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Ethnobotanical studies of medicinal plants: A case study in Skandagiril hills of Kalawara

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Abstract

About 50% of drugs which we are using today for clinical use are obtained from natural products and their derivatives, out of which the derived products from higher plants constitute about 25%. WHO estimated that an average of 80% of people in developing countries depends on herbal medicinal plants for traditional remedies in day-to-day needs and about 855 traditional medicines include crude plant extracts. About 3.5 to 4 billion world's population depends on plant resources for drugs. The present study highlights the importance of documenting, ethnobotanical information and indigenous traditional knowledge about the medicinal plants used by the people in their day to day life to cure some common ailment in the sample study area of Skandagiril Hills of Kalawara.

Keywords: Ethnobotanical, Medicinal Plants, Composition

Introduction

India is one of the major hotspots, which inhabits a wide variety of plants and has been identified as one of the mega diversity's centres of the world. Although it's total land area comprises of 2.4% of the total geographical area of the world. The country accounts for an average of 8% of the total global biodiversity with approximately 49,000 species of plants of which 4,900 are endemic. The Southern Peninsular India and Western Ghat Ecosystem contain more than 6000 species of higher plants including an estimated 2000 endemic species. Out of these 2500 species representing over 1000 Genera and 250 families have been used in traditional systems of medicine. The special importance has to be given for traditional medicine usage practices, although a good proportion of medicinal plant species exists throughout the country and highly significant diverse species is found in the peninsular Indian forests and Western Ghats.

Need for the study

According to WHO about 80% of the world's population especially in the rural areas depends on herbal medicines for their healthcare needs due to change in the life style secrecy of traditional healers and negligence of youngster, the practice and dependence of ethnic societies in folk medicines is in rapid decline globally therefore, ethnobotanical exploitation and documentation of indigenous knowledge about the usefulness of such a vast pool of genetic resource is deliberately needed.

At present medicinal plants are highly threatened due to over exploitation, unsustainable harvesting for trade, habitat destruction, human encroachment and application of inappropriate technologies. In view of this, an attempt has been made to collect ethno botanical information on medicinal plants used in the Chikballapur taluk of Karnataka. Documenting the traditional knowledge is important for the conservation of edible medicinal plants as well as their sustainable utilization.

Sample study area

Skandagiri Hills of Kalawara of Chikballapur (taluk and district) was selected for ethnomedicinal importance because this hill has rich in Phyto diversity besides other usages of plants the practice of oral tradition for health care managements of using herbal medicines. The knowledge about medicinal uses of plants and knowledge is mostly undocumented and transmitted orally from generation to generation.

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The study area is located between latitude and longitude: 13.4181°N, 77.6830°E.

Recently increasing modern healthcare facilities impact of modern civilization, natural resources as well as traditional knowledge are depleting rapidly at an alarming rate. Therefore, it is need of explore and documentation of this indigenous, traditional knowledge of the folk people community. Besides, to the best of the researcher's knowledge no ethnobotany work has been carried out in that area. Keeping these things in mind present study was proposed to document the ethnobotanical knowledge in Skandagiri Hills of Kalawara.

Review of literature

Ethnobotany is a multidisciplinary science. It involves anthropology, sociology, botany and pharmacy. The word ethnobotany was first coined by an American scientist Hansberger in 1896. The development of ethnobotany has proceeded independently in various countries and various field surveys been carried out amongst tribal populations in many parts of the world.

Vast ethnobotanical knowledge exists in India since ancient times. Ayurveda, a well-known Indian native system of medicine, dating back to the Vedic ages (1500-800 BC), has been a fundamental part of Indian culture. The Vedic Aryans were well-known with medicinal plants. This was followed by monumental ancient record on the subject, like Charaka Samhita (1000-800 BC), Sushruta Samhita (800-700 BC) and Vagbhata's Astanga Hridaya (Jain, 1996) [3]. (Jain S, et al., 1996) [3].

