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Indigenous Uses of Ethnomedicinal Plants Among Tribal Communities of Ajodhya Hill Region of Purulia District, West Bengal, India

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Abstract*: Ethnomedicinal knowledge has been used by human beings for the benefit of mankind for thousands of years. Mostly rural peoples primarily depend upon medicinal plants found in their surrounding locality towards the treatment of various diseases treated, as they are economically unprivileged in modern society. The district of Purulia is situated in the western part of West Bengal, encompassing the forest mainly in Ajodhya hills concerning in Jhalda, Balarampur, Bagmundi, and Arsha blocks. These areas are highly flourished with indigenous and Ethnomedicinal plant resources for a long time. The paper exhibits the Ethnomedicine practices of indigenous and ethnic communities as well as highlights its threat due to its overexploitation in an unscientific manner. It also highlights the importance and necessity of Ethnomedicinal plants in a proper way.*

Keywords: *Ethnomedicine, Indigenous community, Exploitation, Conservation. LPG*

INTRODUCTION

The people from traditional societies use plants, which have great potential to provide new and useful plant products for the benefit of the medicinal sciences. Ethno medicine is unable to attract modern civilization but plays a significant role in the diseases preventing ability since time immemorial. Majority of the rural peoples primarily depends upon medicinal plants found in their surrounding locality towards the treatment of various diseases and ailment. Cognitive, environmental knowledge among the rural peoples, especially tribal communities, concerning useful medicinal plants are helpful for the conservation of the cultural heritage of the tribal peoples and in-situbio diversity preservation. India has a rich source of medicinal plants distributed in different geographical regions. Purulia district is enriched with a wealth of forest resources, mainly in the Ajodhya hills region covering Jhalda, Balarampur, Bagmundi, Arsha blocks that are considered to be the major forest products growing area of the district. Indigenous and ethnic communities of the Ajodhya hill region are using medicinal plant resources for a long time, but their knowledge and practices are obliterated day by day. The traditional knowledge needs to be documented before the traditional practices are extinct. We have selected the Ajodhya hill region to explain the significance of such resources in the Ethnomedicinal requirements of the tribal people.

The rationale of the Study:

Raj (2018) finds that Traditional knowledge of ethnomedicinal plants is slowly eroding. The paper highlights that the exploration, identification, and documentation on utilization of ethno botanic resources are essential for restoration and preservation of ethnomedicinal knowledge about the plants and conservation of these species for the greater interest of human society. The paper concludes as the communities should be encouraged with improved cultivation techniques of commercially viable ethnobotanical species through capacity building, timely policy intervention, along strong market linkage. This will ensure income generation and livelihood improvement, and ultimate conservation of these species.

Badola, Pradhan, & K (2008) studied the use of ethnomedicinal practices by the Lepcha tribe in Dzongu valley, an officially demarcated reserve for the Lepcha community, bordering Khangchendzonga Biosphere Reserve, in the north district. This paper reports 118 species belonging to 71 families and 108 genera, under ethnomedicinal utility by the Lepchas for curing approximately 66 ailments, which could be grouped under 14 broad categories. This paper concludes that the changing scenario over time, both at the socio-cultural front and passing traditional knowledge interests from the older to the younger generation and rich ethnomedicinal wealth of the oldest tribe of Sikkim are discussed in the light of conservation strategies and

techniques to adopt.

Bhatiaa, PalSharmaa, R.K.Manhas, & KewalKumar, (2014) studied the Ethno-pharmacology that involves the investigation of the plants used by the traditional communities and further understood the pharmacological basis of these culturally important medicinal plants. The present study was conducted to enlist the medicinal plants used by the local inhabitants of the Udhampur district of Jammu and Kashmir, India. The results of this ethnobotanical survey reveal the rich wealth of indigenous knowledge associated with the villagers of the Udhampur district.

(Mishra, A, & Dhole,2016) reports that ethnomedicinal plants are used for the treatment of cuts and wounds by the tribes in the Koraput district of Odisha. The study encompasses a habit-wise analysis where the identified that herbs are dominated with 20 species followed by trees. Most of the plant species reported grow wildly in different habitats, and their properties are important in traditional herbal medicine. The most common forms of preparing crude drugs from plants are juice, paste, infusion, oil, powder, and ash.

