iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** I **Month of publication:** January 2018

DOI: http://doi.org/10.22214/ijraset.2018.1065

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor :6.887
Volume 6 Issue I, January 2018- Available at www.ijraset.com

Ethnomedicinal plants used by Galo Community of West Siang district, Arunachal Pradesh

Gode Kamum[1], K.S. Kanwal[2] and Lod Yama[3]
[1] *Department of Botany, Mount Carmel College, Bangalore*
[2,3]*G.B. Pant National Institute of Himalayan Environment and Sustainable Development, North East Unit, Itanagar, Arunachal Pradesh*

Abstract: ***The present study has documented the various ethno-medicinal plants used by Galo community of West Siang district of Arunachal Pradesh. A well-designed questionnaire based survey was conducted in the study area to collect ethnomedicinal plants information. A total of 36 plant species belonging to 20 families and 31 genera were used by Galo Community for various ethnobotanical purposes, among these species 6 were trees, 9 shrubs and 21 herbaceous species. Maximum number of species were recorded from family Asteraceae (6 spp.), followed by Zingiberaceae (4 spp.), Solanaceae, Urticaceae and Araceae (3 spp. each). For preparation of herbal medicine, Galo people mostly they use leave (49%) followed by stem (15%), fruits (13%), Root/Rhizome (13 %), Whole plant (5%) and flower (5%) of the plants. These plant parts are used for curing various common diseases such as diabetes, sinusitis, burn, cut, cough and cold, fever, joint pain, ear and eye problem etc. Some important medicinal plant species are facing threat due to habitat degradation, and unsustainable harvesting in the study area. Findings of this study could be used for strengthening the medicinal plants database of the area, developing medicinal plants conservation plan and selecting plants for future ethnopharmacological studies.***

Keywords: Ethnomedicine, Galocommunity, Himalaya, Conservation, Indigenous knowledge system

I. INTRODUCTION

Ethnomedicinal plants are the plants which are used by ethnic people for treatment of different ailments since time immemorial. Ethnomedicinal plants are viewed as a possible bridge between sustainable economic development, affordable health-care and conservation of vital biodiversity [1]. Out of the total 4, 22,000 flowering plants are reported from the world [2] more than 50,000 have been used worldwide for medicinal purposes [3]. According to World Health Organisation (WHO) over 80% of the population in the developing countries still depends on the traditional or folk system of medicine [4]. Over the past couples of decades, there has been a tremendous increase in the use of herbal medicine.Indian Himalayan Region (IHR) is major repository of medicinal plants because of the diverse climatic conditions and diversity of landscape which exist in the area. IHR supports 1748 species of medicinal plants [5], which includes 118 species that yield essential oil and 155 species that are considered sacred [6].

Arunachal Pradesh also popularly known as the “land of the dawn-lit mountains” is the largest Himalayan state in North-East India. It is located between 26°28’ - 29°30’N Latitude and 91°30’- 97°30’ E Longitude. The state is uniquely situated in the transition zone between the Himalayan and Indo-Burmese regions, being recognized as one of the 25 mega biodiversity hotspots of the world. Arunachal Pradesh is also prevalently known as “cradle of all flowering plants” and "paradise of the botanists” as it contains nearly 50% of the total flowering plant species (about 5000 spp. of angiosperm) in India. The state is endowed with vast natural resources viz. water, forest, non timber forest products (NTFP), minerals, agriculture and biological resources. Culturally, the state is also quite rich being home to 26 major and more than 110 minor tribal communities. There are over 500 species of medicinal plants reported in Arunachal Pradesh used by different tribes by different methods and yet more to be explored. Ethnobotanical/ethnomedicinal studies in Arunachal Pradesh has been done by various workers such as Pal, 1992; Rawat and Choudhury, 1998; Yobin, 1999; Murtem&Bisht, 1999; Murtem et al., 2001; Haridasan et al., 2003; Tag et al., 2005; Sarmah et al., 2006, Kala 2005 etc.. While, very limited work has been done to document the medicinal plants used by Galo tribe of the state.Over the years, ethnic communities have developed a great deal of traditional knowledge on the use of plants and plant products in curing various ailments. They can not only cure the ailments but can also be potential source of economy to the state. However, due to excessive and unsustainable extraction of medicinal plant resources from wild areas have resulted in rapid deletion of populations of medicinal plants. Therefore, there is an urgent need for the extensive investigation of medicinal plants and systematic documentation of indigenous practices of medicinal plants. In addition to this, in recent time due to modernization and change in socio-cultural dynamic the rich traditional indigenous knowledge are being either diluted or in the process of dilution.

