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Herbal Ethnomedicine Employed In Traditional Health-Care System By The Deori Community Of Dhemaji District, Assam.

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Abstract

The Northeastern region of India is a repository of medicinal plants and herbs. It is a constituent unit of the Eastern Himalayan Biodiversity Region, which is one of the biodiversity hotspots in the country. In the present study, a field survey was conducted in five Deori villages of Dhemaji District, Assam, which is inhabited mainly by the Deori tribes helped to gather ethnobotanical information concerning 43 medicinal plant species belonging to 32 different families that are traditionally used as herbal medicines for treating different ailments since time immemorial. This study compiles the list of medicinal plants that are traditionally being used by the indigenous healers of the Deori community since prehistoric times. We have also documented the different parts of plants that are used, the diseases that are cured, the different methods of preparation and the mode of administration of the plant.

Keywords: Medicinal plants, Herbal, Deori community, Recipe, Indigenous tribes.

1. Introduction

Traditional utilization of herbs and plants as medicine for curing numerous ailments and diseases have been in practice since prehistoric times. Almost all the ethnic communities around the world practice traditional medicine for health-care. Traditional medicine maybe derived from plant source or animal source (Seth and Sharma, 2004). Plants are the key source of medicine in various traditional health-care systems and plant-based

traditional medicines are a major health care provider around the world primarily in underdeveloped and developing countries (Sen e*t al*., 2017). Even in the developed countries, herbal medicines are in great demand due to their efficacy and lesser side-effects (Kamboj, 2000).

Herbal medicines are often the only medicine in the under developed countries but they are re-emerging as alternative medicine in the developed areas (WHO Report, 1993). World Health Organization (WHO) reported that around 80% of the world's population depends on medicinal plants as their primary health-care source. The WHO reported around 21,000 plants utilized for medicinal purpose. 2500 species of these medicinal plants are found in India; 150 species of them are used on a large scale commercially. Being the largest producer of medicinal herbs and plants, India is called as botanical garden of the world (Seth *et al.*, 2004).

Phyto-therapeutic formulations are standardized herbal preparations containing complex mixtures of plant parts of one or more than one plant containing the active ingredients in the crude or processed state (Calixto, 2000). Medicinal plants are the source of natural molecules and compounds with therapeutic potential that provides the basis for detection of novel drug leads (Atanasov *et al.*, 2015). Natural products are continuing to be important source of leads for modern medicine (Harvey et al, 2015).

The North-East India situated within the Indo-Burma Biodiversity hotspot is a hub of endemic species of flora and fauna. It is a repository of medicinal as well as aromatic herbs and plants (Chakraborty *et al*., 2012). The North-East India is home to many indigenous ethnic tribes and communities. They follow different traditional healing practices (Shankar *et al*, 2012). Since time immemorial, these indigenous communities have been using various parts of medicinal plants for curing different kinds of ailments and diseases. The traditional knowledge of utilization of medicinal plants in health care have been passed on from generations to generations through practice.

Enough literature on traditional herbal medicinal practice by different ethnic communities of North-East India are available except the Deori community of Assam. Keeping in view all these aspects, the present study is an attempt to document the utilization of medicinal herbs and plants for treatment of different ailments by the Deori community of Dhemaji district of Assam.

2. Study Area

Dhemaji District is located between 94°12′18" E and 95°41′32" E longitudes and 27°05′27" N and 27°57′16" N latitudes on the northern bank of the river Brahmaputra in Assam. It is a floodplain area with an area of 3237 sq. km. Dhemaji is home to many indigenous communities and tribes like the Ahom, Deori, Bodo, Mishing, Sonowal-Kachari etc. For the present study, five Deori villages of Dhemaji District were selected as study sites, viz; Sripani, Dhunaguri, Gainadi, Raimyapur and Udaipur.

3. Objectives of the Study

a) To investigate about the ethnomedicinal utilization of different plant species traditionally for the treatment of different ailments by the people belonging to Deori community of Dhemaji District.

b) To analyze the methods and process of utilization of different medicinal plant parts.