Das & Choudhury (2012) show the dependence of the ethnic people on herbal remedies in their day-to-day life. The people, in general, were found to be having strong faith in traditional medicine. Most of them were found to thrive only on herbal medicine throughout their life. Traditional knowledge of such kind demands serious conservation measures. This research made a huge study and showed the use of plants with multiple uses in the tribal ethnomedicine of Tripura.

Singh & Singh (2012) describe the utilization of pteridophytes for the treatment of various gynecological and other related problems by the indigenous women of Pachmarhi Biosphere Reserve in Madhya Pradesh, mainly tribal women of *Korku, Gond, Bharia, Bhil, Mauria, Maria, Paria, Bhatara* and *Baigas* communities. The research shows how a large number of families used plant parts such as rhizomes, tubers, fronds, leaves, stem and spores as herbal medicine in treating 16 different gynecological/reproductive health-related diseases by the tribal women of *Gond, Korku, Bharia, Bhil,* and *Mabasi* communities of Pachmarhi Biosphere Reserve which contribute to about 18.66% of total pteridophytic diversity (134 species) of the area.

Mesfin, Tekle, & Tesfay (2013) analyze different types of traditional medicinal plants used by the indigenous peoples. The study was focused on identifying medicinal plants, disease treated, part of the plant used, methods of preparation, route of administration, ingredients added, etc. the research highlights that deforestation, soil erosion, overgrazing, and drought are the major factors that affect different medicinal plants in the study area. The research proposes that the community of Gemeda district should work incorporates with governmental and non-governmental organizations in order to sustain the traditional knowledge and the medicinal plant species for further generation.

Mussarat et al.'s (2014) study was to document and preserve ethnomedicinal knowledge use to treat different human ailments by traditional healers of Dera Ismail Khan Region, Pakistan. This study is to find out the nature of uses of ethnomedicinal plants for the prevention of different acute syndrome such as kidney function, gastro diseases, respiratory infections, skin infections, etc. The results showed the high dependency of local inhabitants on medicinal plants in meeting their primary health care needs. Moreover, the traditional knowledge has been restricted to elder people. Protection measures should be taken in order to conserve precious multipurpose species that are facing overexploitation.

(Dr. S Theophilies, January 2015) Analyses how diabetes is becoming more harmful day b-day which leads to multi-disease disorder. They also analyze the need and process to maintain the Physiology of water balance.

(MVSS BABU, March 2017) The paper highlights how environmental pollution and other factors like lifestyle, pattern, work pattern, and others make our life more complex in nature. In this paper, a new design of IoT based health monitoring system was discussed for emergency and efficient medical service for quick and early recovery.

Esquivel-García, Pérez-Calix, & Ochoa-Zarzosa, (2018) An ethno-pharmacological survey was carried out in this region to gather information on the use of medicinal plants and herbal preparations for treating dermatological affections, to disseminate the Purépecha indigenous knowledge and identifying promising plants for developing new formulations for cutaneous conditions. This study provides new information on medicinal plants used on the Purépecha Plateau to treat cutaneous diseases. Future pharmacological and toxicological investigations are required to demonstrate the efficacy and safety of these species for treating dermatological affections.

Jima & Megersa (2018) focused on the traditional medicinal plants used by local communities to treat human diseases. Ethnobotanical study of medicinal plants was carried out from June 25 to September 5, 2015, in Berbere district of Oromia region, Ethiopia. The study focused on documentation of medicinal plants used to treat various human diseases in the study area. The study focused on documentation of medicinal plants used to treat various human diseases. This research shows how the Local people possess traditional knowledge of medicinal plants to treat various human ailments; however, agricultural expansion and disinterest of the young generation became the major threat to medicinal plants.

Tripathi (2019) focuses on the importance, role, and

decaying naue of ethnomedicine. She also highlights the role of ethnomedicine in tribal health.