©IJRASET (UGC Approved Journal): All Rights are Reserved

Documentation and popularization of indigenous ethnomedicinal knowledge system among younger generation is essentially required for preservation of traditional knowledge system. Keeping the above in view, the present study was undertaken to document the status of ethnomedicinal plant used by Galocommunity of West Siang district of Arunachal Pradesh.

II.MATERIALS AND METHODS

A. Study area

The study was carried out in the West Siang district of Arunachal Pradesh (Fig. 1).The district is situated between Longitudes 93° 55´ to 94° 55´ E and Latitude 27° 30´ to 28° 55´ N and covers an approximately 8325 sq km. As per Census 2011, the total population of the district it is 1,12,274 persons having a poulation density of 13 per sq km. Aalo is the district headquarter of West Siang. The district is bounded on the North by China, on the East by Upper Siang & East Siang districts, on the South by Assam and on the West by Upper Subansiri& Lower Subansiri districts of Arunachal Pradesh. The district is mainly inhabited by Galo tribe along with some other tribes like Minyong, Bori, Bokar, Pailibo, Ramos, Membas and Khambas. The district has rich diversity of flora and fauna and a wide range of climatic and geographical variations, the district enjoys a moderate and comfortable climate. Four Galo community villages viz. Soi, Nyigam, Gori and Kadi of Basar circle of West Siang district were covered under during the study. Galo tribe is one of the major tribe of Arunachal Pradesh. The Galo primarily inhabit the West Siang district, but are also found in the East Siang district, and Upper Subansiri district. This tribe is well known for its rich traditional knowledge base relating to the diverse uses of plants and plant products (ethnobotanical uses of the plant) in their day to day life [7]. The Donyi-Poloism is the main religion of the tribe in the district. Agriculture is the main occupation and jhum cultivation is still the predominant way of cultivation. Galo tribe is composed of several groups, inhabiting a compact area, comprising of many villages but all culturally and socially linked together. These groups are the Karkas, Paktus, Bogums, Karkos, Lodus etc. Mopin is the main festival of the tribe which is celebrated for four to five days in the month of April for social prosperity and wealth [8]. Galo ethnic community has very traditional knowledge system of utilization of various plants species. Such indigenous knowledge plays crucial role in biodiversity conservation and sustainable natural resource management in the area.

