RESEARCH ARTICLE

Ethnomedicinal Survey of Plants in Nagri Block of District Dhamtari of Chhattisgarh, India

Gaurav Nag*, V. K. Kanungo and Sarvesh K. Patel

DOI: 10.18811/ijpen.v10i03.18

Abstract

Nagri block is located 69 km towards the east direction from Dhamtari district headquarters. It coordinates at 20°34'10" N. and 81°95'90" E. Forest has been flourishing exceptionally well in Nagri block. Plants with medicinal benefits are the predominant part of the terrain of Nagri. The objective of the study is to acquire comprehensive data on the variety of medicinal plants that are found in Nagri block and used by the tribal. Traditional healers and medicine men are playing an important role in primary health care in the study area. Tribal, local people, and traditional healers have been considered during the survey of medicinal plants in the current study. The study documented a total of 50 plant species of 44 genera belonging to 29 families with medicinal uses, local names, and parts used as medicine. Largely used plant part was noted to be root and leaf followed by bark, whole plants, and other parts. A survey of the medicinal plants indicated that there is a wealth of knowledge about treating various ailments using plants available, they are gradually vanishing with the traditional healers and primary health care is still dependent on plants in this tribal area, therefore the traditional knowledge of medicinal plants required to be documented.

Keywords: Nagri, Ethnomedicine, Traditional healers, Chhattisgarh.

Highlights

- Nagri block is one of the well-known tribal-dominated areas of the state.
- Tribal communities like Gond, Halba and Kamar inhabit the study area.
- Tribal are primarily dependent on traditional ethnomedicines.
- The documentation of ethnomedicinal plants of Nagri block is remarkably searce.
- A significant number of ethnomedicinal plants have been recorded during the present survey.

International Journal of Plant and Environment (2024); **ISSN:** 2454-1117 (Print), 2455-202X (Online)

Introduction

The state of Chhattisgarh is known as the "herbal state" due to the abundance and variety of its natural resources. This is because of the extraordinary diversity of ethno-medicinal plants that are found in the area. According to the Indian State of Forest Report 2021, the state's major forest cover, which covers 55,717 sq km, places it in third place among all the states in the country. This enormous area of forested terrain offers a great habitat for a wide variety of plant species, including those that have important therapeutic benefits thanks to the presence of these plants. The state is home to over 550 tribal communities, which are divided into 227 different ethnic groups. These communities are located in approximately 5000 villages, each of which is distinguished by its diverse forest and plant environments (Sahu *et al*., 2014). Five indigenous populations live in 10 different villages within the research area, and each of these communities relies on the native flora for medical purposes.

The scientific field of ethnobotany, which focuses on the ways in which indigenous knowledge and practices are connected with the natural world, is essential to understanding the complex links that exist between people and plants (Sandey and Sharma, 2016). These plant resources are essential to human cultures' existence, especially in rural and tribal communities. Tribal and indigenous people have developed and improved traditional knowledge about using wild and local plants for medicinal purposes over many centuries. Particularly for impoverished rural populations, who frequently find it more accessible and affordable than contemporary healthcare options, this ancient healthcare system is still essential. Modern medical facilities may be too expensive for people living in remote or underdeveloped locations, yet traditional medicine still provides a useful option with little side effects. Traditional cures, on the other hand, are crucial to the survival and upkeep of health for many people living in remote and interior areas, where access to modern healthcare can be prohibitively expensive (Mahalik *et al*., 2015). Thus, it is crucial to preserve and record traditional knowledge about medicinal plants in order to protect marginalized communities' access to healthcare treatments as well as to preserve their cultural heritage.

Given the importance that humanity places on this knowledge of plant utilization, it is imperative that immediate attention be paid to the documentation of this knowledge in order to prevent the loss of this priceless cultural medicinal heritage. The state of Chhattisgarh is a source of many plant species that are used as herbal medicine. This is because the

Department of Botany, Government Nagarjuna P. G. College of Science, Raipur, Chhattisgarh, India.

***Corresponding author:** Gaurav Nag, Department of Botany, Government Nagarjuna P. G. College of Science, Raipur, Chhattisgarh, India., Email: gauravnag30@gmail.com

How to cite this article: Nag, G., Kanungo, V. K., Patel, S. K. (2024). Ethnomedicinal Survey of Plants in Nagri Block of District Dhamtari of Chhattisgarh, India. International Journal of Plant and Environment. 10(3), 151-156.