4. Materials and Methods

The present study was conducted from August, 2021 to October, 2022. 15 households from each of the five study sites were selected as samples with a total sample size of 75 and accordingly survey was conducted. Primary data was obtained through survey with structured questionnaire. Secondary information regarding the process of utilization of different plant parts for treatment of different ailments were gathered through personal interview with the traditional healers and respondents. Data obtained is analyzed via reference to available taxonomic information and existing literature.

5. Results and Discussion

From the present study, it is noticed that the utilization of medicinal herbs and plants for treatment of various ailments and diseases is common among the Deori community. Herbal medicine has been prevalent as the primary treatment in the traditional health-care system of the Deoris. They prefer herbal formulations prepared by taking specific parts of particular plants in specific ratio for treatment of common ailments. A total of 43 species of plants belonging to 32 families have been recorded that are utilized for treatment of several diseases by the Deori community of Dhemaji district of Assam. Almost all the plant species recorded are locally available.

Table 1: Ethnomedicinal utilization of plant species for different ailments by Deori community of Dhemaji District.

Sl. No.	Name of plant species	Family	Common Name	Ailment	Parts of plants used	Method of Utilization
1.	*Acorus calamus*	Acoraceae	Bos	Menstrual problems	Rhizome	Juice of rhizome is consumed
2.	*Aegle marmelos*	Rutaceae	Bel	Piles	Fruit	Raw fruit consumed daily for 10 days
3.	*Allium sativum*	Amaryllidaceae	Nohoru	High Pressure, Epilepsy	Clove	2-3 pieces of raw garlic eaten with meals for 20 days to bring blood pressure to normal. Juice of garlic clove consumed for treating epilepsy.
4.	*Aloe barbadensis*	Asphodelaceae	Salkuwori	Burns, Skin Problems	Gel of leaves	Gel directly applied on the skin
5.	*Amaranthus cruentus*	Amaranthaceae	Morisa haak	Anaemia	Leaves and stems	Cooked and consumed as side dish
6.	*Averrhoa carambola*	Oxalidaceae	Kordoi	Jaundice	Fruit	Juice is consumed
7.	*Azadirachta indica*	Meliaceae	Neem	Blood purification,	Leaves	Grinded leaves are boiled in water and then the water is

				Cholera, Skin problems		consumed. Paste of leaves applied on infected skin area.
8.	*Bacopa monnieri*	Plantaginaceae	Brahmi	High Blood Pressure	Leaves	Juice of leaves mixed with honey is consumed.
9.	*Bryophyllum pinnatum*	Crassulaceae	Dupor tenga	Kindey and Urinary problems	Leaves	Juice of leaves is consumed.
10.	*Celtis tetrandra*	Cannabaceae	Hukuta	Skin problems	Leaves	Dried leaves are soaked overnight in water and this water is consumed
11.	*Citrus aurantifolia*	Rutaceae	Gul nemu	Intestinal worm, Diarrhoea	Fruit	Juice is consumed
12.	*Citrus grandis*	Rutaceae	Robab tenga	Bronchial Asthma	Root	Juice prepared with Citrus roots, fruit of *Terminalia chebula* and ginger is consumed by adding a bit of salt
13.	*Cinnamomum verum*	Lauraceae	Dalcheni	Diabetes	Bark	Cinnamon sticks are boiled in water and this water is consumed

14.	*Clerodendrum colebrookianum*	Lamiaceae	Nephapu	Diabetes, High Blood Pressure	Leaf	Tender leaves are boiled and then consumed
15.	*Costus speciosus*	Costaceae	Jomlakhuti	Jaundice	Rhizome	Juice of three 6 inches long root consumed with 200g milk.
16.	*Cucurma longa*	Zingiberaceae	Halodhi	Epilepsy, Headache, Menstrual irregularities	Rhizome	Smoke of burned raw roots is inhaled for treating epilepsy and headache. Juice of rhizome with milk is consumed for treating irregular menstruation
17.	*Eryngium foetidum*	Apiaceae	Mandhonia	Indigestion	Leaves	Consumed as condiment in curries.
18.	*Garcinia pedunculata*	Clusiaceae	Thekera	Diabetes	Fruit	Boiled and consumed as side dish
19.	*Hibiscus rosa-sinensis*	Malvaceae	Joba phul	Hairfall	Flower and leaves	Paste of flower and leaves applied to hair
20.	*Houttuynia cordata*	Saururaceae	Mosondoi	Diarrhoea	Leaves	Juice is consumed
21.	*Lasia spinosa*	Araceae	Chengmora	Arthritis	Leaves	Cooked leaves are consumed
22.	*Lawsonia inermis*	Lythraceae	Jetuka	High Blood Pressure	Leaves	Paste of leaves applied on head and sole of feet

