



Review on Ethno Medicinal Activities of Wild Varieties of Orchids used by the Ethnic Group of Northeast India

Tahid Alam^{1*}, Bapi Ray Sarkar¹, Pooja Sharma Luitel¹, Arup Kumar Gorai², Ganesh Dey¹, Abdul Hadi Umam³, Tasrina Rahman⁴, Debajit Sikdar¹, Ikram Hussain³ and Abhishek Guha Roy⁵

¹Department of Pharmaceutical Technology, University of North Bengal, Darjeeling – 734013, West Bengal, India; tahidalam108@gmail.com

²Techno India University School of Pharmacy, Bidhannagar, Kolkata – 700091, West Bengal, India

³Rahman Institute of Pharmaceutical Sciences and Research, Tepesia, Bamunkhat – 782402, Assam, India

⁴Pratiksha Institute of Pharmaceutical Sciences, Guwahati – 781026, Assam, India

⁵School of Pharmacy, The Assam Kaziranga University, Jorhat – 785006, Assam, India

Abstract

Ethno medicine broadly refers to traditional medical practices concerned with the social and cultural impacts of health, sickness, and illness related to healthcare and healing techniques. The Orchidaceae family is one of the world's oldest and largest flowering plant families, with over 800 genera and between 25000 and 35000 species. According to the Indian government, 70% of the population practice traditional Indian medicine. In the Northeastern region, there are almost 200 tribes, and they deal with various kinds of orchids found in this region, which have potential medicinal values and traditional indigenous use, which can be effective against multiple diseases. It is essential to keep medicinal plants and perform studies on various kinds. Many plants have yet to be studied for their numerous medicinal potentials. A multidisciplinary approach is necessary to develop potentially helpful drugs using proper pharmacological investigation.

Keywords: Epiphytic, Ethnomedicine, North–East India, Orchids, Terrestrial

1. Introduction

Nature, which holds a commendable importance, is a source of wellness and goodness for humankind. Natural drugs are one of the most important needs in daily life, and their history is as old as human civilisation. There is no debate about how plants were the only form of chemistry for humans since ancient lineage. Today, a lot of information about various plants has been outlined using sources of different studies, work, and research. It is believed that there are over 350,000 plant species (including plant seeds, bryophytes, and ferns), of which 287,655 have been recognized as of 2004¹.

Orchids are nature's most beautiful and widely dispersed flowering plant groupings. The distribution of orchid genera by state in Northeast India highlights the great diversity that this region offers to the Orchidaceae

family (Figure 1), which is one of the oldest and largest families of flowering plants in the world, with over 800 genera and between 25,000 and 35,000 species. In a similar vein, the state-by-state distribution of orchid species reveals Northeast India's significant contribution to the worldwide variety of Orchidaceae (Figure 2), exhibiting its diverse flora within this venerable and expansive plant family. The Orchidaceae family is one of the world's oldest and largest flowering plant families, with over 800 genera and between 25000 and 35000 species where the Northeastern part of India also contributes to the distribution of a wide range of Orchid genus and species.

Orchids are a spectacular group of flowering plants that can be found all over the world, from the tropics to high altitudes². "Orchid" is a Greek-derived word meaning "testicles". This explains why orchids were used

*Author for correspondence

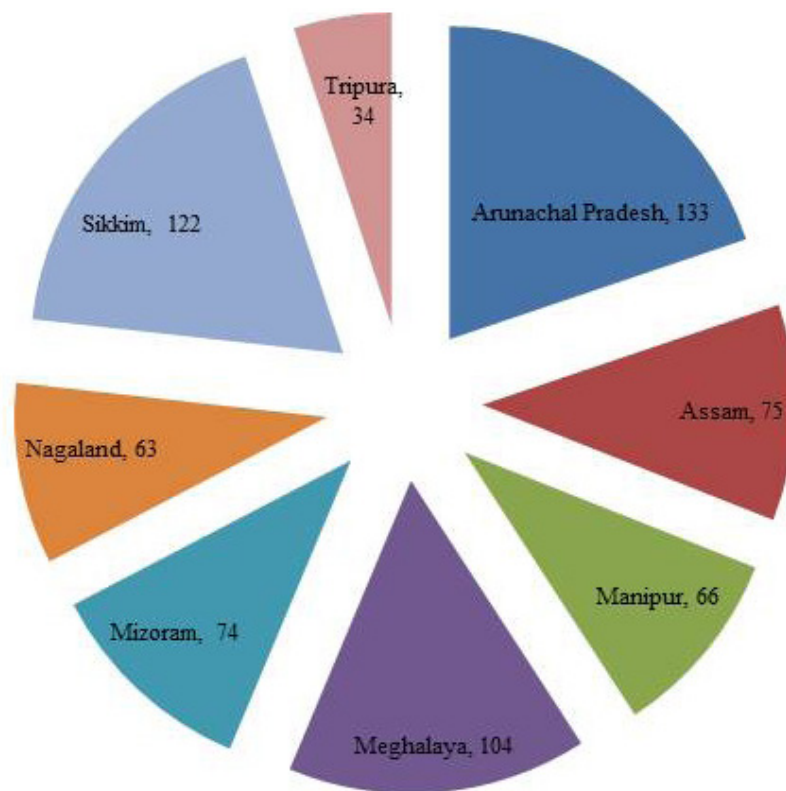


Figure 1. State-wise distribution of Orchid's genus of Northeast India.

