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Ethno-medicinal plants used as medicine by traditional healers of Gomarda Wildlife Sanctuary, Raigarh, Chhattisgarh, India

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ABSTRACT

In India, the traditional system of medicine plays an important role in health care of rural people for many ailments. The ethno-medicinal plants of Gomarda Wildlife Sanctuary, Raigarh, Chhattisgarh, India, help in understanding the traditional medicines and cultures of the local people. This survey work was done with the aim of proper documentation of ethno-medicinally important plants growing in this sanctuary. A total of 25 medicinal plant species belonging to 16 families were documented and found to be present within the study sites. In present work, family Fabaceae found to have the highest number of plant species. Current work analyzed the medicinal plants with most therapeutic usage in this region and documented. Present work being the first documentation and collection of medicinal plants and it provides first ethno-medicinal and cultural assessment of these species of this region.

INTRODUCTION

Traditional and plant based medicine is defined as indigenous medicine that is generally used to maintain health, prevent from diseases, and treat physical and mental illnesses based on theories, beliefs, and experiences. Ethnobotany is defined as the interdisciplinary science of biologically active agents traditionally observed by man (Bruhn and Holmstedt 1981; Subramaniam et al. 1995). Before

the introduction of allopathic and chemical based medicines, man relied on the healing properties of medicinal plants. The healing power of traditional herbal medicines have been realized and documented since "Rigveda" and "Atharvaveda". Since then plants and their extracts have been used therapeutically and even today plant-based medicines continue to play an essential role in world health care (Sofowora et al. 2013). Chhattisgarh is one of the most important states in India because of its ancient history of cultivating and preserving traditional medicinal plants, also the Government has declared this state as "Herbal State" in July 2001 (Ekka 2013). There are many ethnic groups present in Chhattisgarh state and almost every group has its own traditional medicinal knowledge and experiences. Plants have been utilized as medicines for thousands of years in this state and are a source of many potent and powerful drugs. Accordingly the Chhattisgarh Forest Policy has specially provided non-destructive harvest of medicinal plants with the active help and support from local people including traditional healers, Aadiwasi, Baigas and Vaidyas (Ekka 2013). Many plant-derived drugs used in modern medicine are developed through ethno botanical approach (Fransworth 1966; Ghorbani et al. 2006; Bigoniya 2008). 32 medicinal plants belonging to 29 genera and 21 families of angiosperms, which are used in the treatment of various human ailments by certain Adivasis viz., the Chenchus, Reddis, Valmikis and Gonds in Andhra Pradesh and Soras and Kondh tribes in Odisha was listed by Jain et al. in 1973. Malhotra and Moorthy in 1973 gave a list of about 126 medicinal plants used by the local inhabitants of Chandrapur district, Maharashtra. Sahu in 1982 conducted an ethnobotanical study of Madhya Pradesh: plants used against various disorders among tribal women. Tiwari et al. in 2014 have documented the ethno-medicinal knowledge among the tribes of Achanakmar - Amarkantak Biosphere Reserve of Central India. Kushwaha et al. in 2013 performed research work on medicinal plants used in the treatment of some common diseases by the tribal and rural people in Korea district of Chhattisgarh. Wide variety of medicinal plants used by traditional healers of Jashpur district of Chhattisgarh, India was carried out by Tiwari & Mehta in 2013.

MATERIALS AND METHODS

Study area

Gomarda Wildlife Sanctuary (GPS-21.4084° N, 83.1866° E) stretched across 277.82 km^2 is 52 kilometer away from Raigarh district headquarter and is named after the village Gomarda situated inside the sanctuary (Bhattacharyya & Murmu 2007; Figure 1). Gomarda is one of the wealthiest sanctuary in terms of biodiversity and is also very well endowed in scenic beauty. The exquisite natural beauty of sanctuary is the virtue of its vivid geographical landforms which consist of mountains, valleys, plateau, caves, lakes, waterfalls, plains, etc. Large grasslands are the key feature of Gomarda. This sanctuary bears beautiful grasslands as well as small hills with deciduous vegetation which include Bhirra, Karra, Bija, Harra, Amla, Khair, Neem, Baheda, Karanj etc (Kumar & Saikia 2020b).