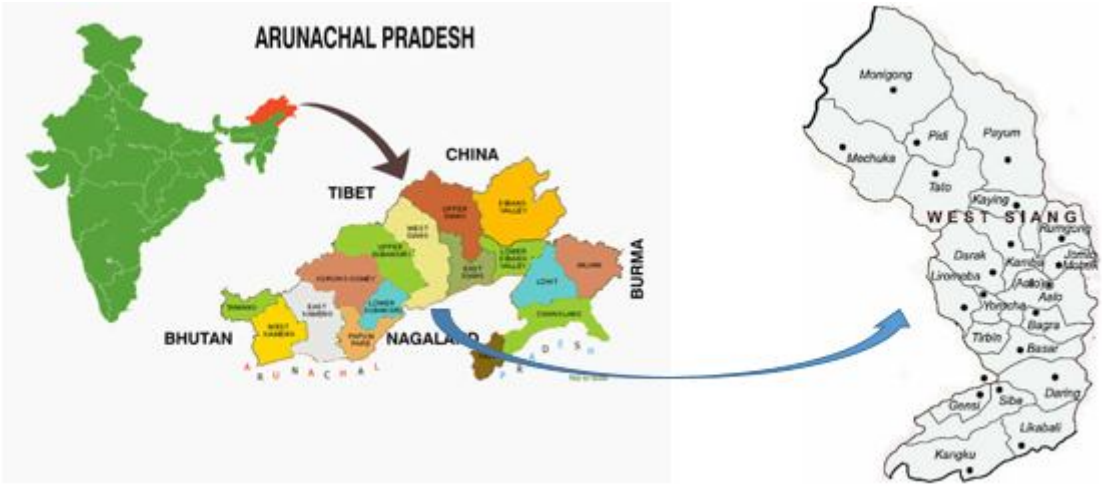


Fig.1 Location map of study area

B. Methodology

The information on ethnomedicinal plants uses by Galo community was collected from primary as well as secondary sources (review of literature). Ethnomedicinal survey was carried out between April and May 2016 to obtain relevant information about medicinal plants used in the treatment of various diseases by Galo tribe of West Siang district of Arunachal Pradesh. Prior to undertaking field study, the objectives of the study were explained to the respondents (village heads, villagers, herb seller and traditional medicine practitioner) and prior informed consent (PIC) was obtain from them. A well designed structured questionnaire-based survey was conducted in the four villages (Soi, Nyigam, Gori and Kadi) to collect information on medicinal plant species like useful and preferred species, local names, life forms, part(s) used, indigenous uses and purpose of use, frequency of uses, occurrence and distribution, etc. The information was collected by consultation with the knowledgeable traditional practitioner of study area villages. Later, short field visits to the forests/home garden was organize accompanied by traditional healers and field guide so as to ascertain the correct identity of plant and also to obtain first hand information on their distribution and general habitat. Medicinal

©IJRASET (UGC Approved Journal): All Rights are Reserved

plants were collected for identification and herbarium preparation following standard methods (Jain &Rao 1977). The collected voucher specimen was deposited at G.B Pant National Institute of Himalayan Environment and Sustainable Development, North East Unit, Itanagar. The specimen was identified with the help of standard flora, research paper, reference collections and experts of Botanical Survey of India (BSI), State Forest Research Institute (SFRI). Photographs of plants species and ethnic people were also captured during the field study. An awareness program was organized in the study area for villagers, school children to sensitize the importance and of medicinal plant species, documentation of traditional indigenous knowledge, conservation, cultivation and promotion of medicinal plants in the region.

III. RESULTS AND DISCUSSION

In present study a total of 36 medicinal plant species were recorded from the study area. These species belongs to 31 genera and 20 families, among these species 6 were trees, 9 shrubs and 21 herbaceous species. Botanical name, family, vernacular name, parts used, life form, medicinal uses, and mode of preparation of each medicinal plants are discussed are given in Table 1. Maximum number of species were recorded from family Asteraceae (6 spp.), followed by Zingiberaceae (4 spp.), Solanaceae ,Urticaceae and Araceae (3 spp. each). Some notable medicinal plants were Clerodendroncolebrookianum, Pouzolziahirta, Solanumtorvum, Solanumindicum, Ageratum conyzoides and Bidenspilosa. For preparation of herbal medicine, the rural and tribal communities of this region use different parts of the plants species. Mostly they use leave (49%) followed by stem (15%), fruits (13%), Root/Rhizome (13 %), Whole plant (5%) and flower (5%) of the plants (Fig. 2). These plant parts are used for curing various common diseases such as diabetes, sinusitis, burn, cut, ear and eye problem etc.