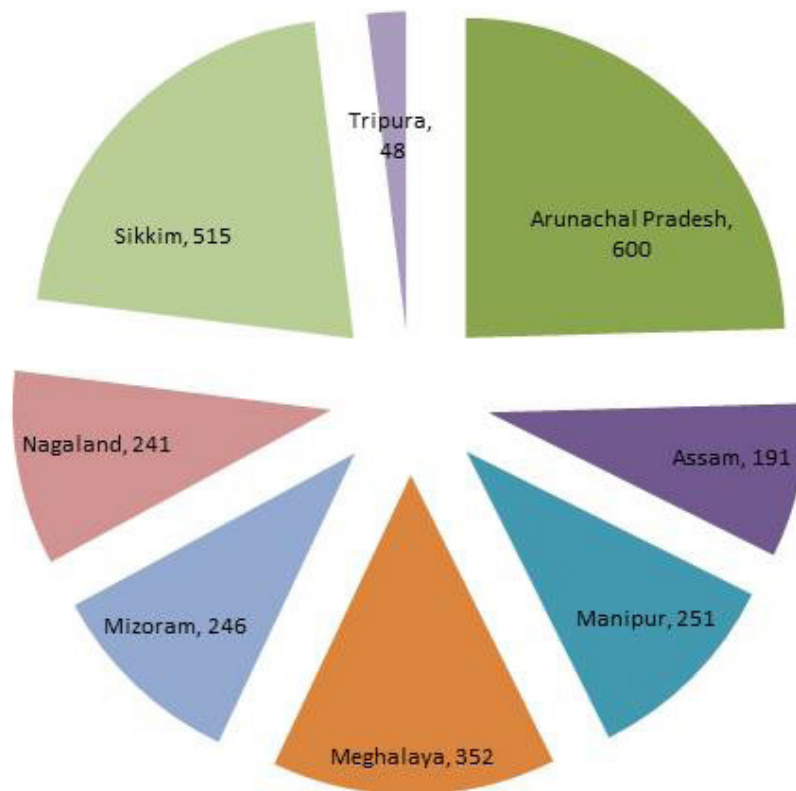


Figure 2. State-wise distribution of Orchid's species of Northeast India.

as aphrodisiacs in ancient cultures. The Greek word "orchis" was initially used by Theophrastus to define a set of plants whose roots were dried and chopped and were employed in ancient medicine as antidepressants, sex stimulants, and nourishing drinks³. Many orchids are used as botanical medicines and food all around the cosmos by numerous different cultures and tribes, even though orchids are primarily grown as ornaments^{4,5}. Though orchids are mostly found in tropical and subtropical regions, they are also found more or less in all regions around the world other than hot deserts and icy Antarctica⁶.

One of the most well-known medicinal systems that have survived and flourished for thousands of years is *Ayurveda*. This system will endure for many millennia due to the extensive knowledge of natural medicine, the link between the nature of the human body's constitution and function, and the forces of the cosmos that interact and affect living things⁷. The lack of financial, material, and human resources and the provision of adequate healthcare services to populations in underdeveloped nations has become a significant problem. The imbalances that exist in these countries' urban and rural communities exacerbate the problem. The vast majority of people living in underdeveloped nations live in rural areas; however, these are the most underserved portions of the population in terms of medical care. In India, at least 80% of the population lives in the countryside⁸. It is anticipated that over one-third of the global population would frequently lack access to affordable, essential drugs. In other words, it seems improbable that modern medicine will allow the great majority of individuals on the earth to have a viable treatment option. On the other hand, traditional medicine is easily accessible, even in remote areas. Due to its accessibility locally and low cost, the great majority of people in developing nations can afford it. According to the Indian government, 70% of the population uses traditional Indian medicine^{9,10}. Several diverse cultural backgrounds residing in India use their traditional medicine system for primary health care from generation to generation¹¹.

It is well known that traditional medical systems have traditionally contributed significantly to meeting the need for health care on a worldwide scale. They're still doing it, and they'll keep having a big impact in

the future. India is unique in this regard since it has six recognized medical systems. Along with Naturopathy and Homoeopathy, they also include *Ayurveda*, *Siddha*, *Unani*, and *Yoga*¹².

More than 80% of the population of human beings in poor countries still relies on traditional healthcare systems (WHO, 2008), and 65% of the people in India, conventional medicine is the only source of health treatment (WHO, 2002). It is not only affordable, but it is also deeply ingrained in their minds^{13,14}.

In India, a vast number of people from various ethnic origins use their own, centuries-old traditional medical system for providing basic healthcare. According to studies, 70–80 % of rural Indians seek medical care through non-allopathic (*Ayurveda*, *Siddha*, *Unani*, and homoeopathy) means, with herbs playing a significant role in these alternative medicinal systems¹⁵.

Conventional medicine is defined by the World Health Organisation (WHO) as: "Traditional medicine is the total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness"¹⁶.

2. Tribes in Northeast India and their Origin

The tribes are indigenous to the land and live in the North-Eastern part of India. They are descended from the ethnic groups of Tibeto-Burmese, Proto Austrioids, and certain Indo-Mongoloids¹⁷. They may trace their ancestors back to Mongolia and South-East Asia. Many tribes continue to follow the traditions of the *Ramayana* and *Mahabharata* because they feel themselves to be a part of that age¹⁸.

255,000 sq. km of area is occupied by Northeast India¹⁹. Representing just under 8% of the nation's total land area, North-East India is composed of eight states. It is home to around 225 tribal communities²⁰.

India's northeast is a part of the world's biodiversity hotspots, with the most diverse plant species in the country²¹. The Northeast (NE) region (situated between latitudes 21°34'N and 29°50'N and longitudes 87°32'E and 97°52'E.) is renowned worldwide for its genetic riches and acts as India's biogeographical gateway and

is home to two biodiversity hotspots^{22,23}. A significant number of tribes call Northeast India home. There are 145 tribal communities, 78 of which are substantial, having populations of above 5000 people. They account for around 12% of India's overall tribal population and 25.81% of North-East India's total population²⁴. The proportion of the total population with tribal populations varies greatly throughout the eight regions in north-eastern India²⁵ (Figure 3). The proportion of indigenous people in the total residents of Assam accounts for 12.46%, Manipur for 40.88%, and Tripura for 31.76%, in that order. The fraction of tribal people to the total population of Arunachal Pradesh, Meghalaya, Nagaland and Mizoram is relatively high. Now, in Mizoram, indigenous people account for 94.43% of the entire (Figure 4).

2.1 Tribes of Assam

In terms of population and surface area, the largest state in that region is Assam. It is situated within 24° to 28° and 49.8° to 96° north latitude and east longitude, respectively. A total surface area of 78,438 km² (30,285 sq. miles) is occupied by Assam²⁴. Assam is bordered by Bangladesh and Mizoram to the south, West Bengal to the west, Nagaland and Manipur to the east, and Arunachal Pradesh and Bhutan to the North. The

Deccan Plateau (Karbi Anglong), the Northern Plains (Brahmaputra Plain), and the Northern Himalayas (Eastern Hills) are three of India's six physiographic dissections that are present in Assam. Twenty-three indigenous groups make up Assam's residents, which is 12.82%. Assam's ethnic group may be categorized into two communities: plain and hill communities. The plains communities are located in the state's plain zones, whereas the hill settlements are primarily found in the state's hilly regions. The Bodo Kacharis are Assam's biggest tribal community, which records for 38% of the state's total tribal residents. Adjacent to the Bodo Kacharis, the Mishings make up 16.16% of the total tribal residents in the autonomous districts of Karbi Anglong and North Cachar Hills. The tribal population in Assam is divided into districts, with tribals accounting for 65.54% of the total population in North Cachar Hills. Tribals account for 51.56% of the district's total population in Karbi Anglong. They account for 43.92% in Dhemaji district and 41.15% in Kokrajhar district. There are substantial ethnic residents in the districts of Kamrup, Dibrugarh, Karimganj, Hailakandi, and North Cachar Hills. The percentages are 11.83 in Kamrup, 11.76 in the North Cachar Hills district, 8.68 in Karimganj, 7.93 in Dibrugarh, and 6.72 in Hailakandi²⁴⁻²⁶.

