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ETHNOPHARMACOLOGICAL STUDIES OF TRADITIONAL HEPATOPROTECTIVE MEDICINAL PLANTS USED BY THE TRIBALS OF BILASPUR DISTRICTS

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Abstract

Plants play significant role not only in our economy but also used as traditional medicines. Almost 75% of the medicinally important plant species grow in wild condition. An ethnopharmacological survey was carried out to collect information on the use of plants for curing hepatic disorders. The majority of the remedies were prepared from freshly collected plant material from the wild and from a single species only. They were mainly taken orally, but some applications were prepared with a mixture of plants or ingredients such as honey, sugar, salt, ginger and pepper. A total of 45 hepatoprotective ethnopharmacological plants species distributed in 32 families are documented in this study. The medicinal plants used by tribals are listed with botanical name, family, local name, parts used, mode of preparation and ethnopharmacological uses. Further studies on chemical and pharmacological actions are suggested to validate the claims.

Key Words: Phytotherapeutic claim, Ethnopharmacology, Tribals, Baiga, Bilaspur.

Introduction

The tribes of India comprise about 8% of the total population of the country having probably the largest number of tribal communities in the world. Globally, about 85% of the traditional medicines used for primary healthcare are derived from plants. Modern medical facilities are unable to reach the common people not only in this state/country but also the whole world. In such a situation people ordinarily resort to indigenous phytotherapeutic treatment which is known to common people from their ancient' heritage. Plants play significant role not only in our economy

but also used as traditional medicines. Traditional medicine and Ethnopharmacological studies play an important role in scientific research, particularly when the literature and field work data have been properly evaluated. India is one of the twelve mega-biodiversity countries of the World having rich vegetation with a wide variety of plants with medicinal value. In many countries, scientific investigations of medicinal plants have been initiated because of their contribution to healthcare. Herbal medicines have good values in treating many diseases including infectious diseases, hypertension, etc. That they can save lives of many, particularly in the developing countries, is undisputable. Ethnomedicinal plant wealth of Bilaspur district is one of the richest in Chhattisgarh state of India. The knowledge of the tribal associated with the traditional healing practices using wild plants is now fast disappearing due to modern healthcare system.

Liver is the key organ of metabolism and excretion is constantly endowed with the task of detoxification of xenobiotics, environmental pollutants and chemotherapeutic agents. Liver diseases such as cirrhosis, fatty liver, and chronic hepatitis are important world health issues. Liver damage is associated with cellular necrosis, increase in tissue lipid peroxidation and depletion in the tissue GSH levels. In addition serum levels of many biochemical markers like SGOT, SGPT, triglycerides, cholesterol, bilirubin and alkaline phosphatase are elevated.

In spite of tremendous advances in modern medicine no effective drugs are available, which stimulate liver functions and offers protection to the liver from the damage or help to regenerate hepatic cells. Herbal drugs play a role in the management of various liver disorders most of which speed up the natural healing processes of the liver. Numerous medicinal plants and their formulations are used for liver disorders in ethnopharmacological practice as well as traditional system of medicine in India.

The objective of this study was to assess the richness of hepatoprotective ethnopharmacological medicinal plant species used by the tribals in Bilaspur district forest areas.

Study area

Bilaspur district is situated in the North- Western part of Chhattisgarh state. . The district is located between 22. 0° North to 21° North Latitude and between 81.2° East to 82.5° East longitudes. The district is bounded by the Shandol

and Dindori district of M.P from north and north western side, Korba and Janjgir-Champa district on the east; Raipur and Durg districts on the south and Kawardha district on the South-west. The district occupies an area of about 19,600 Sq. km. The temperature ranging from 13°C to 47°C. The total population of the district according to 2001 census is 1993042 out of which 23.39 % are scheduled tribes. The physiography of the district gives a perfect platform for the tribal in sustaining their ethno-cultural identity. Tribal people are mostly inhabited in the deep forest area, depend on the forest resources for their livelihood (food, fodder and medicine). The numerical important scheduled tribes are Baiga, Bhumiyas, Dhanwar, Sanjhari-Jhareka, Kanwar, Khaiwar, Kharia, Pando and Gond . The Gonds are the Dravidian tribe belonging Chhattisgarh state. In Bilaspur district 40 % of the tribals are Gonds. The physiography of the district gives a perfect platform for the tribal in sustaining their ethno-cultural identity.

Materials and Methods

During the ethnopharmacological field survey in the tribal areas of Keonchi Forest Division, and recorded tribal use of plants for hepatoprotective medicines. The methodology followed for the study was that of Jain & Mudgal (1999). During field work, interviews were conducted with local knowledgeable villagers, the herbal healer called as Baigas". Collected plant materials were preserved by making herbaria and all the voucher specimens were carefully numbered. Plants are verified at Raw Material Herbarium & Museum, National Institute of Science Communication and Information Resources (NISCAIR), New Delhi. The hepatoprotective medicinal value of each plant was enumerated in the following pattern: a) Botanical Name; b) Family; c); Local name ; d) Parts Used; e) Ethnopharmacological Uses.