23.	*Leucus aspera*	Lamiaceae	Durunbon	Pneumonia, Sinusitis	Leaves	25g juice of leaves consumed thrice daily for treating Pneumonia. 2-3 drops of leaf juice is put inside the nose for treating sinusitis
24.	*Mangifera indica*	Anacardiaceae	Aam	Diarrhoea	Fruit	Fruit juice prepared with ginger is consumed
25.	*Mentha virdis*	Lamiaceae	Pudina	Indigestion	Leaves	Juice of leaves extracted and consumed
26.	*Murraya koenigii*	Rutaceae	Narahingha	Stomach issues	Leaves	Consumed as curry or chutney
27.	*Ocimum sanctum*	Lamiaceae	Tulokhi	High blood pressure	Leaves	50g juice mixed with 2 tablespoon raw turmeric is consumed twice daily
28.	*Paederia foetida*	Rubiaceae	Bhedailota	Anaemia	Leaves	Cooked, then consumed
29.	*Perilla frutescens*	Lamiaceae	Hukloti	Menstrual problems	Leaves	Raw leaf extract is consumed
30.	*Piper nigrum*	Piperaceae	Jaluk	Cholera	Seeds	Juice of tulsi leaves prepared by adding *Piper nigrum* seeds is consumed.

31.	*Psidium guajava*	Myrtaceae	Modhuri	Diarrhoea	Leaves and fruits	Juice of tender leaves is consumed.
32.	*Phyllanthus amblica*	Phyllanthaceae	Aamlokhi	Anaemia, High Blood Pressure, Jaundice	Fruit	Raw, dried fruit or fruit juice is consumed.
33.	*Phylogacanthus thyrsiformis*	Acanthaceae	Titaphul	Jaundice	Flower and tender leaves	20g juice mixed with sugar is consumed twice daily for three days.
34.	*Rauvolfia serpentina*	Apocynaceae	Harpagandha	High Blood Pressure	Root	10 gram of juice two times daily is consumed
35.	*Ricinus communis*	Euphorbiaceae	Eri Gos	Eczema	Leaves	Paste of leaves applied on affected area
36.	*Saccharum officinalis*	Poaceae	Kuhiya	Urinary infection, Heart Disease	Stem	Juice of stem is consumed
37.	*Syzygium cumini*	Myrtaceae	Kola Jamuk	Diabetes	Fruit	Fruit and fruit juice is consumed
38.	*Tagetes erecta*	Asteraceae	Narji phul	Cuts	Leaves	Leaves are crushed and applied on cut to stop bleeding
39.	*Terminalia arjuna*	Combretaceae	Arjun gos	Heart Disease	Bark	100g of bark is grinded and boiled in

						1L of water and this water is consumed twice daily for nearly 18 days
40.	*Terminalia chebula*	Combretaceae	Hilikha	Jaundice	Fruit	6-7 fruit is grinded and consumed with jaggery
41.	*Tinospora cordifolia*	Menispermaceae	Amarlata	Diabetes	Stem	Crushed stem is soaked overnight in a glass of water and this water is consumed.
42.	*Vitex negundo*	Lamiaceae	Posotia	Eczema	Leaves and roots	Paste of leaves and roots mixed with sesame seeds is applied on affected area
43.	*Zingiber officinale*	Zingiberaceae	Aada	Pneumonia, Cough	Rhizome	Juice of ginger and Tulsi leaves mixed with honey is consumed.