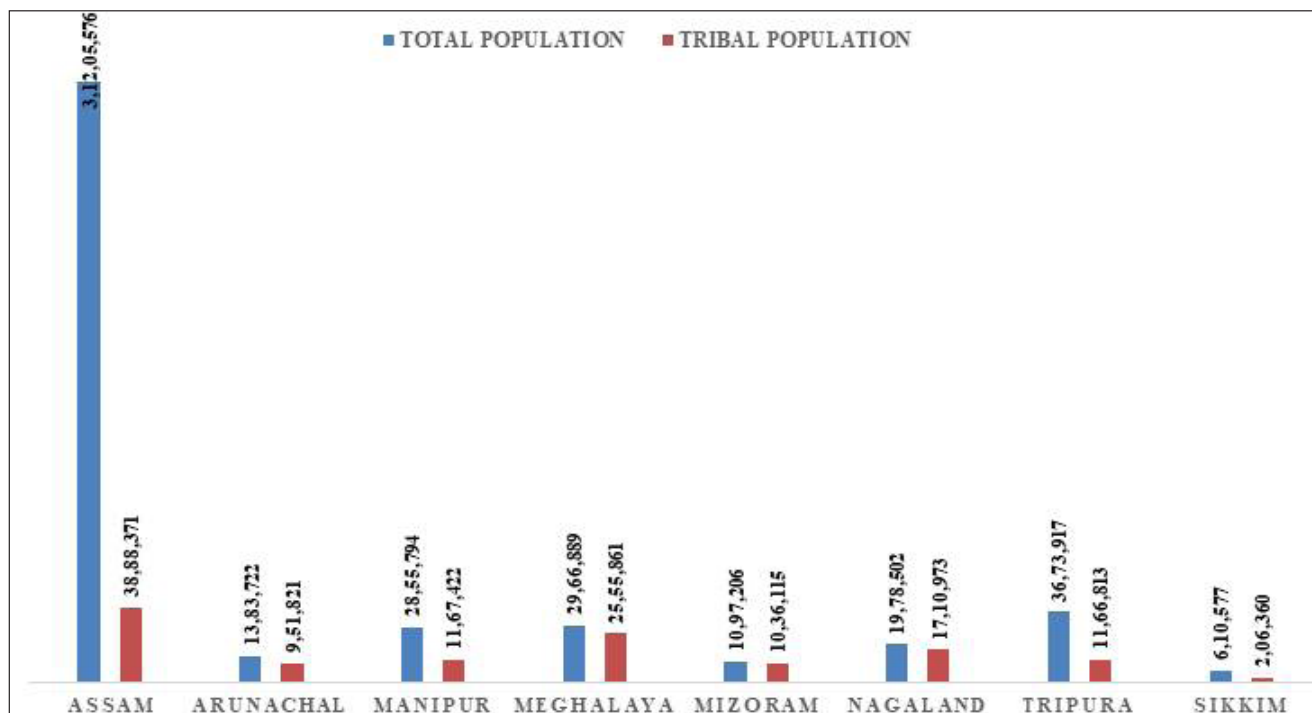


Figure 3. State-wise total population and tribal population of Northeast India.

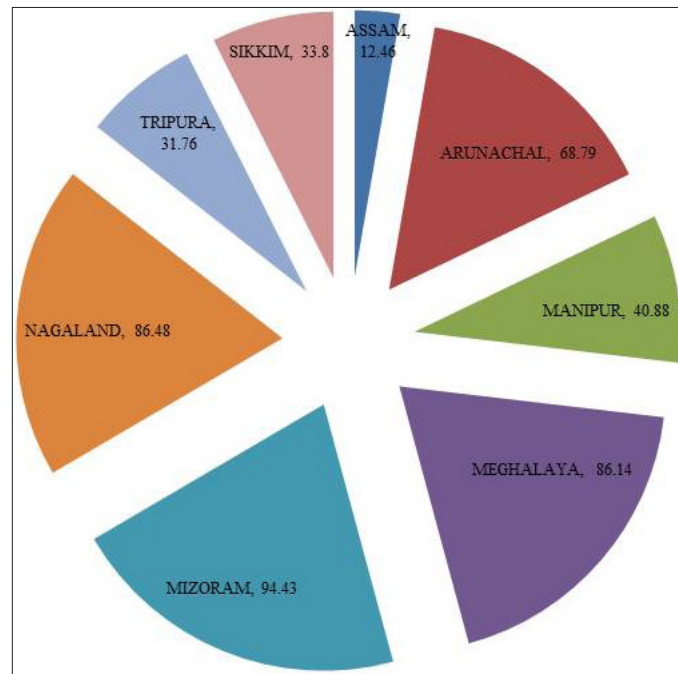


Figure 4. State-wise percentage of tribal population of Northeast India.

2.2 Tribes of Arunachal Pradesh

Arunachal Pradesh, which translates as "Land of the Rising Sun"²⁷, known as a territory of the Indian subcontinent, has been mentioned in Hindu literature in prehistoric, like the epic poems Ramayana and Mahabharata and the Kalika-Purana. It is a rocky region in the deepest northeastern part of the country, bounded to the west by the empire of Bhutan, to the north by the Tibet Sovereign Province of China, the Indian states of Nagaland and Assam border the region to the south and southeast, respectively, while Myanmar (Burma) borders it to the southwest²⁸. The state capital is situated at Itanagar.

Arunachal Pradesh is a mountainous region in northeast India tucked in the Himalayan foothills. 83,743 km² (32,333 sq miles) area occupied by the state. The geographical region is 98% land, with 80% forest cover and 2% water²⁴.