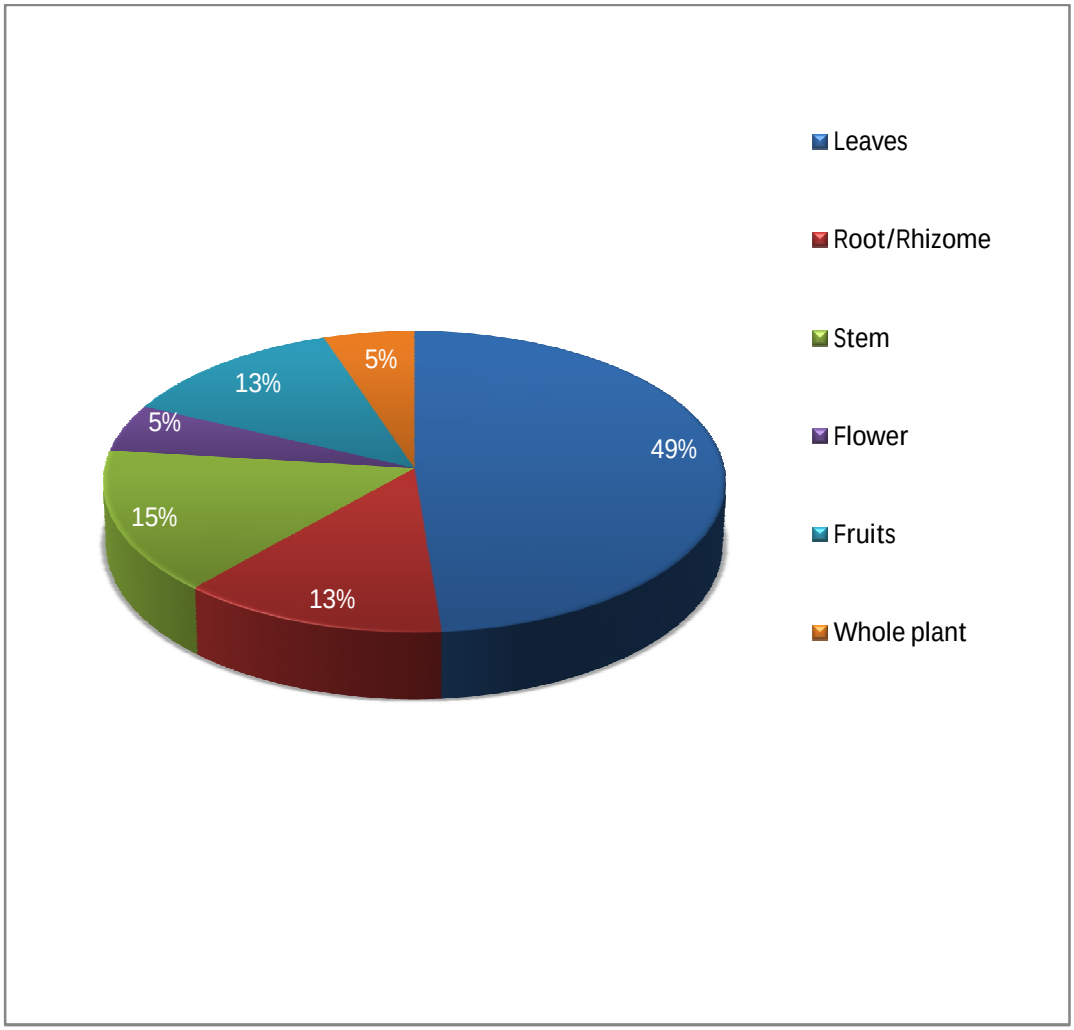


Fig. 2- Different plants parts used for ethnomedicinal by Galo tribe.

©IJRASET (UGC Approved Journal): All Rights are Reserved

Table 1: Ethnomedicinal plants used by Galo tribe of West Siang district, Arunachal Pradesh