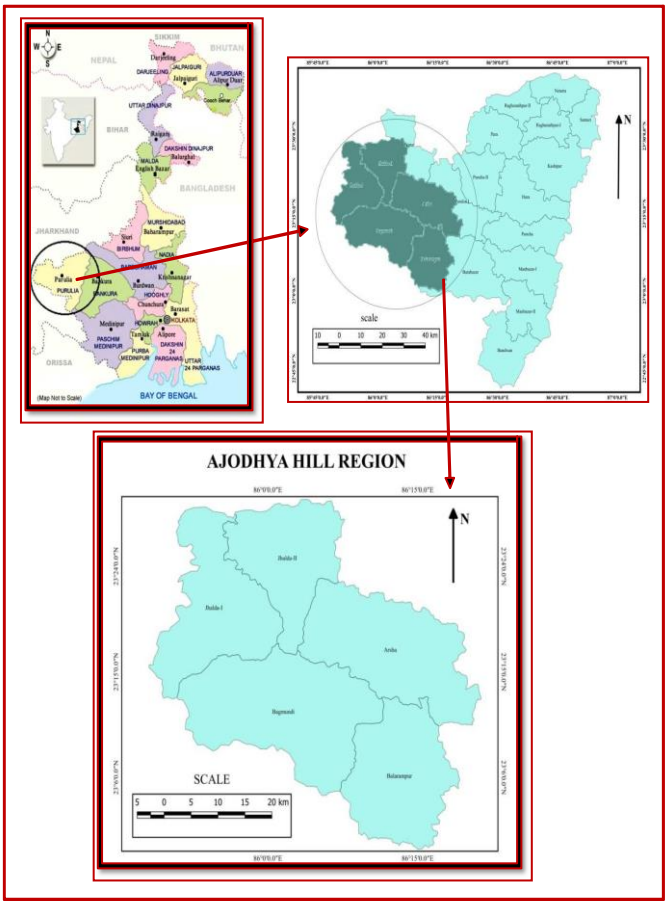


Fig. no-1, Location of the study area. NATMO, Bhuban image

STUDY AREA: - This study was conducted in the Ajodhya hills region. Ajodhya hill located at Purulia district in the state of West Bengal, India. It's a part of the Dalma hills and extends part of eastern ghat range. Ajodhya hills are located at $23^{0}13'00"$ N, $86^{0}06'00"$ E to $23^{0}27'00"$ N, $86^{0}77'00"$ E occupying an area of about 320 sq.k.m. Which covers portions of Jhalda, Bagmundi, Balarampur, and arsha blocks of Purulia district. The highest peak of Ajodhya hill is Chemtaburu, which is situated in Bagmundi block. The average elevation of this region is about 700 m. The general scenario of this region is undulating land with scattered hills. Total forest covers 36452.77 hector area, and 4500 hector area is under conservation. The total population of the Ajodhya hill region is 699056 in which a large portion is the tribal community, among them 60%aresanthals,18%areBhumij,6%areMundas,7% Sabars, 1% irhores, and 8% are mahatos according to census 2011.

OBJECTIVES: - The main objectives of the present study are-

- To establish the relationship between medicinal plant resources and tribal people of the study area.
- To highlight the significance of forest resources in the Ethnomedicinal requirement of the tribal people.
- To establish the role of Ethnomedicinal plants in the current modern civilized society.
- Nature and use of Ethnomedicinal plants for curing some common and rare diseases.
- To established the significant influence of Ethnomedicinal plants in tribal development.

MATERIALS AND METHODS: -

Qualitative and Quantitative measures have been used in our study. The study based on primary as well as secondary sources of data has been used. Plants samples were collected and documented through a few fields surveys in the Ajodhya hill region (Bagmundi, Balarampur, Jhalda, and arsha blocks). The information from the local peoples and tribal communities about Ethnomedicinal plants identification and their uses helps us a lot in our study.

To select the region mentioned above for inquiry census data, land use maps, GIS maps prepared by the Zila Parishad office of Purulia district, and topographical maps were referred to explore the features of Ethnomedicine practice by tribal people. Among secondary data, some literature reviews, annual government reports were followed. Some Quantitative techniques (sampling, diagram, etc.) have been using to fulfill our research objective.