Almost two-thirds of the inhabitants in the state are legally classified as Scheduled Ethnic group, a phrase that typically refers to ethnic peoples who do not fit into the dominant Indian social system. The Sherdukpen, Monpa, Nissi (Nishi or Dafla), Apa Tani, Hill Miri, and Aka are among the major ethnic groups in western Arunachal Pradesh²⁹. The Adi are the state's principal ancestral group and dwell in the central area. The

Mishmi live in the northeastern highlands, while the Wancho, Nocte, and Tangsa live in Tirap's southeastern area³⁰. The indigenous peoples of the state largely segment related rural lives and vocations; many are survival farmers who also hunt, fish, and gather forest yields to amplify their diet. The terrain is characterized by scattered settlements and solitary farmsteads. Because of the region's remarkable orchid breeding, Arunachal Pradesh is moreover acknowledged as "Orchid Paradise"³¹.

2.3 Tribes of Manipur

Manipur consumes residents of 1,420,953 people and strong tribal beliefs despite its size of 22,356 square kilometres. Manipur's population and tribes include the Naga, Meities, Mizo, Kuki-Chin- and other civilizations.

Manipur is colonized by 29 groups, 22 of which are Scheduled Ethnic groups (75.86% as opposed to the 13.72% domestic average²⁴).

In this stage, three separate human aggregates exist. The Loi, Pangal, Yaithibi, and Thanga are also part of the Meiti people. The Naga are another earlier group that includes the Tangkhul, Mao, Kabui, Maram, Kacha, Marim, and Tarao. The Hmar, Gangte, Thadou Paite, Zou, Vaiphei, Aimol, Koiring, Kom, Chote, Chiru, Langang, Koirao, Anal, Moyan, Thangal, and Monsang are among the Kuki-Chin^{29,30}.

2.4 Tribes of Mizoram

The Mizo people were previously divided into several ethnic groups and given the cumulative name *mi* (man) *zo* (either mountain or cold) because their fellow citizens saw them as fierce people from the high frigid mountains. There are several ethnic groups among the Mizo people, including the Pawis, Paites, Pangs, Lusei, Hmars, and Raltes²⁴.

The present population of Renthlei, Chawngthu, Zowngte, Khwlhring, and Khiangte consists of 15 separate communities, and they are no longer regarded as distinct groupings. Tribes such as the Ngente, own identities. Hmar, Pawi, Lusei, Mara, Paite, Bawm, Ralte, Tlau, Hualngo, Baite and Pang are among the communities that retain a sense of identity^{29,30}.

2.5 Tribes of Meghalaya

Meghalaya, or "Abode of the Clouds," is a tiny state south of Assam with a range of 22,429 square kilometers³². It has a population of 29, 64,007 people Long ago, colonial rulers dubbed it the "Scotland of the East"³³.

2.6 Tribes of Nagaland

As the 16th State of the Indian Union, Nagaland was lawfully established on December 1st, 1963. Nagaland is made up of the former Assam Naga districts and the Tuensang border divisions. The Chakesang, Angami, Chang, Ao, Lotha, Chirr, Khiamngam, Konyak, Phom, Sangtam, Makware, Sema, Rengma, Yimchunger, and Zeliang are the most populous Naga tribes^{29,30} and is one of the world's key biodiversity hotspots (Indo-Burma area)³⁴. Assam lies to the west, Manipur to the south, Arunachal Pradesh to the north, and Myanmar to the east encircle Nagaland. It is located at 93°20'-95°15' E and 25°6'-27°4' N³⁵.

2.7 Tribes of Tripura

Tripura, India's second-smallest state, attained statehood on January 21, 1972. The tribals, who have a rich and diverse culture, are mostly from the Deobarma, Chakma, Reang, Usai and Halam groups. Tripura is home to 32 distinct ethnic groups, Noatias, Riangs, Chakmas, Maghs, and Jamatias are among them^{29,30}. The most numerous Scheduled Ethnic groups are the Riangs, Jamatias, Chakmas, Halams, Maghs, and Noatias³⁶; 3.66 million people live there.

2.8 Tribes of Sikkim

Sikkim is bounded by Tibet, Bhutan, and Nepal. It is home to Kanchenjunga, India's highest mountain range. It has glaciers, alpine meadows, and Buddhist temples from the 1700s^{37,38}.

In the 2011 census, tribes encompassed 8.6% of India's residents, with 427 ethnic groups nationwide. North-East India, housing nearly 200 ethnic groups, stands as one of the world's most culturally diverse regions.

3. Methodology

To summarize the current evidence regarding medicinal orchid plants, a systematic review of the literature was conducted. Data were collected from secondary sources, primarily from government websites and State Medicine Plant Boards. Additional references were sourced from research papers, books, and articles to aid in data interpretation. This review also included an intensive survey of locally available information on the use of traditional herbal medicine, gathered through personal interviews and literature surveys. This comprehensive approach ensured a thorough understanding of the medicinal applications of orchids.

4. Use of Orchids as Ethno Medicine

Orchids have long been valued in Northeast India, not just for their aesthetic qualities but also for their deeply rooted ethno medicinal uses (Table 1). Many orchid species have been used medicinally in the region's diverse cultures, providing treatments for a range of illnesses³⁹. From treating fevers and digestive disorders to serving as aphrodisiacs and aiding wound healing, orchids hold a significant place in traditional medicine practices of Northeast India^{40,41}. The deep knowledge of orchid usage that Indigenous societies have passed down through the years highlights the significance of these plants in holistic therapeutic methods^{42,43}. Research and conservation initiatives in Northeast India and other regions are still motivated by the orchids' ethnomedicinal legacy, even as contemporary science investigates the potential of these gorgeous blossoms for therapeutic purposes.