Submitted: 12/04/2024 **Accepted:** 02/09/2024 **Published:** 30/11/2024

state possesses a vast amount of established information regarding medicinal plants as well as a wide variety of plant and animal species (Patel, 2012). A study was conducted in the Nagri block of the Dhamtari district in Chhattisgarh state with the purpose of documenting the indigenous knowledge of tribal people in relation to species that are considered to be ethno-medicinally valuable.

Materials And Methods

Study area

The Dhamtari district, which encompasses a total area of 4,084 square kilometers, is distinguished by the varied geography and abundant natural resources that it possesses. Dhamtari, Birguri, and Nagri are the three major forest ranges that are distinguished by this region's significant features. Nagri, which is one of the four blocks that make up the district, can be found at a latitude of 20°34'10" N and 81°95'90" L East. It is situated roughly 69 kilometers east of the main administrative headquarters of the district. This block encompasses a total area of 2,070 sq km, the majority of which is comprised of huge forested zones. The Gond, Halba, and Kamar represent the indigenous tribal people who call the lush green terrain of Nagri their home. The ecological and cultural significance of this region within the Dhamtari district is highlighted by the fact that these tribes have spent a significant amount of time and effort relying on abundant forest resources for their livelihoods and traditional customs. The dense woods and diverse flora and fauna of Nagri play an important role in the environmental and socio-economic fabric of the region. This contribution is an indication of the strong connection that exists between the indigenous peoples of the region and the natural environment in which they live (Fig. 1).

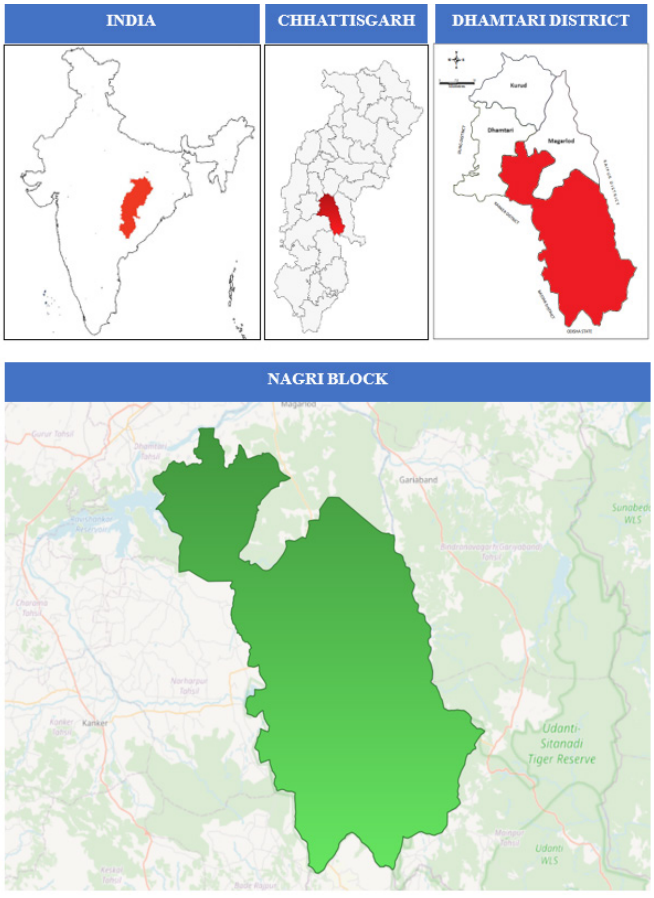

Fig. 1: Map of study area

Data collection

During the year 2022, the survey was carried out as part of the Nagri block in ten villages that were dominated by tribes. Traditional healers, Sirha, and Baigas of varying ages were selected from among the residents of each community to fulfill the role of informants. For the purpose of documenting a variety of illnesses, personal interviews with practitioners of traditional medicine were also conducted. Field visits were also conducted with local healers in order to have a better understanding of the identification of the plants and the medicinal applications of these plants. Using a questionnaire that was created by Jain (1986) and Masih (1990), the ethnobotanical data was collected. The common name, the habit of the plant, and the plant parts that are utilized to manufacture medications for the treatment of ailments were the categories that were used to document the plant. Another question that was posed to the informants concerned the manufacturing of drugs and the manner by which they were administered for the treatment of various ailments.

Identification

Plants were identified with the assistance of Flora of Madhya Pradesh Vol. I (Verma *et al*. 1993), Flora of Madhya Pradesh Vol. II (Mudgal *et al*. 1997) and Flora of Madhya Pradesh Vol. III (Singh *et al*. 2001). The latest names of ethnomedicinal plants were recorded from the online portal of the Royal Botanic Gardens, Kew.