Collection of ethno-medicinal information

The present work was carried out between January- May 2019. Informants were selected on the basis of information

provided by selected knowledgeable elder traditional healers and local tribes of the study region. They are generally more aware of the traditional knowledge. Prior to survey, a ethno-botanical survey pro-forma was designed (Buwa et al. 2019) and pretested with informants to find out its suitability for the present study and later on modified according to response of informants. All interviews were carried out in local language (Chhattisgarhi and Lariya) of the study area. Pro-forma designed for the traditional healers about ethno-medicinal plants knowledge, focused on the local names of medicinal plants, parts of the plants used, types of diseases treated, modes and methods of drugs preparation and modes of administration regarding each medicine. Survey pro-forma also contained questions regarding sociocultural information (Young 2016). This study area is very significant for ethno-medicinal studies showing to the dominance of different communities like Baiga, Aadiwasi, Binjhwar, Bariha etc. Recorded herbs, shrubs and trees were identified with the help of local people, previous literature and employee of the sanctuary (Table 1).

RESULTS AND DISCUSSION

Ethno-medicinal research has led to the documentation of a large number of wild plants used by traditional healers and tribes for their medicinal importance. In present work 25 plant species were reported belonging to 16 families. Percentage of family is as follows: Fabaceae 20%, Malvaceae 16%, Combretaceae 8%, Anacardiaceae 8%, Acanthaceae 4%, Papaveraceae 4%, Asparagaceae 4%, Meliaceae 4%, Burseraceae 4%, Apocynaceae 4%, Vitaceae 4%, Euphorbiaceae 4%, Moraceae 4%, Sapotaceae 4%, Oleaceae 4%, Lythraceae 4% (Figure 2). It has been observed that the leaves of the plants are a major part that has been used for ethno-medicinal purposes followed by bark, fruits, and roots respectively (Figure 3). Local people use these plants to treat common diseases like skin disease, wound healing, jaundice, fever, diabetes, joint pain etc. Demographic, economic, socio-political, ecological, religious and cultural entities existing in a community are key drivers of traditional knowledge in a given community. Various ethno-medicinal investigations also show that traditional knowledge on medicinal plants varies depending on different factors including gender, age and occupation.

CONCLUSION

Ethno-medicinal plants of Gomarda Wildlife Sanctuary, Raigarh are used by local people since ancient era and their documentation have done negligible. Hence many traditional methods used to cure any diseases have been decreased due to less transfer of traditional knowledge, civilization, migration and modernization by ethnic people from their particular area. So documentation is very important now-a-days to conserve these traditional knowledge. The present study proved that medicinal plants are playing very important role in meeting the primary health care of tribes and other rural people of study area. Ethno-botany is not the only avenue for new drug discovery, not the only source of models for conservation, but the body of knowledge it represents is founded on long-term experience with both subjects.

Table 1: Various medicinal plants used as medicine by traditional healers of Gomarda Wildlife Sanctuary Raigarh, Chhattisgarh, India

Botanical name	Local name	Family	Habit	Plant Parts Used	Uses
Andrographis paniculata (Burm.f.) Nees	Bhuineem/ Kalmegh	Acanthaceae	Herb	Whole pant	Dry powder of whole plant is mixed with hot water is used for treatment of fever, diabetes and gall disease.
Argemone mexicana L.	Satyanshi	Papaveraceae	Herb	Root, Leaf	Ring worm, abdominal pain, cough, jaundice, asthma, male impotency.
Asparagus racemosus Willd.	Satavari/ Dashmool	Asparagaceae	Herb	Root	Powder of root is used to treat urinary problems. Increases quantity and quality of sperm.
Azadirachta indica A. Juss.	Neem	Meliaceae	Tree	Whole plant	Leaf is used to treat chickenpox, seed oil has been used for treating skin disorders.
Bauhinia malabarica Roxb.	Amti	Fabaceae	Tree	Fruit Leaf	Jaundice, blood purification, ant diabetic and antimicrobial activity.
Bombax ceiba L.	Semal	Malvaceae	Tree	Whole plant	Jaundice, asthma, helps in blood purification.
Boswellia serrata Triana and Planch.	Saliha/Salai	Burseraceae	Tree	Bark, Leaf	Arthritis, bronchial asthma, wound healing.
Buchanania lanzan Spreng.	Chaar	Anacardiaceae	Tree	Bark, Leaf	Used to treat snake bite and wound healing.