Name of plant	Family	Local name (Galo name)	Habit	Part used	Diseases cured	Method of use
Clerodendrumcolebrookianum	Verbenaceae	Oin	Shrub	Leaves	Reduce blood pressure, insomnia	Leaves are boiled in water for 10-15 minute, decoction is used with leaves. Also consumed as curry.
Pouzolziahirta	Urticaceae	Oik	Shrub	Leaves	Increasing breast milk/lactation	Leaves are boiled in water with pinch of salt and decoction is consumed
Drymariacordata	Caryophyllaceae	Keddehkerreh	Herb	Whole plant	Sinusitis, bronchitis, cold, nose blockage, snake bites and ringworms	The plant is tightly wrapped in banana leaves and then kept over the fire on a pan or under the heated coal for about 5-10 minutes to provide heat on it. After that, the wrapper (leave) is opened gently and the releasing vapor in inhaled for the relief of cough and sinusitis. leaf paste applied for snake bites and ring worm Leaf extract mixed with pepper and drink with tea to cure cough and cold.
Solanumindicum	Solanaceae	Baak	Shrub	Fruit	Lower blood pressure & pimples	Fruit powder is mixed with luke warm water andconsumed to lower blood pressure. For treatment of pimples seeds are applied on the skin and keep it overnight and wash it next morning with cold water.
Houttuyniacordata	Saururaceae	Namsunemih	Herb	Whole plant	Dysentery	Leaf paste or raw leaves are used
Zanthoxylumrhetsa	Rutaceae	Hibeh/onger	Tree	Fruits	Termination of pregnancy	Ripe fruit is consumed for pregnancy termination
Mikaniamicrantha	Asteraceae	Railway nimeh	Herb	Leaves	Loose motion	Leaves is grinded and the juice is extracted and consumed with little water.
Ageratum conyzoides	Asteraceae	Einamya/ Eirego	Herb	Leaves	Blood clotting	The leaves is crushed and the juice is applied on the cut part to stop the bleeding.
Solanumviarum	Solanaceae	Kigo/ al tao	Herb	Fruit	Toothache and oral blister	Fruit powder is wrapped in a dried leaves or paper and smoke like a cigarette.
Psidiumguajava	Myrtaceae	Mudri	Tree	Leaves	Diarrhea and stomach trouble	Decoction of leaves is consumed.
Pouzolziasanguinea	Urticaceae	Osik	Herb	Root	Blood clotting	Power of bark is applied on the freshly cut wound to stop bleeding.
Colocasiasp.	Araceae	Riksin	Herb	Stem	Antibacterial, antifungal and blood clotting	Stem paste is applied on the freshly cut area.
Syzygiumcumini	Myrtaceae	Jamun	Tree	Stem/bark	Controlling BP and diabetes	Bark juice is is consumed every early morning in empty stomach for its better result.
Zingiberofficinale	Zingiberaceae	Takkeh	Herb	Leave / rhizomes	Cough, cold,fever and improve	Decoction of rhizomes is used with tea or water.

©IJRASET (UGC Approved Journal): All Rights are Reserved

					digestion	
Paederiafoetida	Rubiaceae	Eppehtareh	Herb	Leaves	Jaundice and gastric	Extract of leaves mixed with pinch of turmeric powder and consumed in empty stomach early morning.
Lasiaspinosa	Araceae	Hikrubu	Herb	Leave/stem	Joint pain, healing wounds and kills intestinal worm	Leaf paste is applied externally.
Elatostemasp.	Urticaceae	Ojjjili	Shrub	Whole plant	Burn	Leaf paste is applied on burnt area
Zanthoxylumsp.	Rutaceae	Tan-tago	Tree	Stem /bark	Heat boils	Bark juice is used for heat boil
Bambusabalcooa	Poaceae	Ae	Herb	Stem	Blood blots on freshly cut wounds	The outer surface of the bamboo stem is scrapped off properly and applied on the freshly cut area to check bleeding
Eupatorium odoratum	Asteraceae	Daglin	Shrub	Leaves	Sore between the toes and itchiness	Warm leaf paste is applied on the affected area
Amphineuronsp.	Thelypteridaceae	Rugdik	Herb	Leaves	Anti-inflammatory	Raw leaves wrap around the swollen ankle with a piece of cloth for whole night.
Scopariadulcis	Scrophulariaceae	Arnemih	Herb	Leaves/roots	Cancer,blood clotting	Leaf paste is applied on the affected area and root juice is used for cancer
Zingibercassumunar	Zingiberaceae	Kekir	Herb	Leaves/rhizome	Cough and cold	Rhizome juice is mixed with honey used for cold and cough
Acmellaoleracea	Asteraceae	Marsa	Herb	Flower	Mouth bruises	Raw flower is used
Centellaasiatica	Apiaceae	Yatunemih	Herb	Leaves	Chronic digestion	Leaf juice is used for indigestion
Curculigolatifolia	Hypoxidaceae	Roek	Herb	Rhizome	Blood clot	Rhizome sap is applied on affected area
Amorphophallussp.	Araceae	Tab cingi	Herb	Leaves	Insect bite	Leaf paste is tighten on affected area
Begonia tessaricarpa	Begoniaceae	Buckuchullu/ bikurimbu	Herb	Stem	Nausea and vomiting	Raw stem is eaten
Elettariasp.	Zingiberaceae	Pipa/kampik	Herb	Stem	Cough	Raw soft part of shoot is consumed
Terminaliachebula	Combretaceae	Ilca	Tree	Fruit	Gastritis	Fruit powder is mixed with water and juice used
Catharanthusroseus	Apocyanaceae	Donyiphul	Shrub	Leaves	Control blood sugar	Two to four leaves are chewed every early morning empty stomach.
Zingiberzerumbet	Zingiberaceae	Jakir	Herb	Flower	Controls blood pressure	Decoction of flower is used
Solanumtorvum	Solanaceae	Hot baak	Shrub	Fruit	Controls blood pressure	Decoction of fruit is used
Dalhousieabracteata	Fabaceae	Nytjirpopir	Shrub	Leaves	Blood clot	Leaf paste is used in injury area
Bidenspilosa	Asteraceae	Tagam	Herb	Leaves	Chronic indigestion	Raw leaves are chewed or used with water