Results And Discussion

The present study systematically categorized 50 different plant species from 44 genera and 29 families, displaying a wide range of botanical diversity used in traditional medicine (Table 1). This extensive study showed that these plants are used by villagers and traditional healers to cure 32 various diseases (Table 1), demonstrating the embedded knowledge and reliance on herbal treatments in these communities. The most noteworthy discovery among the results is that joint pain and diabetes are the two main health issues that are primarily treated using five plant species. This suggests that using herbal remedies to address these illnesses is quite important.

Four plant species are specifically utilized to treat skin conditions like acne and pimples, as well as diarrhea and joint discomfort. This implies that common skin disorders and gastrointestinal problems have well-established treatments in traditional methods. The study discovered that three plant species are used to treat several illnesses, including fever, cough, asthma, and toothaches (Table 1). This illustrates the wide spectrum of respiratory and oral health conditions for which herbal remedies can be used, highlighting their importance to general health.

Additionally, the study found that two plant species are used to treat a number of different illnesses, such as piles, ulcers, jaundice, ringworm, snake bites, stomach pain, and increasing

Table 1: Ethnomedicinal plants of Nagri block of district Dhamtari, Chhattisgarh, investigated during the year 2022

S. No.	*Botanical Name*	*Vernacular Name*	*Family*	*Plant parts used*	*Medicinal Uses*
1.	*Aegle marmelos* (L.) Corrêa	Bel	Rutaceae	Lf	Eye ailments
2.	*Andrographis paniculata* (Burm.*f.*) Wall. *ex* Nees	Bhuineem	Acanthaceae	Lf	Fever, Malaria
3.	*Argemone mexicana* L.	Satyanshi	Papaveraceae	Rt	Cough
4.	*Asparagus racemosus* Willd.	Satavar	Asparagaceae	Rt	Diabetes
5.	*Azadirachta indica* A.Juss.	Neem	Meliaceae	Lf	Hair fall
6.	*Bauhinia variegata* L.	Kachnaar	Fabaceae	Br	Body ache
7.	*Boerhavia diffusa* L.	Punarnava	Nyctanthaceae	WP	Jaundice, skin disease
8.	*Bombax ceiba* L.	Semal	Malvaceae	Br	Nerve pain
9.	*Butea monosperma* (Lam.) Kuntze	Palash	Fabaceae	Sd	Diarrhea and dysentery
10.	*Calotropis procera (*Aiton) W.T.Aiton	Madaar	Apocynaceae	Rt, Br	Ringworm, laxative, joint pain
11.	*Cassia fistula* L.	Bhalumusri	Fabaceae	Rt	Snake bite
12.	*Cissus quadrangularis* L.	Hadjod	Vitaceae	WP	Bone fracture
13.	*Cleistanthus collinus* (Roxb.) Benth. *ex* Hook.*f.*	Karra	Phyllanthaceae	Rt	Headache.
14.	*Cleome viscosa* L.	Hurhur	Capparaceae	Wp	Joint pains, swellings, stomach pain
15.	*Commiphora wightii* (Arn.) Bhandari	Guggul	Burseraceae	Rt	Stomach ache
16.	*Cordia dichotoma* G.Forst.	Bohar bhaji	Boraginaceae	Lf	Vitiligo
17.	*Cordia macleodii* (Griff.) Hook.*f.* and Thomson	Dahiman	Boraginaceae	Rt	Piles
18.	*Datura metel* L.	Dhatura	Solanaceae	Lf, Rt	Fever, sores, muscle spasm
19.	*Dendrophthoe falcata* (L.*f.*) Ettingsh.	Madan	Loranthaceae	Lf	Treatment of testicles
20.	*Euphorbia hirta* L.	Dudhi	Euphorbiaceae	Wp	Asthama, Skin diseases
21.	*Ficus religiosa* L.	Peepal	Moraceae	Br	Respiratory diseases
22.	*Ficus tinctoria* G. Forst.	Koriya	Moraceae	Br	Diabetes
23.	*Grewia hirsuta* Vahl	Gudsakari	Malvaceae	Rt	Joint pain
24.	*Gymnema sylvestre* (Retz.) R.Br. *ex* Sm.	Gudmar	Apocynaceae	Lf	Diabetes
25.	*Justicia adhatoda* L.	Adusa	Acanthaceae	Lf	Diabetes
26.	*Justicia simplex* D. Don	Bhuitulsi	Acanthaceae	Rt, Lf	Cough, jaundice
27.	*Linum usitatissimum* L.	Sanbeej	Linaceae	Sd	Paralysis
28.	*Madhuca longifolia* (L.) J.F.Macbr.	Mahua	Sapotaceae	Rt	Snakebite
29.	*Mangifera indica* L.	Aam	Anacardiaceae	Ft	Anthelmintic
30.	*Mimosa pudica* L.	Laajwanti	Fabaceae	Wp	Arthiritis, ulcer, bronchial asthama
31.	*Ocimum tenuiflorum* L.	Tulsi	Lamiaceae	Lf	Cold and Cough, fever
32.	*Phyllanthus amarus* Schumach. and Thonn	Bhui amla	Phyllanthaceae	Wp	Liver disorder
33.	*Phyllanthus emblica* L.	Amla	Phyllanthaceae	Sd	Dysentery
34.	*Piper longum* L.	Pipli	Piperaceae	Ft	Sleep
35.	*Plumbago zeylanica* L.	Chitrak	Plumbaginaceae	Sd	Arthritis
36.	*Pongamia pinnata* (L.) Pierre	Karanj	Fabaceae	Br,Sd	Piles, ulcer
37.	*Psidium guajava* L.	Amrud	Myrtaceae	Lf	Mouth ulcer
38.	*Pterocarpus marsupium* Roxb.	Bija	fabaceae	Br	Diabetes
39.	*Rauvolfia serpentina* (L.) Benth. *ex* Kurz	Sarpganda	Apocynaceae	Rt	Loose motion
40.	*Saccharum officinarum* L.	Ganna	Poaceae	St	Jaundice
41.	*Schleichera oleosa* (Lour.) Oken	Kusum	Sapindaceae	Ft	Scabies, itching
42.	*Semecarpus anacardium* L.*f.*	Bhilwa	Anacardiaceae	Rt	Acidity
43.	*Senegalia catechu* (L.*f.*) P.J.H.Hurter and Mabb.	Khair	fabaceae	Lf	Diarrhoea, toothache