The Deori community of Dhemaji district use about 43 species of plants traditionally for treatment of ailments such as jaundice, diarrhoea, diabetes, indigestion, epilepsy, menstrual issues, cough etc. Different parts of plants such as leaves, roots, rhizome, bark are used to prepare specific herbal formulations for particular disorder. They prefer to use herbal traditional folk medicine against these ailments rather than synthetic chemical drugs.

Almost all the ethnic communities of Assam practice phytotherapy and herbal ethnomedicinal systems for treating diseases. Borah and Bora (2020) documented the different plant species utilized traditionally for treatment of common diseases by the Deori community of Lakhimpur district, Assam. Sonowal and Barua

(2011) reported the traditional ethnomedicinal system practiced by the Tai-Khamyangs of Assam. Many researchers from time to time documented the traditional herbal ethnomedicinal practice among the Ahom tribe of Assam (Kalita *et al.*, 2010, Bailung *et al.*, 2016; Dohutia *et al*., 2016). Choudhury *et al.* (2012) documented the herbal medicines utilized for treating different ailments by the Chorei tribes of Southern Assam. Talukdar *et al*. (2020) reported 70 medicinal plants used for treating 25 ailments by the Garo community of western Assam. Basumatary *et al* (2014) documented the utilization of 44 species of plants for curing numerous ailments by the Bodo-Kachari tribe of Karbi Anglong district of Assam. Ethnomedicinal utilization of different parts of plants have been documented among Mishing community of Assam for the treatment of several diseases (Borah *et al*, 2009; Panging *et al*.,2017). Bora *et al*., (2016) reported the medicinal plants utilized in folk medicine for female health care in Assam. Taid *et al*., (2014) documented about 20 species of plants utilized by the traditional healers of Dhemaji district of Assam for curing reproductive health related disorders. Medicinal plants used against jaundice by different communitis of Assam have also been reported (Pandey *et al*., 1996; Bhattacharyya *et al.*, 2020). Hepatoprotective herbal medicine traditionally used in Assam have been documented (Borthakur *et al*., 2004; Deka & Nath, 2015). Reports on different plants having anti-diabetic properties utilized against diabetes by the traditional healers of North-East India have also been published by researchers (Hazarika *et al*., 2020; Kalita *et al*., 2014). Although literature is available regarding traditional herbal folk medicine but detailed scientific analysis on the efficacy, quality and safety of traditional medicine is lacking.

Traditional ethnomedicinal knowledge have led to new research and identification of potent therapeutic compounds (Atanasov *et al*., 2015). Herbal medicine is accepted to be a safe alternative to synthetic medicine by most people but it does carry some risks (Ernst, 2005). Complete information regarding composition of formulation of herbal medicine is lacking which seems to be a concern (Majumdar *et al*., 2019). Integration of herbal medicine into modern medicinal system must take into account the interrelated issues of safety, efficacy and quality (Fong, 2002). Uncontrollable quality of herbal medicine associated with parameters such as variability in harvest seasons, plant origin, processing etc. possess obstacle for internationalization and modernization (Yongyu *et al*., 2011). Proper documentation of the traditional herbal medicinal practice of the ethnic communities must be done with the utilization of advanced scientific and analytical tools. Accurate information regarding the quality, efficacy and safety of the herbal medicines prepared by the traditional healers is very crucial that requires more in-depth scientific studies.

6. Conclusion

The traditional ethnomedicinal knowledge prevalent among the various tribes and communities has great significance. Although the knowledge has been passed on from generation to generation, it has been preserved and prevailed through beliefs and practices. It has paved the way for new research and for discovering the potent molecules from the particular plant source that functions to cure a particular disease and has aided in drug designing. Proper analysis of the potent phytochemicals and their effects pertaining to cytotoxicity, genotoxicity etc. studies should be conducted to reveal the efficacy and safety of the phyto-remedies and for new drug invention. The North-East India being a hotspot of endemic medicinal plants call for more scientific explorations and analysis. Systematic scientific study and advanced technology must be integrated for proper documentation of the phytomedicinal utilizations that has been preserved through traditional knowledge among the indigenous ethnic communities.

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