Table 1. Ethno medicinal uses and distribution of orchids found in Northeast India

Name of the plant	Habitat	Availability	Part used	forms	References
Rheumatism and Arthritis					
<i>Acampe carinata</i> (Grif)	E	AS (Dhemaji district)	Root	paste	44, 47-49, 61-63
<i>Acampe praemorsa</i> (Rox)	E	AS/AR/MZ/MG/MN/TR/SK/NG	Root	paste	44-51, 53, 54
<i>Acampe papillosa</i> (Lindl.)	E	SK	Root, leaves	Dried decoction	44-49
<i>Bulbophyllum sterile</i>	E	AS/MN/MEG	Pseudobulbs	Fresh pulp	44-50
<i>Cypripedium elegans</i>	T	AS/MN/MEG	Root	Fresh juice	44, 48, 49
<i>Dendrobium crepidatum</i>	E	MN/MG/MZ	Stem	juice	35-49, 85, 86
<i>Habenaria dentata</i> (Sw)	T	MG	Whole plant	juice	46-49, 91, 92
<i>Habenaria pectinata</i>	T	MG	Tubers	Tubers	45-49
<i>Otochilus porrectus</i>	E	MG	Whole plant	Juice and extract	45-49
<i>Pholidota imbricate</i> Lindl.	E	MG/MZ	Pseudobulbs	Juice	44-49
<i>Pholidota pallida</i> Lindl.	E	MG	Root, pseudobulbs	Juice	44-49
<i>Polystachya concreta</i> (Jacq.)	E	MG	Pseudobulbs	Paste	44-49
<i>Rhynchostylis retusa</i> (L.)	E	AS/AR/MZ/MG/MN/TR/ /NG	Leaves, root	Paste	44-50
<i>Vanda tessellata</i> (Roxb.)	E	MZ/MN	Root, leaves	Paste	45-49
Join and muscle pain					
<i>Acampe rigida</i> (Buch.-Ham. ex Sm.)	E	AS/MN/MG	Root, leaves	Extract and paste	44-50, 66
<i>Aerides odorata</i> Lour	E	AS/MN/MG	Whole plant	Paste	44-50, 57-69
Blood circulation					
<i>Acampe rigida</i> (Buch.-Ham.ex Sm.)	E	AS/MN/MG	Root, leaves	Juice	44-50
<i>Goodyera hlechtendaliana</i> Rchb.f.	T	NG	Whole plant	Juice	45-49
Immune modulator					
<i>Dendrobium devonianum</i> Paxto	E	MN/MZ/NG	Stem	Dries stem	45-49, 86

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
Jaundice					
<i>Agrostophyllum brevipes</i> King and Pantl	E	AS	Tubers	Powder	44-50, 70
<i>Luisia trichorrhiza</i> (Hook.)	E	AS/AR/MG/SK	Tubers	Paste	44-50
Swelling					
<i>Aerides odorata</i> Lour.	E	AS/MN/MG	Whole plant	Paste	44-50, 67-69
<i>Bulbophyllum sterile</i> (Lam.)	E	AS/MG	Pseudobulbs	Paste	44-50, 74
Inflammation					
<i>Agrostophyllum callosum</i> Rchb.f.	E	MN/MG	Tubers	Powder	45-49, 70
<i>Bulbophyllum odoratissimum</i> (Sm.)	E	AS/MN/MG/MZ	Whole plant	Infusion or decoction	44-50
<i>Dendrobium densiflorum</i> Lindl.	E	AR/MN/NG/MZ	Leaves	Paste	45-49, 63, 68-70, 84, 87
<i>Dendrobium moniliforme</i> (L.) Sw	E	AS/AR/SK	Pseudobulbs	Paste	44-50, 71, 89
<i>Pholidota chinensis</i> Lindl.	E	NG/MZ/AR	Pseudobulbs	Extract	44-50
Diabetes					
<i>Agrostophyllum callosum</i> Rchb. f.	E	MN/MG	Tubers	Powder	44-50, 70
<i>Geodorum densiflorum</i> (Lam.)	T	MN/AS/AR	Tubers	Powder	44-50
Skin disease					
<i>Agrostophyllum callosum</i> Rchb.f.	E	MN/MG	Tubers	Powder	45-49, 70, 72
<i>Dendrobium chrysanthum</i> Wall. ex Lindl.	E	AP/MN/NG	Leaves	Paste	45-49, 73, 80, 88
<i>Dendrobium densiflorum</i> Lindl.	E	AP/MN/MZ/NG	Pseudobulbs	Paste	45-49, 63, 68-70, 76, 84, 85
<i>Dendrobium monticola</i>	E	AR	Pseudobulbs	Paste	45-49, 67, 68, 78
<i>Eulophia spectabilis</i>	T	AS/AR/MZ/MG/ MN/TR/ /NG	Leaves	Paste	44-50
<i>Geodorum densiflorum</i> (Lam.)	T	MN/AR	Tubers	Poultice	45-49

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Habenaria intermedia</i>	T	AS/AR/MZ/SK	Tubers	Paste	44-50
<i>Pholidota articulate</i> Lindl.	E	MZ/MG/MN	Fruit	juice	45-49
<i>Renanthera imschootiana</i>	E	AR/MZ/MG/MN/ TR/NG	Leaves	paste	45-49
<i>Vanda coerulea</i>	E	AS/AR/MZ/ MG/MN/TR	Leaves	Juice	44-50
Bone fracture					
<i>Antagonism gracile</i> Wall. ex Lindl	E	MG/MN	Tubers	Paste	45-49
<i>Bulbophyllum odoratissimum</i> (Sm.)	E	MN/MG/MZ	Whole plant	Infusion or decoction	45-49
<i>Cymbidium aloifolium</i> (L.) Sw.	E	AS/AR/MZ/MG/ MN/TR/SK/NG	Whole plant	Paste	44-50, 61, 64, 67-69, 78-83
<i>Dendrobium amoenum</i> Wall.	E	MN	Pseudobulbs	paste	44-49, 69
<i>Dendrobium densiflorum</i> Lindl.	E	AR/MZ/MG/ MN/TR/NG	Pseudobulbs	Pulps	45-49, 63, 58-70, 84, 85
<i>Dendrobium eriiflorum</i> Griff	E	MG	Pseudobulbs	Paste	45-49, 69
<i>Dendrobium heteocarpum</i> Wall. ex Lindl.	E	MN	Pseudobulbs	Paste	45-49
<i>Dendrobium moschatum</i> (Buch-Ham.)	E	AR/AS/MN/ MG/TR	Pseudobulbs	Paste	45-49, 63, 70, 85, 90
<i>Dendrobium transparens</i> Wall. ex Lindl	E	AR/AS/MN/ MG/TR	Pseudobulbs	Paste	45-49, 69
<i>Habenaria dentate</i> (Sw.)	T	MG	Whole plant	Juice	45-48
<i>Mycaranthes pannea</i> (Lindl.)	E	MN/MG/MZ	Leaves	poultice	45-49
<i>Oberonia falconeri</i> Hook.f.	E	AS	Whole plant	Juice	44-50, 63
<i>Otochilus lancifolius</i> Griff	E	NG	Pseudobulbs	Juice	45-49, 53
<i>Papilionanthe tes</i> (Roxb.)	E	AR/AS/MN/MG/TR	Whole plant	Paste	45-49
<i>Thunia alba</i> (Lindl.)	E	MN/MG/TR	Whole plant	Paste	45-49
Burns					
<i>Bulbophyllum careyanum</i>	E	MG/MZ	Pseudobulbs	Fresh pulp	45-49, 69