44.	*Syzygium cumini* (L.) Skeels	Jamun	Myrtaceae	Lf	Toothache
45.	*Tamarindus indica* L.	Imli	Fabaceae	Br	Pimple and acne
46.	*Terminalia arjuna* (Roxb. *ex* DC.) Wight and Arn.	Arjun	Combretaceae	Br	Stamina booster
47.	*Terminalia bellirica* (Gaertn.) Roxb.	Behra	Combretaceae	Ft	Anemia
48.	*Terminalia chebula* Retz.	Harra	Combretaceae	Br, Ft	Digestion, weakness
49.	*Tridax procumbens* L.	Bhingraj	Asteraceae	WP	Typhoid
50.	*Vachellia nilotica* (L.) P.J.H.Hurter and Mabb.	Babool	Fabaceae	St	Gum pain, toothache

Photographs: a. *Andrographis paniculata* (Burm.f.) Nees, **b.** *Asparagus racemosus* Willd., **c.** *Bombax ceiba* L. **d.** *Cissus quadrangularis* L., **e.** *Cleistanthus collinus* (Roxb.) Benth. *ex* Hook.*f*., **f.** *Cordia dichotoma* G.Forst.

Photographs: g. *Dendrophthoe falcata* (L.*f*.) Ettingsh, **h.** *Mimosa pudica* L., **i.** *Plumbago zeylanica* L., **j.** *Phyllanthus amarus* Schumach. & Thonn., **k.** *Phyllanthus emblica* L., **l.** *Syzygium cumini* (L.) Skeels.

Fig. 2: Familywise distribution of Ethnomedicinal plant species

stamina. This variation highlights how adaptable certain plant species are in treating acute as well as chronic health problems. Only one plant species was reported for each of the less frequent or more specialized illnesses, which included typhoid, headache, eye disorders, malaria, hair loss, body ache, nerve pain, bone fractures, vitiligo, testicular hydrocele, paralysis, liver disorders, sleep problems, scabies, acidity, anemia, and paralysis (Table 1). For proper identification, specimens and photographs of all 50 medicinal plants were taken on the study site. Some photographs of largely used medicinal plants are attached with the result (Photograph a-l). This thorough record, which addresses a wide range of health issues, illustrates the conventional wisdom ingrained in the use of particular herbs for targeted therapeutic objectives.

All things considered, the results of this study show an intricate web of traditional medical practices, emphasizing the wide range of plant species that have been used extensively to treat a variety of medical ailments. This emphasizes how important traditional knowledge is to these cultures' healthcare practices, as well as the long-lasting value of plant-based treatments.