©IJRASET (UGC Approved Journal): All Rights are Reserved

Cressocephalumcrepidioides	Asteraceae	Gendu	Herb	Leaves	Blood clotting and insomnia	Leaf paste is applied on injury and decoction of leaf is used for insomnia

The Galo community of the study area has a very interesting way of treating different diseases. They were not just using the plants to cure diseases but also utilizing them for other ethnobotanical uses such as food, fire wood, fencing, wild edible, vegetable etc. Some of the notable medicinal plants which can be eaten or are consuming by the Galo tribes as a main staple food besides its medicinal importance are Clerodendroncolebrookianum, Pouzolziahirta, Solanumindicum, Bambusasp., Colocasia sp., Zingibercassamunur, Acmellaoleraceae and Crassocephalumcrepidioides. Pouzolzia is mostly consumed as a curry Bamboo has the most important value as its young shoot is considered to be the main food by the Galo people and the matured stems are used in building houses, bridges, furniture etc. Leaves of Zanthoxyllumrhetsa and Amphineuron sp. are also used as fish toxin for catching fish by the Galo community. Zingiberzerumbet and Elletaria sp. are also used in packing food materials by tribal people. The mostly used medicinal plants are Clerodendroncolebrookianum, Solanumindicum, Ageratum conyzoides and zinger.. The most frequent type of preparation was decoction and paste of plant parts. Plant decoction is extracted by crushing the plant parts and sometimes plant parts are boiled with water and the liquid decanted. Ailments such as skin disease, cut, wounds, sore, boils, body ache and scabies are cured by external application of the plant paste.Most of the medicinal plants the tribal was using were just for regular problem like cut, burn, dysentery, jaundice etc. Some other tribal communities of Arunachal Pradesh such as Adi, Apatani, Siingpho and Thangsaetc. are also use similar plants to cure various disease and ailments. Adi tribe use Drymariacordata in treating gastritis where asGalo people mostly use for treating sinusitis. The warm leaf infusion of Ageratum conyzoides is given for 3 days for treating dysentery by Aditribe whereas, the Galo tribe use the plants for blood clotting in cut and wounds. Many other tribes use Solanumtorvum in treating gum infection and tooth ache too other than controlling blood pressure. Similarly Houttuyniacordata in treating measles and skin problem whereas Galo tribe use the plant in treating diarrhea. Therefore, other tribal people are using medicinal plants in their own traditional way and also for different purposes.