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Coelogyne corymbosa</i> Lindl.	E	AR	Pseudobulbs	Juice	45-49
<i>Bulbophyllum leopardinum</i> (Wall.)	E	MN/MG	Leaves, pseudobulbs	Pulp or juice	45-49, 75
<i>Coelogyne fuscescens</i> Lindl.	E	MN/MG	Pseudobulbs	Juice or paste	45-49, 67-69
<i>Coelogyne nitida</i> (Wall. ex D.Don)	E	AR/MG/MN	Pseudobulbs	Juice or paste	45-49, 69
<i>Coelogyne prolifera</i> Lindl.	E	AR/AS/MN/MG/NG	Pseudobulbs	Paste	44-50, 68, 69, 84
<i>Coelogyne punctulata</i> Lindl.	E	AR/MN/MG/MZ/NG	Pseudobulbs	Paste	45-49, 63,79
<i>Credium acuminatum</i>	Mostly T	AS/MN/MG	Pseudobulbs	Paste	44-50
<i>Cymbidium aloifolium</i> (L.) Sw	E	AR/AS/MN/MG/NG/TR	Leaves, root	Paste	44-50, 61, 64, 67-83
<i>Dendrobium amoenum</i>	E	MN	Flowers	Paste	44-49, 69
<i>Liparis odorata</i> (Willd.)	T	MG/SK	Leaves	Juice	44-49
<i>Luisia tristis</i> (G.Forst.)	E	MG/AR	Leaves	Juice	44-49
<i>Papilionanthes</i> (Roxb.)	E	AS/MN/MG/NG/TR	Whole plant	Juice	44-50
Aphrodisiac					
<i>Calanthe plantaginea</i> Lindl.	T	AR/SK/MZ	Rhizome	Powder	45-49, 69
<i>Calanthe tricarinata</i> Lindl.	T	AR/MZ/SK	Leaf, pseudobulbs	Powder	45-49, 67, 84
<i>Coelogyne cristata</i> Lindl.	E	AR/MN/MG	Pseudobulbs	Powder	45-49, 77, 81
<i>Coelogyne ovalis</i> Lindl.	E	AR/MN/MG/NG	Pseudobulbs	Powder	45-49
<i>Dendrobium fimbriatum</i> Hook	E	AS/MN/MG/TR	Pseudobulbs	powder	45-49
<i>Dendrobium nobile</i> Lindl.	E	AR/MN/MG/MZ	Stem	powder	45-49, 90
<i>Dendrobium macaraii</i> (Lindl.)	E	MG	Whole plant	powder	45-49
<i>Eulophia dabia</i> (D.Don) Hochr.	T	AR/MN	Rhizome	juice	45-48, 54
<i>Eulophia spectabilis</i> (Dennst.)	T	AR/AS/MN/MG/NG/MZ	Tubers	juice	44-50
<i>Habenaria dentate</i> (Sw.)	T	MG	Whole plant	powder	45-48

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Satyrium Nepalese</i>	T	MG/SK	Tubers	Raw form	45-48
Health tonic					
<i>Brachycorythis obcordata</i>	T	MG	Tubers	Powder	45-48, 67, 69, 77, 78
<i>Calanthe plantaginea</i>	T	AR/SK	Rhizome	Dry powder	45-48, 69
<i>Calanthe puberula</i> Lindl.	T	MG	Rhizome	Dry powder	45-48, 69
<i>Cephalanthera longifolia</i> (L.)	T	TR/AR	Rhizome	juice	45-48, 63, 67, 70, 78
<i>Coelogyne fimbriata</i> Lindl.	E	MG	Pseudobulbs	Powder	45-49, 75, 84
<i>Cymbidium aloifolium</i> (L.) Sw.	E	AR/AS/MN /MG/NG/TR	Rhizome	Powder	44-50, 61, 64, 67-69, 78-83
<i>Cymbidium iridioides</i>	E	AR/AS	Pseudobulbs, root	Powder	45-49, 67-69, 79, 80
<i>Dendrobium crepidatum</i>	E	MN/MG/MZ	Stem	Powder	45-49
<i>Dendrobium eriiflorum</i> Griff	E	MG	Pseudobulbs	Dry powder	45-49
<i>Dendrobium falconeri</i> Hook.	E	MN/MG/MZ	Stem	Dry powder	45-49
<i>Dendrobium fugax</i> Rchb.f	E	MZ/NG	Whole plant	Dry powder	45-49
<i>Dendrobium nobile</i> Lindl.	E	AR/MN/MG/MZ	Stem	Powder	45-49
<i>Dienia cylindrostachya</i> Lindl	T	MG	Pseudobulb	Powder	45-48
<i>Eulophia spectabilis</i> (Dennst.)	T	AR/AS/MN/ MG/NG/MZ	Tubers	Juice	44-48
<i>Habenaria furcifera</i>	T	AR/MZ	Tubers	Paste	45-48, 94
<i>Herminium monorchis</i>	T	MG	Roots	Powder	45-48
<i>Malaxis muscifera</i> (Lindl.) Kuntze	T	SK	Stem, pseudobulb	Juice	45-48
<i>Neottianthe calcicola</i> (W.W. Sm.)	T	AR/SK	Rhizome	Juice	45-48
<i>Otochilus albus</i> Lindl	E	MG	Whole plant	Powder	45-49
<i>Phaius tankervilleae</i>	T	AS/MG/NG/MZ	Tubers	Juice	44-48, 50
<i>Pholidota imbricate</i>	E	MG/MZ	Bulbs, Pseudobulbs	Powder	45-49
<i>Pholidota articulate</i> Lindl.	E	MN/MG/NG	Whole plant	Powder	45-49