Result

Bilaspur is one of the tribal rich districts of chhattisgarh famous for its "**Gond**" primitive tribe which are unique in their ethno cultural heritage. The rapid damage to natural habitats, thus threatening the very survival of several indigenous species. The tribals of Bilaspur district have developed vast knowledge of plants as observed by the author during the field survey from 2007 to 2008 of ethnopharmacological work which they have acquired

through their traditional practices since time immemorial. The present investigation is carried out by the intensive field exploration and interaction with the tribal people to identify the ethnomedicinal plants and their uses. The data when crosschecked with the published literature, it was found that most of the uses are either less known or not recorded earlier. The data on medicinal plants used for Hepatic disorders was collected from the local inhabitants in the Bilaspur district, and analyzed. The enumeration and utilization of these plants are described below.

Plants used as traditional medicines.

Abutilon indicum

Family - Malvaceae

Local Name - Kangi

Parts Used - Leaf

Ethnopharmacological Uses - Leaf decoction (15ml) is given once a day in the early morning for 15days.

Acros calamus

Family - Araceae

Local Name - Bach

Parts Used - Rhizome

Ethnopharmacological Uses - Take half tsp. rhizome powder with honey twice a day for 7 days.

Adhathoda vasica

Family - Acanthaceae

Local Name - Adusa

Parts Used - Leaf

Ethnopharmacological Uses - one tsp. leaf juice is taken 4 times a day for 3 days.

Aegle marmelos

Family - Rutaceae

Local Name - Bael, Hotta

Parts Used - Leaf

Ethnopharmacological Uses - Grind 1 leaf and 3 pepper and take thrice a day for 7 days.

Aloe Vera

Family - Lillaceae

Local Name - Ghikawar

Parts Used - Leaf

Ethnopharmacological Uses - Take 2 tsp. of leaf juice in empty stomach in the morning for 10 days morning.

Andrographic paniculata

Family - Acanthaceae

Local Name - Chirita

Parts Used - Leaf

Ethnopharmacological Uses - The leaf juice 2 tsp. each is taken twice a day for three days.

Annona squamosa

Family - Annonaceae

Local Name - Sitaphal

Parts Used - Seeds

Ethnopharmacological Uses - 1 tsp. of Pasty mass of seeds is taken with water twice a day for 15 days.

Argemone mexicana

Family - papaveraceae

Local Name - pilikantali

Parts Used - Leaf

Ethnopharmacological Uses - The juice of fresh leaves(5ml) is given in Jaundice for twice a day for one week.

Artocarpus lakoocha

Family - Moraceae

Local Name - Dahu

Parts Used - Root

Ethnopharmacological Uses - Dried root powder (5gm) is taken once in morning for five days.

Asparagus racemosus

Family - Lilliaceac

Local Name - Satawar

Parts Used - Root

Ethnopharmacological Uses - Root decoction (15ml) is taken once a day continuously for 15 days in empty stomach.

Asteracanta longifolia

Family - Acanthaceae

Local Name - Kantali

Parts Used - Leaves.

Ethnopharmacological Uses - Decoction of leaves (3ml) mixed with paste of *Piper longum* (2gm) is taken in empty stomach once in the morning up to fifteen days.

Azadirachtu indica

Family - Meliaceae

Local Name - Neem

Parts Used - Stem bark

Ethnopharmacological Uses - Boil the stem bark in two glasses of water and reduce it to half glass and give 2 tsp. thrice a day.

Boerhavia diffusa. Linn

Family - Nyctaginaceae

Local Name - punarva, Kapadasag

Parts Used - Leaf

Ethnopharmacological Uses - Take 2 tsp. of leaf juice in empty stomach in the Morning.

Butea monosperma

Family - Fabaceae

Local Name - Palas

Parts Used - Bark

Ethnopharmacological Uses - The bark decoction is taken once a day for 10 days.

Centella asiatica

Family - Umbelliferae

Local Name - Medak Sag'

Parts Used - Leaf

Ethnopharmacological Uses - Take 1 tsp. of leaf powder with milk for 5 days.

Curcuma longa

Family - Zingiberaceae

Local Name - Haldi

Parts Used - Rhizome

Ethnopharmacological Uses - Decoction of rhizome along with leaves of *Andrographis paniculata* taken 30 ml. twice a day for 7 days.

Eclipta alba

Family - Compositae

Local Name - Bringharaj

Parts Used - Leaf

Ethnopharmacological Uses - Take 1 tsp. of leaf powder with milk for 5 days.