Butea monosperma (Lam.) Taub.	Palash	Fabaceae	Tree	Stem, Bark	Juice of bark is used to treat diabetes and dysentery in summer.
Calotropis procera (Aiton) Dryand.	Arak	Apocynceae	Shrub	Latex	Latex is used in removing thorn.
Cassia fistula L.	Amaltas	Fabaceae	Tree	Leaf, Seed	Juice of leaf used to treat loose motion, seed is used in treatment of fever and leprosy.
Cissus quadrangularis L.	Hadjod	Vitaceae	Climber	Whole plant	Plant is used to joint fractured bones.
Euphorbia hirta L.	Dudhi	Euphorbiaceae	Herb	Latex, Leaf, Root	Leukoderma, Leaf juice is used to remove intestinal worm in children.
Ficus racemosa L.	Dumar	Moraceae	Tree	Seed, Fruit, Latex	Seeds and fruits are used in urinary problems. Latex is used in diarrhea and piles.
Grewia hirsuta Vahl.	Gudsakari/ Kharata	Malvaceae	Small tree	Leaf	Paste of Leaf is used to control swelling and pain in legs.
Helicteres isora L.	Marodfalli/ Ataan	Malvaceae	Small tree	Fruit	Dry powder of fruit is used to treat diarrhea and arthritis.
Lannea coromandelica (Houtt.) Merr.	Moyan/ Mohin	Anacardiaceae	Tree	Leaf, Bark	The boiled leaves are applied for local swellings and body pains.
Madhuca longifolia *(J.Koenig ex L.)*	Mahua	Sapotaceae	Tree	Flower, Seed, Stem, Oil	Fat is used in skin care, Stem is used as toothbrush and alcoholic drink is prepared from flowers.

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Nyctanthes arbour-tristis L.	Parijat	Oleaceae	Small tree	Leaf	Dry powder of leaf is used in treatment of sciatica and joint pain.
Pongamia pinnata (L.) Pierre	Karanj	Fabaceae	Tree	Leaf, Seed, Root, Bark	Seed oil used in skin disease. Oil is used for treatment of pyorrhea.
Senegalia catechu (L.f.) P. J. H. Hurter and Mabb.	Khair	Fabaceae	Tree	Bark, Leaf	Bark and leaf is used to treat diarrhea, skin disease and bleeding.
Sterculia aurens Roxb.	Gindola/ Kullu	Malvaceae	Tree	Gum	A solution of gum, water and sugar is used to treat loose motion.
Terminalia bellerica (Gaertn.) Roxb.	Baheda	Combretaceae	Tree	Fruit	Fruits are used in cough and cold. A constituent of trifala.
Terminalia chebula Retz.	Harra	Combretaceae	Tree	Fruit	Used in gastrological problems. It is also a constituent of trifala.
Woodfordia fruticosa (L.) Kurz	Dhawai	Lythraceae	Shrub	Leaf, Flower	Quick healing, Relieve burns, Vaginal prolapse. Tea (Kadha) is made from leaf, Red dye is made from flowers.