A study on ethnobotany was initiated by Janaki Ammal in the Economic Botany section of Botanical Survey of India in 1954. From 1960, Jain started intensive field studies among tribals of Central India. The publication from his group in early sixties triggered ethnobotanical activities in many other centres, particularly among botanists, anthropologists and ayurvedic medicinal practitioners (Lalramnghinglova 2000) [4]. (Lalramnghinglova H. 2000) [4] In recent years, several ethnobotanical studies were carried out by many workers in different parts of this country and many number of ethnobotanical data specially on the use of indigenous traditional medicinal plants were documented. Ignacimuthu et al., 2006 investigated a total of 60 ethnomedicinal plant species used by the Paliyartribes to cure skin diseases, snake bites, stomachache and nervous disorders in Southern Western Ghats of Madurai district, Tamil Nadu.

Jayasimha et al. (2012) [2] (G.T. Jayasimha, 2012) [2] studied the ethnobotany of chenchus, yerukulas, sugalis or lambada's tribal groups in Nallamalla forests of Kurnool district, Andhra Pradesh and reported hundred medicinal plants used as a cure for 50 ailments. Agarwal and Varma (2012) recorded 79 ethnomedicinal plant species being used for stone problems in rural areas of Bhopal district, Madhya Pradesh. Anjaneyulu and Sudarsanam (2013) reported traditional uses of 54 plant species used for treating asthma

by tribal people of Rayalaseema area of Andhra Pradesh. Ratul et al. (2013) [5] (Ratul, 2013) [5] recorded 84 forest-based medicinal plants used by the rural community of Assam. RamaKrishna et al. (2014) brought to light a total of 155 species which used by the tribal people for their primary health care and day to day life of different ethnic group such as Thotis, Kolams Gonds,, Naikpods, Pradhans, Chenchus and Mathuras of Adilabad district, Andhra Pradesh. Chunamoni and Robindra (2014) [1] (Chunamoni Das, 2014) [1] studied the ethnobotanical knowledge of the Rabha ethnic group residing in Mataikhar reserve forest in Kamrup district, Assam and recorded a total of 28 ethnic plants. They adapted a rapid ethnobotanical appraisal method for field study comprising field visit and walk along forest transect with key informants and interview of traditional healers. An account of 70 medicinal plant species used by the tribal people like Bhil, Pawara and Pardhi residing in Nandurbar, Dhule and Jalgaon district of Maharashtra has been reported by Laxman and Ajit (2014). Ethnobotanical studies of Yamuna Nagar district of Haryana have been conducted by the Parul and Vashistha (2015).



Graph 1: Sample Area Selected for the Study

Table 1: Profile of Skandagiri Hills

Place	Skandagiri Hills, Kalawara (Village)
Name of the Taluk	Chikkaballapur
District	Chikkaballapur
State	Karnataka
Area	637 sq.km
Population	2,12,536 taluks in Chikkaballapur district

Taluk administration of Chikkaballapur taluk is divided into 3 Hoblies and Chikkaballapur is only one town, which is also the taluk head quarter. There are 222 inhabited and 29 uninhabited villages in Chikkaballapur taluk. (Table 1).

Table 2: Administrative divisions of Chikkaballapur taluk, Chikkaballapur district (Data obtained from Chikkaballapur District Office)

Number of Villages		V.A circles	Hobalies	Gram Panchayats	Municipalities	City/Town
Inhibited 222	Uninhibited 29	35	3	22	1	1

Data collection and questionnaire

Regular field trips were undertaken to different localities of the study area during the period from February 2020 to

March 2020. Localities were selected in such a way that they represent the entire Taluk including the rural areas and tribal pockets. A list of traditional practitioners belonging to

different areas was prepared. Each locality was visited and collection the information about the medicinal plants. During the fieldwork, frequent visits were made to the herbal practitioners and efforts were made to convince them to disclose their traditional knowledge about the healing interview with the information along with the field visits during the collection hours. The following information was gathered from the questionnaire distributed to the respondents.