OPERATIONAL DEFINITION:

***Indigenous Knowledge*- Knowledge** that involves an intimate relationship with the belief systems and that has been accumulated through a long series of observations transmitted from generation to generation through language, practices, and rituals. It is a set of perceptions, information, and practices that guide local community members in terms of how to best use their local resources, both environmental and cultural.

***Medicinal Plant*- Medicinal plants**, also called **medicinal herbs**, have been discovered and used in traditional medicine practices since prehistoric times. Medicinal plants are widely used in non-industrialized societies, mainly because they are readily available and cheaper than modern medicines. The annual global export value of the thousands of types of plants with suspected medicinal properties was estimated to be US$2.2 billion in 2012. (http://www.traffic.org/medicinal-plants/, 2018) In 2017, the potential global market for botanical extracts and medicines was estimated at several hundred billion dollars(Ahn, 2017). In many countries, there is little regulation of traditional

medicine, but the World Health Organization coordinates a network to encourage safe and rational usage. Medicinal plants face both general threats, such as climate change and habitat destruction, and the specific threat of over-collection to meet market demand(Lichterman, 2004).

ETHNOMEDICINE: -

Ethnomedicine is the study of the traditional medicine practiced by various ethnic groups and especially by indigenous peoples. Ethnomedicinal research is interdisciplinary, in its study of traditional medicines. It applies the methods of Ethno botany and medical anthropology. Ethnomedicinal knowledge was only preserved by traditional oral practice.

TABLE: 1:- Medicinal plants used by the tribal peoples of Ajodhya hill region, Purulia district, West Bengal, India:-

Serial number	Scientific name	Local name	Plant's parts used	Diseases treated
1	Calotropis gigantea	Akanda,madar	Root, Leaves	Fever, body swelling of cattle
2	Achyranthes aspera Linn	Apang, chirchiti	Root, Seed	wound
3	Ziziphus oenoplia Mill	Sia kul	Root	Anthelmintic
4	Tinospora cordifolia	Gurchi, latgulanj	stem	Venereal diseases, fever
5	Abrus precatorius Linn	Gunja, kead	Root	Fever, skin diseases, eye diseases
6	Breynia retusa Alston	Jirul	Leaves and Root	Cough, Pneumonia
7	Acorus Calamus	Boch	Rhizome	Louse infestation
8	Ricinus communis	Redi	Seed, leaves	Headache, purgative
9	Strebluas asper	Sheora	Bark, Leaves	Antiseptic, Bronchitis
10	Sida cordifolia	Berela	Root, Leaves	Blood vomiting
11	Hemidesmus indicus	Anantamul	Root	Fever, skin diseases,Blood purification
12	Argemone Mexicana Linn	Sialkanta, Rangini, Bakul kata	Stem, Seed	Sore eyes, Red eyes, Body sores
13	Clitoria ternatea	Aparajita	Root	Infertility
14	Datura metel	Datura	Leaves	Alopecia
15	Osmium canum	Ban tulsi	Leaves	Cough, skin diseases
16	Mimosa pudica	Lajjabati	Root	Infertility
17	Clerodendrum indicum	Ghnetu	Root	Veterinary use
18	Alangium salvifolium	Akarh	Whole plant	Snake bite, Urinal infection
19	Terminalia chebula Retz	Haritaki	Fruits	Intestinal problem