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Pleione humilis</i> (Sm.)	E	MG	Pseudobulb	Dried powder	45-49
<i>Pleione praecox</i> (Sm.)	E	MG	Pseudobulb	Dried powder	45-49
<i>Smitinandia micrantha</i>	E	MN	Root	powder	45-49
<i>Spiranthes sinensis</i>	T	SK/AS/TR	Tuber	powder	45-48, 55
<i>Zeuxine strateumatica</i>	T	AS	Roots, tubers	Dried powder	44-50, 56
<i>Flickingeria fugax</i> (Rchb. f.)	T	AR/MZ/NG	Whole plant	Powder	45-48
<i>Cypripedium cordigerum</i> D. Don	T	AR/SK	Roots	Powder	45-48
<i>Galeris strachaeyi</i> (Hook. f.)	E	AR/NG	Tubers	Juice	45-48
Gastrointestinal disorder					
<i>Example carinata</i> (Griff.)	E	AR/MG	Leaves	Powder	45-49, 61-63
<i>Calanthe triplicata</i>	T	MN/MG	Pseudobulbs	Juice	45-48, 63, 79
<i>Dendrobium jenkinsii</i> Wall. ex Lindl.	E	AS/MN/MG/NG	Stem	Fresh or dried	45-49
<i>Liparis nervosa</i> (Thunb.)	T	MG	Tubers	powder	45-48
<i>Liparis odorata</i> (Willd.)	T	MG	Leaves,	Juice	45-48
<i>Rhynchostylis retusa</i> (L.)	E	AS/MG/MN/MZ/TR	Leaves,	Juice	44-50
<i>Gymnadenia orchidis</i> Lindl.	T	AR/MG	Tubers	Salep	45-49
Constipation					
<i>Coelogyne cristata</i> Lindl.	E	AR/MN/MG/	Pseudobulbs	Juice	45-49, 81
<i>Corymborkis veratrifolia</i> (Reinw.) Blume	E	AS	Leaves	Leaf juice	45-49
Snakebite					
<i>Cremaster appendiculata</i>	T	AR/SK	Root	powder	45-48, 63, 70
<i>Goodyera repens</i> (L.)	T	MZ/NG	Whole plant	extract	45-48
<i>Habenaria pantlingiana</i>	T	AR/MZ	Tubers	Extract	45-48
<i>Habenaria pectinata</i>	T	MG	Leaves	Juice	45-48
<i>Dendrobium macaraii</i> (Lindl.)	E	AR/NG	Whole plant	Paste	45-49

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
Fever					
<i>Anoectochilus roxburghii</i>	T	AS/MG	Whole plant	Infusion	45-48, 58
<i>Coelogyne fimbriata</i> Lindl.	E	MG	Pseudobulbs	Paste or juice	45-49, 75, 84
<i>Coelogyne flaccida</i> Lindl.	E	AR/MN/MG/NG	Pseudobulbs	Paste	45-49, 68, 69, 84
<i>Coelogyne nitida</i> (Wall. ex D.Don)	E	AR/MN/MG/NG	Pseudobulbs	Juice	45-49, 69
<i>Coelogyne prolifera</i> Lindl.	E	AR/AS/MN/MG/NG	Pseudobulbs	Paste	44-50, 68-69, 84
<i>Coelogyne stricta</i> (D.Don)	E	MN/MG/MZ	Pseudobulbs	Paste	45-49, 67, 68, 78
<i>Corymborkis veratrifolia</i> (Reinw.) Blume	T	AS	Leaves	Juice	44-50, 70
<i>Crepidium acuminatum</i> (D.Don)	E	AS/MN/MG	Pseudobulbs	Juice	44-50
<i>Cymbidium aloifolium</i> (L.) Sw.	E	AR/AS/MN/MG/ NG/TR	Leaves	Powder	44-50, 61, 64, 67-69, 78-83
<i>Dendrobium chrysanthum</i>	E	AR/MN/NG	Leaves	Juice	44-49
<i>Dendrobium chrysotoxum</i> Lindl.	E	MN/MZ/NG/TR	Leaves	Juice	45-49
<i>Dendrobium fimbriatum</i> Hook.	E	AS/MN/MG/TR	Pseudobulbs	Juice	44-50
<i>Dendrobium longicornu</i> Lindl.	E	MG/MZ	Whole plantole plant	Juice	45-49
<i>Dendrobium nobile</i> Lindl.	E	AR/MN/MG/MZ	Stem	Powder	45-49
<i>Malaxis muscifera</i>	T	SK	Swollen stem base	Decoction	44-48
<i>Papilionanthe tes</i> (Roxb.) Schltr.	E	AS/MG/MN/MZ/TR	Whole plant	Paste	44-50
<i>Pholidota imbricate</i> Lindl.	E	MG/MZ	Pseudobulbs	Paste	45-49
<i>Ponerorchis chusua</i>	T	AR/NG	Tubers	Powder	45-48
<i>Dactylorhiza hatagirea</i> (D.Don)	T	SK/AR	Tubers	Juice	45-48
<i>Dendrobium macaraii</i> (Lindl.)	E	MG	Whole plantole plant	Paste	45-49
<i>Habenaria intermedia</i>	T	AS/AR	Tubers	Paste	44-50

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Vanda tessellata</i> (Roxb.)	E	MN/MZ	leaves	Paste	45-49, 52
Cancer					
<i>Liparis odorata</i> (Willd.)	T	MG	Leaves	Juice	45-48
<i>Pholidota articulate</i>	E	MG/MN/NG	Root	Powder	45-49
<i>Vanda testacea</i> (Lindl.)	E	MN/MZ	Leaves	Powder	45-49
Cold and cough					
<i>Calanthe sylvatica</i> (Thouars)	T	MG/MZ	Leaves	Fresh or dried powder	45-48, 63, 67-70
<i>Coelogyne ovalis</i> Lindl.	E	AR/MN/MG/NG	Whole plant	Fresh powder	45-49, 63, 68, 84, 79, 93
<i>Crepidium acuminatum</i> (D.Don)	E	AS/MN/MG	Pseudobulbs	Juice	44-50, 63, 67-69, 70, 78
<i>Cymbidium devonianum</i>	E	MG	Whole plant	Concentrated decoction	45-49
<i>Dendrobium denudans</i> D.Don	E	MG	Stem	Decoction	45-49
<i>Dendrobium longicornu</i> Lindl.	E	MG/NG	Roots	Boiled	45-49
<i>Eulophia dabia</i> (D.Don) Hochr.	T	AS/MN	Rhizome	Infusion	44-48, 50, 57
<i>Monomeria barbata</i> Lindl.	T	AR/SK	Tubers	Fresh juice	45-48
<i>Papilionanthe tes</i> (Roxb.) Schltr	E	AS/MN/MG/MZ/TR	Whole plant	Juice	44-50
<i>Satyrium nepalense</i>	T	SK/MG	Tubers	Juice	45-48
<i>Vanda cristata</i>	E	MN/MG/TR/MZ/ AR/TR	Leaves	Juice	45-49, 63, 68, 70, 73, 75, 77, 80, 81, 94
<i>Zeuxine longilabris</i>	T	AR/MN/SK	Whole plant	Dried powder	45-48
<i>Cypripedium himalaicum</i>	T	SK	Whole plant	Fresh juice	45-48
<i>Nervilia aragoana</i>	T	NG/MZ/AR	Whole plant	Fresh juice	45-48
Diarrhoea					
<i>Brachycorythis obcordata</i> (Lindl.)	T	MG	Root	Dried and powder root with milk	45-48, 67-69, 77, 78
<i>Cleisostoma williamsonii</i> (Rchb.f.)	E Rar Ely T	AR/NG	Leaves, stem	Dried powder with milk	45-49, 63, 80

