinally useful plants. An additional research analysis is required to preserve the bio resources that are slowly declining in this area of campus. This study will promote a practical use of botanicals and must be continued focusing on its pharmacological validation. Further detailed

exploration and collection of ethnobotanical information, chemical studies and screening for medicinal properties will provide cost effective and reliable source of medicine for the welfare of humanity. Previous studies conducted in different parts of India clearly indicated that the information derived from ethnobotanical documentation is the source for the development of new drugs for various ailments (Tripathi, 2000; Sudhakar Reddy et al., 2007; Ravi Prasad Rao and Sunitha, 2011).

The documentation of medicinal plants flora is the only way to preserve the fundamental knowledge of the plant resources of the study area (campus). So it concluded that the present documentation will be useful to the campus students for further research and field works.

Conflict of interest statement

Authors declare that they have no conflict of interest.

References

- Bhattacharjya, D. K., Borah, P. C., 2008. *Indian J. Trad. Knowl.* 7(3), 501-504.
- Das, A., Tag, H., 2006. Ethnomedicinal studies on the Khamti tribe of Arunachal Pradesh. *Indian J. Trad. Knowl.* 5(3), 317-322.
- Dharmachandra Kumar, T., Pullaiah, T., 1999. Ethno – Medico – Botany of Chenchus of Mahabubnagar District, Andhra Pradesh, *Anc. Sci. Life.* 19(1-2), 31-35.
- Gamble, J. S., Fischer, C. E. C., 1967. *Flora of the Presidency of Madras. Vol. 1-3, Calcutta.*
- Jain, S. K., De, J. N., 1966. Observations of ethnobotany of Purulia, West Bengal. *Bull. Bot. Surv. India.* 8, 237-251.
- Mukul, S. A., Uddin, M. B., Tito, M. R., 2007. Medicinal plant diversity and local healthcare among the people living in and around a conservation area of Northern Bangladesh. *Int. J. For. Usufr. Manag.* 8(2), 50-63.
- Pei, S. J., 2001. Ethnobotanical approaches of traditional medicine studies: Some experiences from Asia. *Pharmaceut. Biol.* 39, 74-79.
- Pullaiah, T., 2010. *Flora of Andhra Pradesh*, CBS Publishers, New Delhi.
- Rao, R. R., 1996. Traditional knowledge and sustainable development: Key role of

- ethnobiologist. *Ethnobotany*. 8, 14-24.
- Ravi Prasad Rao, B., Sunitha, S., 2011. Medicinal plant resources of Rudrakod sacred grove in Nallamalais, Andhra Pradesh, India. *J. Biodiv.* 2(2), 75-89.
- Seth, S. D., Sharma, B., 2004. Medicinal plants of India. *Indian J. Med. Res.* 120, 9-11.
- Sudhakar Reddy, C., Reddy, K. N., Thulsi Rao, K., Pattanaik, C., 2007. Ethnobotanical studies on medicinal plants used by the Chenchus of Nallamalais in Kurnool District, Andhra Pradesh, India. *Res. J. Med. Plants*. 1(4), 128-133.
- Tripathi, Y. C., 2000. Ethnomedicinal treasure of tribal Rajasthan. *J. Non-Timber For. Prod.* 7(1-2), 77-84.
- Udayan, P.S., George, S., Thushar, K.V., Balachandran, I., 2005. Ethnomedicine of the Chellipale community of Namakkal district, Tamilnadu. *Indian J. Trad. Knowl.* 4(4), 437-442.
- Umapriya, T., Rajendran, A., Aravindhana, V., Binu T., Maharajan, M., 2011. Ethnobotany of Irular tribe in Palamalai Hills, Coimbatore, Tamilnadu. *Indian J. Nat. Prod. Resour.* 2(2), 250-255.

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