Eleusine coracana

Family - Poaceae

Local Name - Baigatola

Parts Used - Leaf

Ethnopharmacological Uses - The leaf juice is taken twice a day for a week.

Emblica officinalis

Family - Euphorbiaceae

Local Name - Avala

Parts Used - Fruit

Ethnopharmacological Uses - The fermented liquor made from the fruit is taken 50ml twice a day each for one week.

Ficus religiosa

Family - Moraceae

Local Name - Pipal

Parts Used - Bark

Ethnopharmacological Uses - 3" * 3" piece of bark is ground fine and kept in half glass of water overnight and take early in the morning daily for 3-7 days.

Hemidesmus indicus

Family - Asclepiadaceae

Local Name - Dudi larag'

Parts Used - Root

Ethnopharmacological Uses - The root is eaten raw or the root paste 1 tsp. is taken twice a day for 3 days.

Hibiscus cannabinas

Family - Malvaceae

Local Name - Kudurum

Parts Used - Leaf

Ethnopharmacological Uses - Tender leaves are cooked as vegetable and take twice a day.

Lowsonia inermis

Family - Lytheraceae

Local Name - Mehandi

Parts Used - Whole plant

Ethnopharmacological Uses - The juice of fresh leaves(5ml) is given in Jaundice for twice a day for one week.

Leucas aspera

Family - Labiatae

Local Name- Guma sag'

Parts Used- Leaf

Ethnopharmacological Uses- The juice of leaves mixed in a little honey is given internally for 7 days.

Mangifera indica

Family - Anacardiaceae

Local Name - Aam

Parts Used - Bark

Ethnopharmacological Uses - 2 tsp. full of root or stem bark powder is mixed with little water is taken thrice a day for 5 days.

Momordica dioica

Family - Cucurbitaceae

Local Name - Ban Kerala

Parts Used - Leaf

Ethnopharmacological Uses - The leaf juice is mixed with Turmeric is taken thrice a

day for a week.

Ocimum sanctum

Family - Labiatae

Local Name - Tulsi

Parts Used - Leaf

Ethnopharmacological Uses - 1 tsp. of leaf juice is taken .twice a day for a week. Or the leaf decantation with 3-5 pepper corn powder is taken half cup each once a day for malaria.

Oldenlandia corymbosa

Family - Rubiaceae

Local Name - Bui Dhania

Parts Used- Leaves

Ethnopharmacological Uses- leaves decantation 20 ml. each is given twice a day for a week.

Phyla nodiflora (L.) Greene

Family - Rbenaceae

Local Name - Kangi

Parts Used - Bark

Ethnopharmacological Uses - Wholeplant (10 g) and 7 black peppers are grounded to a fine paste and the paste thus obtained is taken on empty stomach, along with rice washed water of 3 consecutive days in Jaundice.

Phyllanthus niruri

Family - Euphorbiaceae

Local Name - Bhuiamla

Parts Used - Whole plant

Ethnopharmacological Uses - The whole plant is made into paste and small pills of 5 gm is made, and I pill each is taken thrice a day for 3-5 days.

Psidium Guajava

Family - Myrtaceae

Local Name - Amarood

Parts Used - Leaf

Ethnopharmacological Uses - The tender leaves are crushed and 5 tsp. of juice is taken in the morning and evening for a week.

Ricinus communis

Family - Euphorbiaceae

Local Name - Arand

Parts Used - Leaf

Ethnopharmacological Uses - The leaf decantation or tender of leaf is crushed and made small pills and take thrice a day for three days.

Scoparia dulcis

Family - Serophulariaceae

Local Name - Mitha Dhania

Parts Used - Whole plant

Ethnopharmacological Uses - Plant decantation one cup each is mixed with sugar thrice a day for one week.

Sida Cordifolia

Family - Leguminosae

Local Name - Bariyari

Parts Used - Root

Ethnopharmacological Uses - 1 tsp. full of Root powder is taken twice a day for 10 days.

Solanum nigrum

Family - Solanaceae

Local Name - 'Makoi' 'Totopako'

Parts Used - Fruits

Ethnopharmacological Uses - The decoction of the berries(1/2 glass) is given thrice a day for 10 days.

Solanum xanthocarpum

Family - Solanaceae

Local Name - Kanteli

Parts Used - Leaves

Ethnopharmacological Uses - The leaves juice is taken twice a day for a week.

Sphaeranthus indicus

Family - Compositae

Local Name - Mundi

Parts Used - Leaves

Ethnopharmacological Uses - The leaves juice(15 ml) is taken twice a day for a week.

Spondias pinnata

Family - Anacardiaceae

Local Name - Amada

Parts Used - Fruits

Ethnopharmacological Uses - The fruit is eaten raw or cooked once a day for a week.