IV. CONCLUSION

The present study highlighted that the *Galo* tribe of West Siang district of Arunachal Pradesh have very rich traditional knowledge ofethnomedicinal plants. They use various medicinal plants species to cure different diseases due to remoteness of the area and lack of modern health care facilities in the region. In recent couple of years, continuous unsustainable exploitation, habitat degradation, anthropogenic pressure and change in climatic conditions has led to the rapid depletion of several medicinal plant species [9]. Moreover, traditional medicinal knowledge is also depleting day by day due to change in socio-cultural dynamics, migration from villages to urban areas, lack of interest of youths on traditional values and dependency of modern healthcare facilities in the region. Hence, documentation of available base line ethno medicinal indigenous knowledge is urgently required for strengthening the traditional medicinal plants knowledge and framing comprehensive medicinal plants conservation and management strategy. Keeping in view the limited availability of time, this rapid medicinal plant study was carried out only few villages of *Galo* tribe. Therefore, it has been suggested that comprehensive documentation of medicinal plant and indigenous knowledge of *Galo* people needs to be conducted in the West Siang district. Findings of this documentation study can be used for strengthening the medicinal plants database of the area, developing medicinal plants conservation planning and selecting plants for future ethnopharmacological studies.It is also suggested that medicinal plant nurseries need to be developed for mass scale propagation of the highly valuable medicinal plants and other important ethnoflora. Plant samplings could be distributed among the villagers and farmers for cultivation and conservation in their home gardens/kitchen gardens and farmlands. Considering the importance of medicinal plants in local health care practice among *Galo* people, habitat protection of medicinal plants, in-depth advanced biomedical research, technology transfer to local communities for sustainable harvesting of medicinal plants, dissemination of medicinal plants significance through education and awareness programs among rural community, encouragement of community participation in medicinal conservation, and framing a comprehensive program for the long-term conservation and management of medicinal plants diversity by involving different stakeholders are suggested for conservation and sustainable utilization of medicinal wealth of the West Siang district of Arunachal Pradesh.

V. ACKNOWLEDGEMENT

The authors are highly thankful to all the Galo people of West Siang district for sharing valuable information about ethnomedicinal plants. The authors are thankful to Director, G.B. Pant National Institute of Himalayan Environment and Sustainable Development