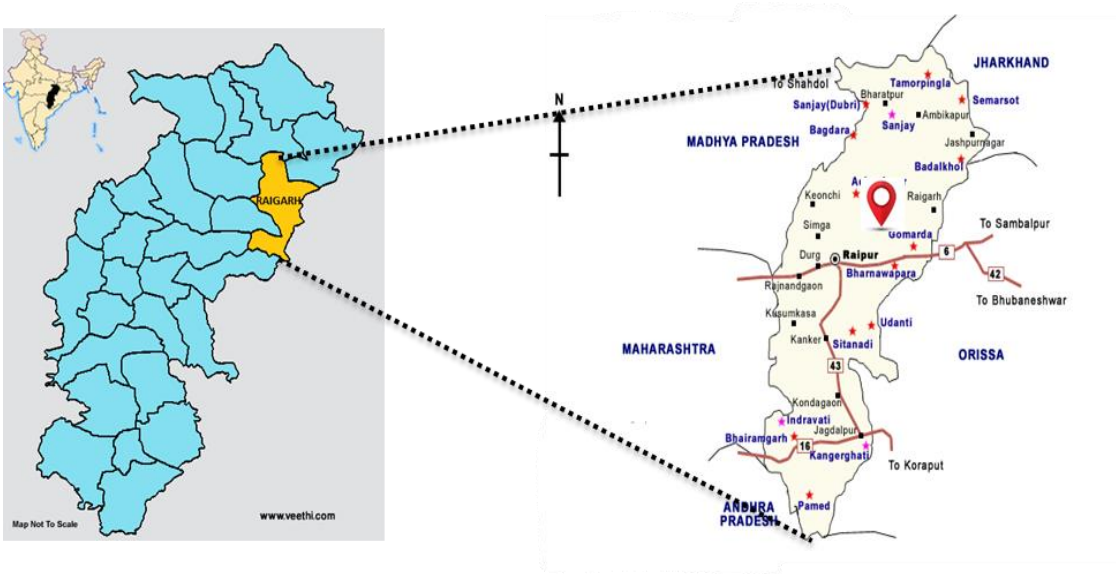

Figure 1: Gomarda Wildlife Sanctuary (GWS), Raigarh – Chhattisgarh, India

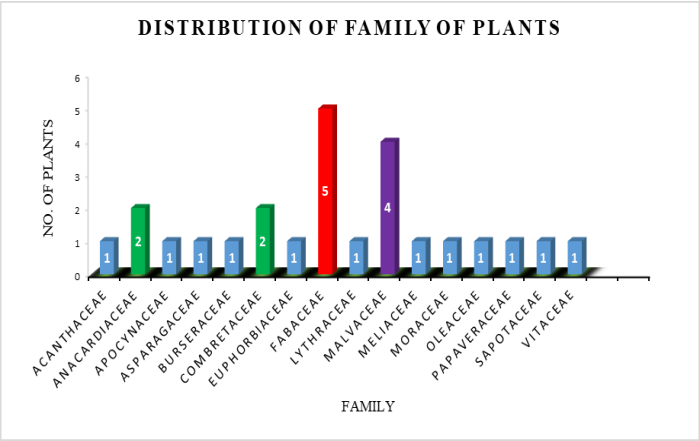

Figure 2: Distribution of family of plants used by healers of GWS, India

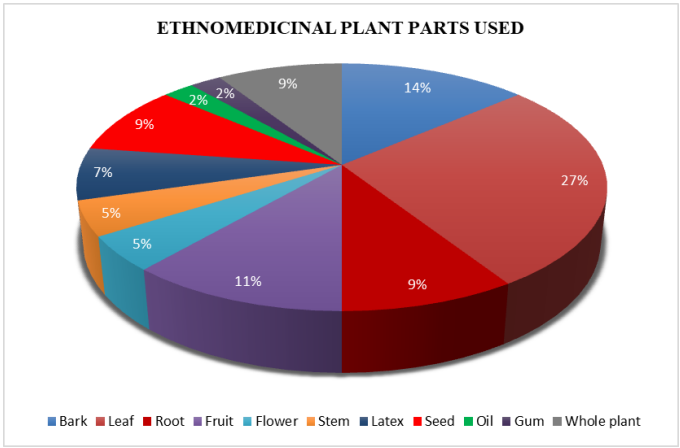

Figure 3: Diversity of plant parts used in different diseases & disorders

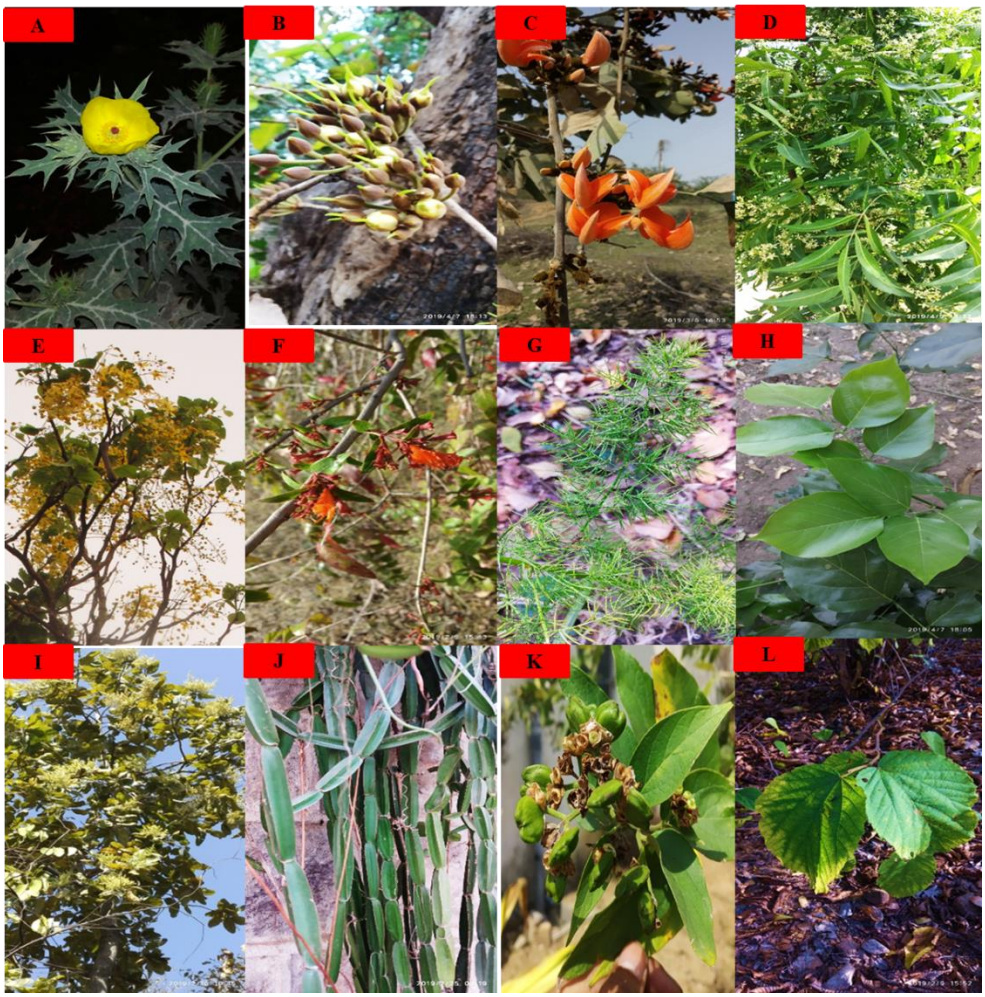

Plate 1: A) *Argemone mexicana* ; B) *Madhuca longifolia* ; C) *Butea monosperma*; D) *Azadirachta indica*; E) *Cassia fistula*; F) *Woodfordia fruticosa* ; G) *Asparagus racemosus* H) *Pongamia pinnata* ; I) *Buchanania lanzan*; J) *Cissus quadrangularis* ; K) *Nyctanthes arbour-tristis* ; L) *Helicteres isora*

PLATE 2: Field works and collection of information

CONCLUSION

Ethno-medicinal plants of Gomarda Wildlife Sanctuary, Raigarh are used by local people since ancient era and their documentation have done negligible. Hence many traditional methods used to cure any diseases have been decreased due to less transfer of traditional knowledge, civilization, migration and modernization by ethnic people from their particular area. So documentation is very important now-a-days to conserve these traditional knowledge. This research study and documentation was conducted first time on this sanctuary area on the basis of medicinal plant. The present study proved that medicinal plants are playing very important role in meeting the primary health care of tribes and other rural people of study area. Ethno-botany is not the only avenue for new drug discovery, not the only source of models for conservation, but the body of knowledge it represents is founded on long-term experience with both subjects.

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