The information about the ingredients added, methods of administration or application, dose and duration of medication and association medicated food was also recorded in few cases. The information was recorded in standard questionnaire which includes local name of the plants, parts used and methods of drugs preparations, mode of administration, probable dosage and duration of treatment. At the end of each interview, specimen of the plants were collected and identified with the help of regional and local floras.

Results

Statistical data

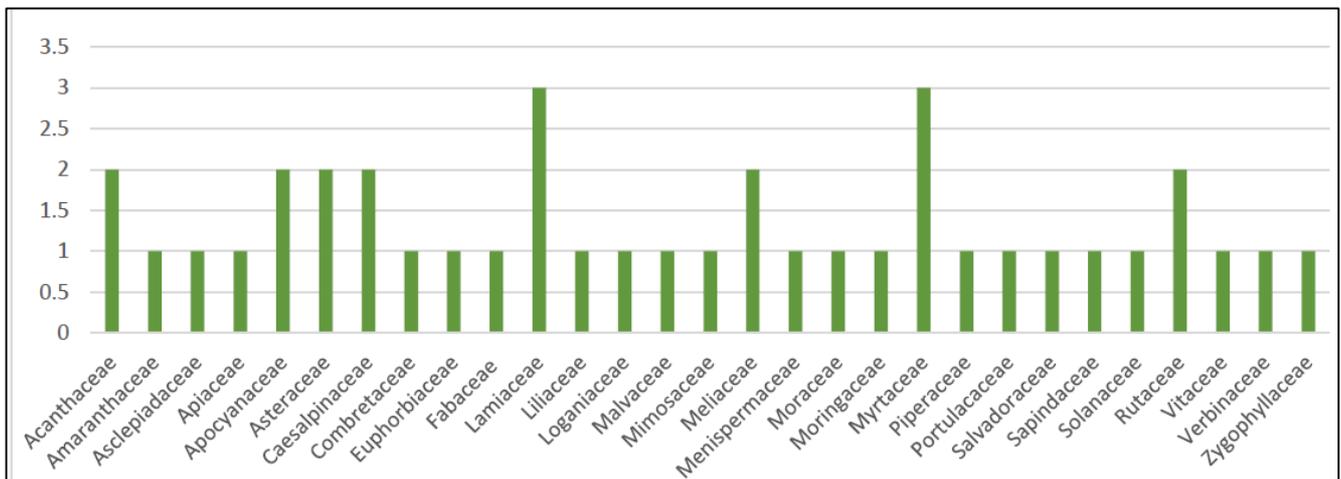
The study revealed that the people in and around Kalawara practitioners were using 41 medicinal plants belonging to 28 families to treat 53 types of ailments, the medicinal data collected and a brief discussion was made in their local language.

People of the Kalawara reserve forest area preferred the administration of their herbal medicines through oral followed by topical and inhalation through the nostrils.

- The collected materials from medicinal plants, most of the herbal medications prepared from shrubs (15) followed by herbs (11), climbers (03), trees (11)
- Shrubs are more growing type of medicinal plants as documented.

Table 3: Distribution of Plants

Sl No.	Type of Plants	Number of plants
1	Herbs	12
2	Shrubs	15
3	Climbers	11
4	Trees	03
Total		41



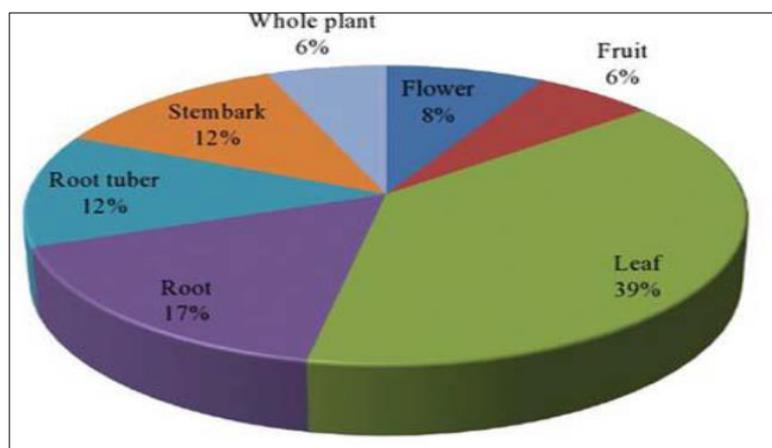
X-axis: Name of the family
Y-axis: Number of plants in each family