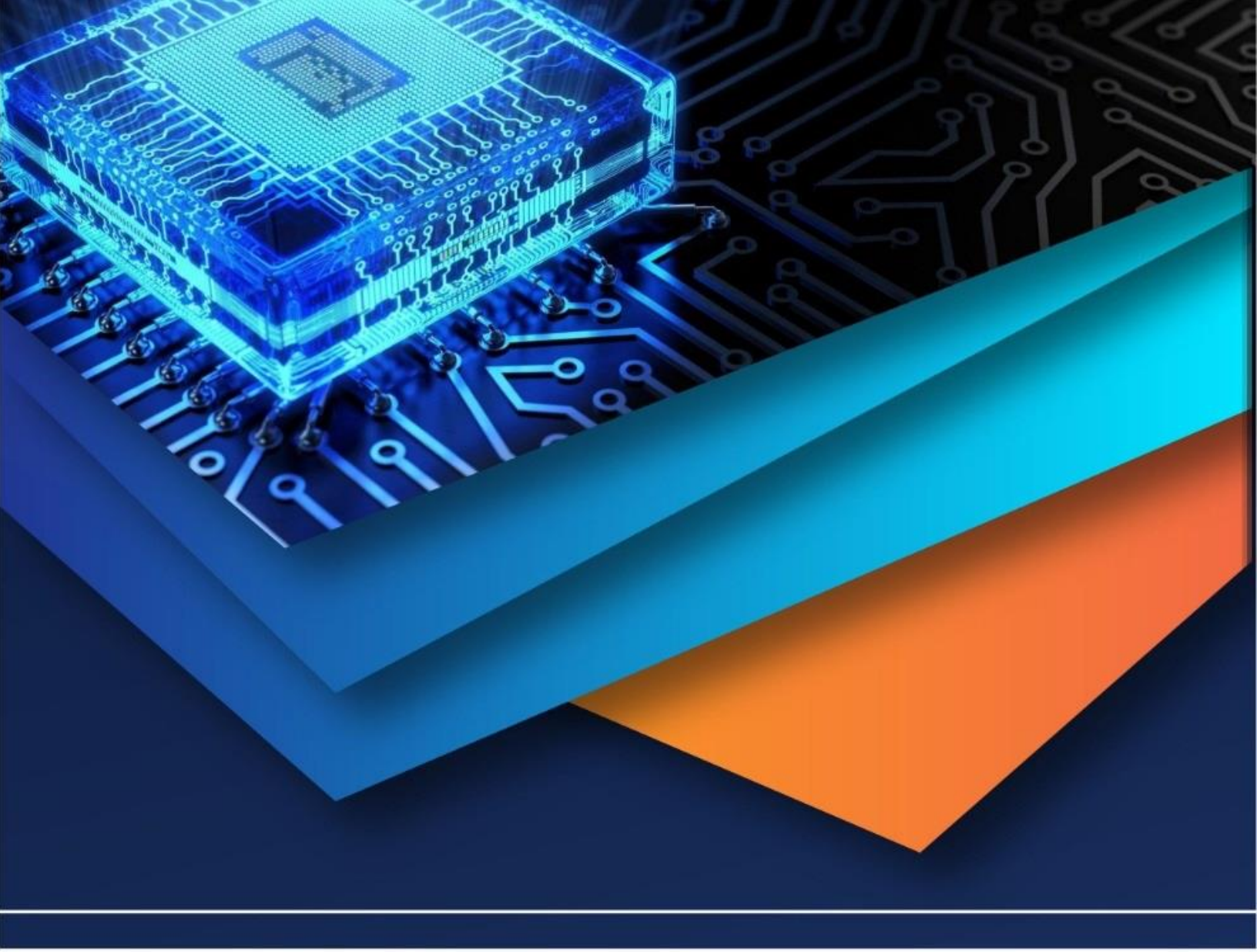
©IJRASET (UGC Approved Journal): All Rights are Reserved

and Scientist In-charge, North East Unit for facilities and encouragement. First author is also thankful to Head Department of Botany, Mount Carmel College, Bangalore for support and research facilities.

REFERENCES

[1] Dhar, U., Manjkhola S., Joshi M., Bhatt A., Bisht A.K., and Joshi M. Current status and future strategy for development omedicinal plants sector in Uttaranchal, India, Current Science, 2002, 83:956-964.
[2] GovaertR.. How many species of seed plants are there? Taxon, 2001,50:1085-1090.
[3] Schippmann U., Leaman D.J. and Cunningham A.B.. Impact of cultivation and gathering of medicinal plants on biodiversity: global trends and issues. In: Biodiversity and the ecosystem approach in , forestry and fisheries. Satellite event on the occasion of the ninth regular session of the commission on genetic resources for food and agriculture. Rome 12-13 October, 2002.
[4] Chauhan N.S. Business potential of medicinal and aromatic plants. Science Tech. Entrepreneur, 1996, 34-38. Potential Value .GyanodayaPrakashan, Nainital, 1998.
[5] Samant S.S. and Pant S. Diversity, distribution pattern and traditional knowledge of Sacred Plants in Indian Himalayan Region. Indian Journal of Forestry, 2003, 26 (3): 201-213
[6] Ratan O., Mili R. and Tag H. Ethnobotany of the Galocommunity of Arunachal Pradesh, India. Pleione, 2016, 10(2): 248 - 261.
[7] Bora, S.S, Lahan, J.P, Borooah, M. &Sarmah, R. Poka- a traditional rice wine of the Galo Tribe of Arunachal Pradesh, India. Intn. J. Agri. Sci, 20124(6): 268 – 271.
[8] Kanwal, K.S. and Hema Joshi. Medicinal plants diversity, indigenous uses and conservation status in 669.

©IJRASET (UGC Approved Journal): All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)