Tamarindus Indica

Family - Leguminosae

Local Name - Imli

Parts Used - Seeds

Ethnopharmacological Uses - The rind powder of seeds of Tamarindus Indica 1 tsp. full given, for twice a day for

one week in Jaundice.

Terminalia bellirica

Family - Combretaceae

Local Name - Behera

Parts Used - Fruit

Ethnopharmacological Uses - The Triphala powder is taken 1 tsp each thrice a day for 10 days.

Terminalia chebula

Family - Combretaceae

Local Name - Harrara

Parts Used - Fruit

Ethnopharmacological Uses - The rind powders of Harrara, Behara and Gooseberry is mixed in equal amount and take 1 tsp each twice a day for a week.

Tinospora cordifolia

Family - Menispermaceae

Local Name - Fladjod, Guruh

Parts Used - Stem

Ethnopharmacological Uses - One cup of stem decantation is taken twice a day for 7 to 21 days.

Zingiber officinale

Family - Zinzibereceae

Local Name - Adarak

Parts Used - Rhizome

Ethnopharmacological Uses - Half gram of turmeric, 1 tsp. gooseberry juice. 1 tsp. Tinospora cordifolia juice mixed and taken twice a day for a week.

Zizyphus jujuba

Family - Rhamnaceae

Local Name - Ber

Parts Used - Leaves

Ethnopharmacological Uses - Leaves (7no) together with 7 black peppers are grinded to a fine paste and the paste thus obtained is taken on empty stomach with rice-washed water.

Zizyphus mauriliana Lam.

Family - Rhamnaceae

Local Name - Ber

Parts Used - Leaf

Ethnopharmacological Uses - The leaves juice(15 ml) is taken twice a day for a week.

Discussion

A number of organizations within India are concerned with maintaining India's Traditional Medicine Systems. In addition, there is a wide spread development network, and established pharmaceutical industry and a wealth of botanical experts in the country. Until now, however, there has been little effort to document the volume and impact of national or international trade in India's medicinal plants. According to the latest figures, it costs around 800 million dollars to put a new drug on the market. When companies manufacture a product based on TK and convert it into a medicine, they "acquire" a product which is worth a few hundred million dollars. A USA based top pharmaceutical companies like MERCK, RANBAXY and SHAMAN are the classical examples. Such is the enormous potential hidden in these plants gifted by Nature. This rapid damage to natural habitats, thus threatening the very survival of several indigenous species. The present investigation is carried out by the intensive field exploration and interaction with the Baiga (tribal Healer) for nearly one year to identify the ethnopharmacological hepatoprotective medicinal plants. The data when crosschecked with the published literature, it was found that most of the uses are either less known or not recoded earlier. A total of 45 plants belonging to 32 families have been

documented for their therapeutic use against liver disorders. The plant parts used ranged from roots, leaves, rhizomes, stems, barks, seeds, flowers, fruits and in some cases the whole plant. The majority of the traditional medicines were prepared using water as the medium. In addition to pure herbal preparations, in some cases the drug was administered along with milk, jaggery, honey etc. These supplement ingredients may be used to enhance the effect of the herbal preparations or are simply used to make the preparations palatable. However, the exact role of these materials in curing the liver disorders is not clearly known as systematic investigation on the characterization of the active ingredients have not yet been made. The present study was unique in nature so far as the information is concerned. All the medicinal herbs reported in the paper are being employed as herbal drugs in various pharmaceutical preparations. During the study it is observed that the family Acanthaceae and Euphorbiaceae are dominantly used by the tribals to cure their various liver disorders followed by Malvaceae, Rubiaceae and Mimosaceae, Apocyanaceae, Menispermaceae, Caesalpiniaceae, Moraceae, Zingiberaceae, Solanaceae, Ascleiadaceae, Combretaceae, Rhamnaceae, Meliaceae, Rutaceae and others.

Conclusion

Even though the tribals use most of the wild plants in different ways in their day-to-day life, The food habits and healing systems are fast changing due to non- availability of genetic resources. The rich and untapped flora, which tribal societies have been using for food, medicine, etc need to be investigated with a view to develop new sources of proteins, fats, starches, alkaloids, therapeutic agents etc. Our ethnopharmacological studies shows that medicinal plants are still widely used by the tribal population. The tribals of Bilaspur district represent an invaluable, indigenous knowledge base, some of which are documented but by large to be explored. The ethnopharmacological knowledge of these tribals may provide a strategy for discovery of clinically useful compounds from plant sources as ethnomedicine is the mother of all other systems of medicine. The study revealed that whatever knowledge on plants exists with the people of the study area, they are on fast declining because lack of interest of local youth to learn the traditional knowledge from the old herbal healer. Therefore, greater efforts are required to document

traditional knowledge of the local people so as to prepare a comprehensive account of it, which will open new vistas in plant research that can fulfill the purposes of conservation and which are eco-friendly to nature.

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