20	Zingiber officinale Rosc	Adi, Ade	Rhizome	cough
21	Thysanolaena agrostis Nees	phuljharu	Root	Fever, Worm sores (cattle)
22	Allium cepa Linn	pianz	Leaves, bulb	Burn injury, Diarrhoea, wounds
23	Cynodon dactylon Pear	Durba	Stem, Leaves	Headache, ear pain
24	Emblica officinailis	Amlaki	Leaves, Fruits	Hair fall,
25	Asparagus racemosus	Shatamuli	Root, Leaves	Hypertension, High blood pressure
26	Glycosmis pentaphylla	Banlebu	Leaves, Fruits	Tonsillitis, leech infection
27	Cassia fistula Linn	Sonali	Fruits, leaves	Constipation
28	Cissus repanda vahl	Bod nari	Whole plant	Sannipat disease (cattle)
29	Eulophia nuda Lindl	Tipoi, Tipui	Tubers	Belly-ache
30	Glossogyne bidens(retz.) Alston	Tejraj, Nakdana	Whole plant	Headache, Vomiting
31	Andrographis panicultata wall	kalmegh	Whole plant	Fever, Liver problem, Diarrhoea
32	Ichnocarpus frutescene R. Br.	Dudhilata, koe lata	Root	Syphilis
33	Abutilon indicum Linn. Sweet	Kakhi, Jhamp	Root	Tanni disease
34	Polygonum plebeium R.Br	Munia, Muni ara	Whole plant	Diarrhea, Dysentery
35	Randia dumetorum	Boi bindi	Bark	Fever
36	Scoparia dulcis Linn	Ban dhoney	Whole plant	Gout, Indigestion
37	Clerodendrum infortunatum non-Linn	Bhant, Gokhola	Root, Leaves	Headache
38	Vitex peduncularis	Bhadu, Simkata	Leaves, Stem-bark	Chest pain
39	Scilla indica Baker non-Roxb	Piri kulai ba	Bulb	Headache
40	Azadirachta indica	Neem	Leaves, Stem	Leprosy, Eye disorders, skin disease, bloody nose, Stomach upset, Fever, Liver problem.

Data source:- Based on a Questionnaire survey of forest villagers in Ajodhya hill region, 2017/ Fig.no-2, Pictures of various medicinal plants Source: - Primary survey, Captured by author.

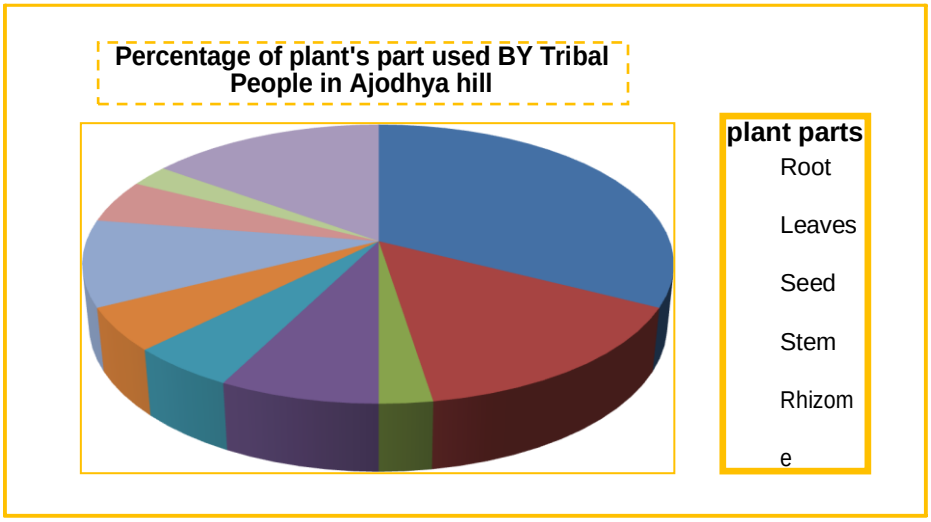
RESULTS AND DISCUSSION: - The tribal people of the Ajodhya hill region evolved a symbiotic association with Ethnomedicinal plants for thousands of years. They are highly dependent on Ethnomedicinal plants for primary health care and curing some rare diseases, as they are economically backward from modern society. They have limited resources to use, but they utilized them in a proper way for surviving. In our present study, we have identified forty Ethnomedicinal plants by primary survey with the help of local people. The tribal people mostly used Akanda, Redi, Aparajita, Apang, Haritaki, Adi, Durba, Amlaki, Tulsi, Jirul, Neem, etc. Ethnomedicinal plants for curing different diseases. The plant's parts mostly used are roots, Leaves, Seed, Stem, Rhizome, Bark, Fruits, bulbs, and Tubers, etc., and in some cases, the whole plant (fig. 2). Among these identified plants, Root is mostly used plant's part by the tribal peoples. Among diseases commonly treated by Ethnomedicinal plants are