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Cymbidium iridioides</i>	E	AR	Pseudobulbs Root	Fresh juice	45-49, 67-69, 79, 80
<i>Geodorum densiflorum</i>	T	MN/MZ	Tubers	Fresh juice	45-48
<i>Ponerorchis chusua</i>	T	AR/NG	Tubers	Fresh juice	45-48
<i>Satyrium nepalense</i>	T	SK/MG	Tubers	Fresh juice	45-48
<i>Tropidia curculigoides</i>	T	AS	Tubers, stem	Decoction	44-50, 58
<i>Vanda coerulea</i>	E	MN/MG/TR/MZ/AR	Leaves	Juice	45-49
<i>Nervilia aragoana</i> Gaudich.	T	NG/MZ/AR	Whole plant	Fresh or dried powder	45-48
Menstrual pain					
<i>Rhynchosyilis retusa</i> (L.)	E	AS/MG/MN/MZ/TR	Root	Decoction	44-50
Cuts and wound healing					
<i>Aerides multiflora</i> Roxb.	E	AS/MG/MN	Leaves	Paste	44-50
<i>Aerides odorata</i> Lour.	E	AS/MG/MN	Leaves	Paste	45-50, 53-65, 67-70
<i>Agrostophyllum callosum</i> Rchb.f.	E	MG/MN	Tubers	Powder	45-49, 70
<i>Cephalanthera longifolia</i>	T	TR/AR	Rhizome	Paste	45-48, 63, 67, 70, 80
<i>Coelogyne corymbosa</i> Lindl.	E	AR	Pseudobulbs	Juice	45-49, 79, 81
<i>Coelogyne cristata</i> Lindl.	E	AR/MG/MN	Pseudobulbs	Juice	45-49
<i>Coelogyne punctulata</i>	E	AR/MN/MG/MZ/NG	Pseudobulbs	Paste	45-49, 63, 79
<i>Cymbidium aloifolium</i> (L.)	E	AR/AS/MN/MG/NG/TR	Seed	Powder	44-50, 61, 64, 67-69, 87, 88
<i>Cymbidium elegans</i>	E	AR/MG	Leaves, pseudobulbs, roots	Juice	45-49, 66, 68, 69
<i>Gymnadenia orchids</i>	E	MG	Pseudobulbs	Powder	45-49, 59
<i>Cymbidium hookerianum</i>	E	MG	Seeds	Paste	45-49, 63
<i>Cymbidium iridioides</i>	E	AR	Leaves	Juice	45-49, 67-69, 79, 80
<i>Geodorum densiflorum</i>	T	MN/MZ	Tubers	Poultice	45-48
<i>Habenaria furcifera</i>	T	AR/MZ	Tubers	Paste	45-48
<i>Habenaria marginata</i> Colebr.	T	AR/MZ	Tubers	Juice	45-48

Table 1. Continued...

Name of the plant	Habitat	Availability	Part used	forms	References
<i>Luisia tristis</i> (G.Forst.)	E	MG	Leaves	Juice	45-49
<i>Phaius tankervilleae</i>	T	AS/MG/MZ/NG	Tubers, leaves	Poultice	45-48
<i>Pleione humilis</i> (Sm.)	E	MG	Pseudobulbs	Paste	45-49
<i>Pleione praecox</i> (Sm.)	E	MG	Pseudobulbs	Pseudobulbs Paste	45-49
<i>Rhynchostylis retusa</i> (L.)	E	AS/MG/MN/MZ/TR	Root	Juice	45-49

** E = Epiphytic, T = Terrestrial, AR = Arunachal Pradesh, AS = Assam, MG = Meghalaya, MZ = Mizoram, TR = Tripura, MN = Manipur, SK = Sikkim

Orchids can grow in a wide range of substrates. They are both economically and medicinally important which could have a great impact on our country's economy. North–Eastern region of India is rich in orchid diversity. These orchids are still widely used in the traditional system of medicine in the Northeastern part of India but, sadly, necessary scientific studies on the medicinal properties of these orchids are still at the bottom of the agenda. Thus extensive research is necessary to be able to fully recommend the orchid species for their medicinal uses.

4. Discussion and Conclusion

The ethnic group in North–East India has a rich history of utilizing the flora there. It is important to maintain the knowledge of local flora used in traditional systems of medicine. Folk remedies were discovered to be important to ethnic people's daily lives. The massive development of industrialization, aggressive civilization, and contamination are major contributors to the destruction of various species and the risks they pose to biodiversity. To create a better medicine or formulation with minimal side effects for the treatment of various disorders, it is essential to preserve medicinal plants and conduct research on the different species. Many plants have yet to be investigated for their therapeutic properties. A variety of substrates are suitable for orchid growth. They are significant from an economic and medical perspective, which might have an immense impact on the economy of our nation. The diversity of orchids is remarkable in India's north-eastern area. Unfortunately, the requisite scientific investigations on the therapeutic

benefits of these orchids are still far down the agenda, even though these orchids are still frequently employed in North–Eastern India's traditional medical system. Thus, to completely suggest the orchid species for their therapeutic purposes, a multidisciplinary approach is required to create potentially useful medications. Numerous medicinal plants on the list have powerful pharmacological activities that have not yet been thoroughly researched. The article highlights the value of Orchids medicinal plants that have traditionally been used in north-east India. The necessary information regarding the level of activity as well as toxicity would be taken into consideration for future examination to produce the potential drug component.

5. Acknowledgement

The authors would like to thank Suraj Mistri, Research scholar, Department of Pharmaceutical Technology, University of North Bengal, for his encouragement, help and support in completing this article.

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