Graph 2: Number of Plants in each Family

Composition of herbal medicines

These medicines were prepared mostly from leaf (39%) part of the plant followed by root (17%), root tuber (12%), stem

bark (13%), flower (8%), whole plant (6%), and fruit (4%). [Graph-3]

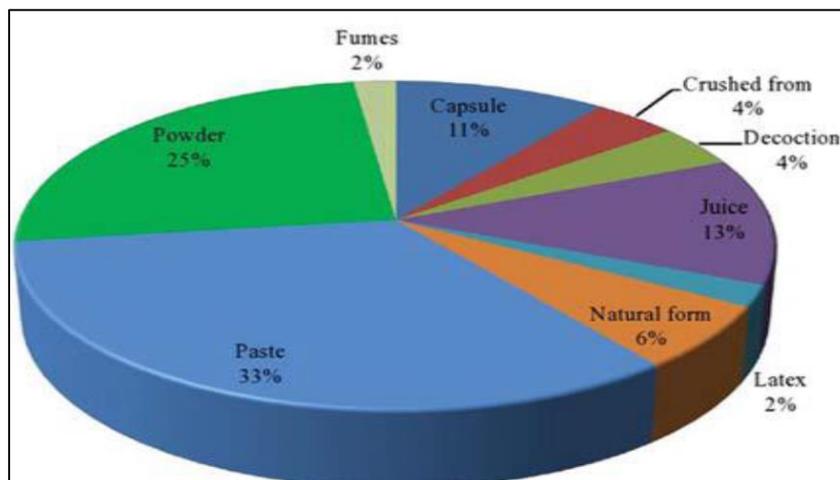


Graph 3: composition of herbal medicines

Form of Herbal Medicines

They commonly prepared herbal medicines in the form of a paste (33%) followed by powder (25%), juice (15%),

Capsule (10%), Natural form (6%), Crushed form (4%), Decoction (4%), Fumes (2%) and Latex (2%) [Graph- 4].

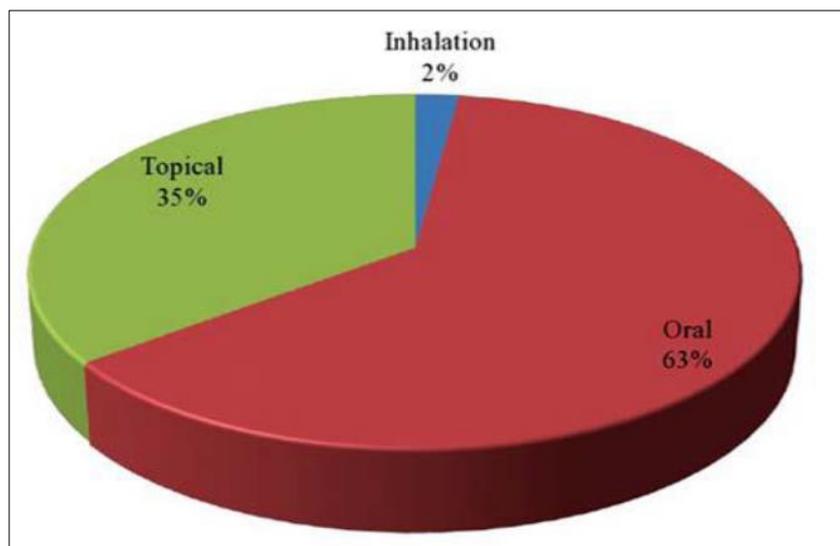


Graph 4: Form of Herbal Medicines

Administration of herbal medicines

People of the Kalawara, reserve forest area preferred the administration of their herbal medicines through oral (58%)

followed by topical (40%) and inhalation (02%) through the nostrils. [Graph-5].