Fever, headache, skin disease and diarrhea, etc. the Ethnomedicinal plants used in a processed way by the tribal peoples for curing those diseases, such as- juice of fresh leaves of Tulsi mixed with honey, collected from the jungle,

is drunk one tablespoon twice a day for curing cough and cold. The stem of Durba is pasted and rubbed on the forehead to treat headaches. Dry leaves and bark of Anantamul have been mixed with boiled water used for bathing during pox to cure it. Leaves of Neem are eaten by frying or boiling it for blood purification, and Neem leaves are also very much antiseptic and used in many ways for curing it.

Climate change: Our planet is warming faster than any time in the past 10000 years with the changes. The planet has ego adopt this condition, and if they are not able to do this, there is going to be extinct.

Change in land use pattern: Currently, land has used mostly for establishing settlements, industries, and various other purposes, which is causing degradation of forest resources.



Source: - Computed by author. Fig.3 - Percentage use of plant's part by tribal people in Ajodhya hill region.

The above diagram represents Percentage use of plant's part in Ajodhya hill region by tribal peoples. More than 30% of plant parts used is Root followed by Leaves and Whole plant about 15% after that about 7.5% is Stem and other parts have used in very small percent, equal or less than 5%.

DECAY OF ETHNOMEDICIMAN PLANTS: - Ethnomedicinal plants have been used for thousands of years, but they face some damage by several physical and anthropogenic causes. Those are -

Overuse and overexploitation: extensive use of forest products such as wood, bark, leaves, rubber, food, fodder, fuel, etc., is causing reduction of forest resources.

Agricultural expansion: Expansion of agricultural areas for increasing production of food crops causing reduction to forest areas.

***Deforestation*:** In recent times cutting of trees done in an unscientific manner, which leads to degradation of forest, which ultimately leads to deforestation situation.

Increasing human settlement*:* Due to the rapid increase in population, the demand for establishing a settlement for humans is increasing day by day, destruction of forest occurs.

Timbering: In recent times, timbering industries are growing very fast, for supplying woods for timbering industries cutting of forest done in an excessive manner, which is the considerable reason of forest degradation.

Development and Availability: Due to the effect of LPG, Allopathic medicine is cheaper and be effective within a short time. Now people are trying to believe, especially the younger generation, that any type of disease can be treated by this allopathic medicine quickly and easily.

SUGGESTION AND CONCLUSION: - Human well-being in both rural and urban areas depends on a diverse array of wild plant products from an even more diverse array of wild plant species. This includes species used for their medicinal and aromatic properties. An estimated 50,000–70,000 medicinal and aromatic species are harvested from the wild, with the annual global export value of pharmaceutical plants alone being over USD2.2 billion in 2011. From the above discussion, it is evident that there is a very well-developed Ethnomedicinal system present in Ajodhya hill region, Purulia district, West Bengal, India. Some of these Ethnomedicinal plants are at the point of extinction. Ethnomedicine is a traditional knowledge that should be preserved to save human lives from Exploitation and over-dependency on Alternative medicine. (Tripathi, 2019). These resources not only help the indigenous people to live as well as it maintains the ecological balance on the earth. This indigenous knowledge of ethnomedicine is usually practiced in the backward region by the particular community. It has

been utilized by the ojha, Roza, Janguru, kobiraj to treat diseases. But today, these people are being neglected due to educational and technological advancement. Simultaneously, as per the view of old medicine men, the number of medicinal plants is being decreased due to lack of cultivation, urbanization and decreasing forest areas, overgrazing by animals, etc. The indigenous person believes this traditional medicinal system is the best way for treatment and healing of not only small-scale diseases but also makes a link between nature and society. Necessary steps should be taken to preview the extinction of these highly medicinal important plants. To avoid biodiversity extinction, some measures should have taken-cultivation of rare medicinal plants, the establishment of an herbal medicinal bank, special training for enhancing and spread of this indigenous knowledge and practices, as well as conservation and balance between nature and Users.

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