Graph 5: Administration of herbal medicines

Discussion

Ethnomedicinal study is carried out in Kalawara village area skandagiri reserve forest area. The usage of medicinal plants from plant families like Myrtaceae, Lamiaceae is the most preferred.

It is found that ethnomedicinal knowledge is becoming restricted only to the elders; traditional practitioners and local farmers, while young people are totally ignorant of this wealth. Advancement in Science and Technology has changed the social values and therefore, younger generation are transforming at a much faster rate into the new tradition. Medicinal plants knowledge is going to be obsolete because of the interference of modern cultural changes. This situation appears to occur in many parts of the country and world. It is therefore very important to document the native flora along with their ethnomedicinal recipes before extinction of the indigenous knowledge. The findings regarding most utilization of this family are due to wide

distribution of these family plants in the study area and known number of traditional uses.

Shrubs are most utilized plants in these areas for preparation of herbal formulations due to easily available and made easy for collection of these plants. The leaves are mainly used herbal medicine in this area. The common use of leaf in the preparation of remedies could partly due to the relative ease of finding of this plant part. The leaves remain green and available in plenty throughout the year. The herbal preparation in the form paste and oral administration of medicine is the most preferable in these areas. It may due to the fact that most of the plant parts were brought fresh from nearby forests and taken orally may be due to the effective exoneration of ailments.

Milk is an excellent medium for oral administration of drugs and strengthens the patients as nutritionally. Admixtures of sweeteners like jaggery and sugar in the case of *Asparagus racehorses*, these sweeteners avoid the bitterness of

medicines and provide cumulative interest to patients to take medicines at regular intervals. An addition of spices like turmeric powder in the case of *Cassia auriculata*, *Cissus quadrangularis*, *Euphorbia antiquorum*, *Justicia tranquebariensis*.

As the turmeric powder elevates the performance of actual drug and it acts as excellent antimicrobial agent on different disease causative microorganisms. Addition of lubricants like castor oil, gingelly oil and honey was in the case of *Sida acuta*, *C. quadrangularis* and *T. involucrata*. These lubricants are helpful to patients taken oral medicines in an easiest way. Admixture of curd in the case of *Dodonea viscosa*, it improves overall performance of actual medicine, camphor provides excellent relief from rheumatic pains.

The ethnomedicinal data of 41 medicinal plants enumerated from the Skandagiri of Kalawara of ckikkaballapur (taluk and district) area, and recorded their medicinal uses obtained from the some people of Kalawara Based on this database, it can be concluded that the medicinal values claimed by the people of Kalawara area are of high significance towards curing of different ailments in a traditional way with their unique nature of selection and preparation of herbal medicines from medicinal plants.

Conclusion

The people of Skandagiri of Kalawara area have vast knowledge on medicinal values of plants in their surrounding forest. The study revealed that 41 medicinal plants belonging to 29 families are used to treat 53 types of ailments. The plant species belonging to Laminaceae, Myrtaceae are most used for the preparation of herbal medicine and shrubs of life form, leaf part of plant, paste form of medicine, oral administration of medicines are most preferred characters of these study areas.

Selection, preparation, addition of ingredients, and combination of medicinal plants for the preparation of herbal formulations is unique and no more documentation was made previously in these areas. Local people of surrounding villages attracted to this traditional medicine, because of its cost-effective and easy to get from local traditional healers. Most of the data claimed in these areas is only get from the above age of 40-60 years and the people of younger generations are not interested in practicing the same. Hence, this is the right time to document the disappearing ethnomedicinal uses and to explore this data to globe.

The documentation of ethnomedicinal data is vital for the future breeding program, and research works to validate the important phytochemicals. Moreover, these plants may produce gene pool of medicinal plants. So that these plants and knowledge of the people are conserved before they will be lost forever. This is high time to validate the medicinal values of this area to explore to the globe, and this data is useful for pharmacists and conservation biologists. Collaborative research and integrated efforts are required to preserve the indigenous knowledge with tribal people. If all the informants come forward with positive attitude and broad mind, Ethnobotany will be a highly flourished discipline in the near future.

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