Local healers use a wide range of plant species, although the Fabaceae family made the biggest contribution, with 12 species used to treat various illnesses. Singh *et al*. (2013) found similar Fabaceae species prevalence in India and Chhattisgarh. Due to its diverse therapeutic characteristics, the Fabaceae family is important in traditional medicine. The study included numerous plant families after the Fabaceae. The Acanthaceae, Apocynaceae, Phyllanthaceae, and Combretaceae families contributed three species. These families may be valued in traditional medicine due to their particular therapeutic characteristics and functions in treating various health issues. Continuous use of plants from these families shows their importance in local pharmacopeia. Each of the Malvaceae, Boraginaceae, Moraceae, Anacardiaceae, and Myrtaceae families produced two plant species. These families play a moderate but substantial role in traditional therapies, illustrating the different medicinal plant resources used by indigenous healers. These families' plants' unique qualities and uses enhance traditional medicine.

The survey also found many plant families with one species. Rutaceae, Papaveraceae, Asparagaceae, Meliaceae,

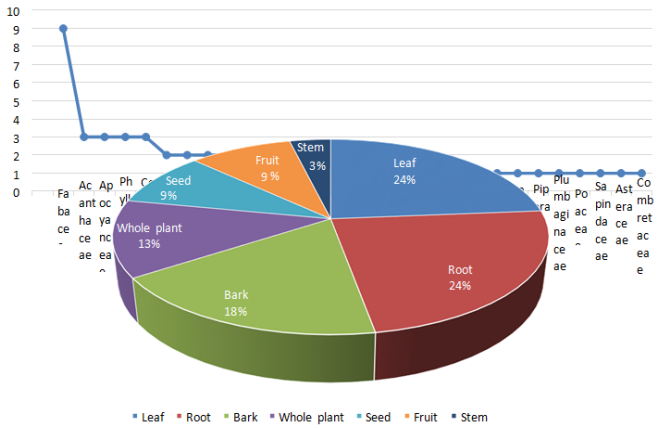

Fig. 3: Plant parts used by tribals in treatment of various ailments in Nagri block

Nyctanthaceae, Vitaceae, Capparaceae, Buseraceae, Solanaceae, Loranthaceae, Euphorbiaceae, Linaceae, Sapotaceae, Lamiaceae, Piperaceae, Plumbaginaceae, Poaceae, Sapindaceae, and A While each family provided only one species, their inclusion shows the wide range of plant groups used in traditional medicine. (Fig. 2).

The study revealed that the most frequently used plant part for ethnomedicinal treatment was the root and leaf (24%), followed by bark (18%), whole plant (13%), seed and fruit (9%), and lastly, stem (3%) (Fig. 3). Inhalation, oral administration, paste application, and rubbing massage were the forms and routes of medicine administration. Most of the illnesses of the gastrointestinal tract like stomach aches, piles, jaundice, and diarrhea, were noted to be treated by oral administration of medicine. Most of the skin ailments like body wounds, acne, and pimples were found to be treated by dermal application of paste. Similar results were recorded by other workers across the globe, like Islam *et al.* (2020) and Xiong (2020). In India, Dahare and Jain (2010) and Bala and Singh (2016) had similar results, whereas Upasana and Bharti (2015) and Chand *et al.* (2021) in Chhattisgarh.

Conclusion

The investigation reveals that the region is rich in medicinal plants, essential for treating various human ailments. This abundance highlights the importance of recording and preserving traditional knowledge, which is at risk due to widespread exploitation. Documenting ethnomedicinal plants is central to the survival of these species and the well-being of local communities. Traditional knowledge, often transmitted orally, underscores deeply rooted societal traditions but risks being lost without systematic documentation.

The study explored that local people still use medicinal plants to treat common illnesses despite the availability of modern healthcare services. These plants are used to treat conditions such as colds, coughs, fevers, headaches, poisonous bites, skin disorders, joint pain, and tooth infections. This reliance on traditional medicine reflects the community's value on ethnomedical practices, especially in tribal areas, and highlights how traditional knowledge can complement modern medical treatments.

The study emphasizes the importance of recording and preserving ancient medical practices to ensure this valuable knowledge is passed to future generations. Standardizing and preserving this information can value cultural heritage and contribute to broader medical research and conservation efforts.

Acknowledgment

The authors are thankful to all the officers and employees of the Forest Department of Nagri block of district Dhamtari for their kind support and assistance. Authors are also grateful to the Head of the Department, Botany, Govt. N.P.G. College of Science, Raipur, (C.G.) India, and special thanks to all the informants from different tribal communities for their engagement and for sharing their knowledge during the study.

Credit Authorship Contribution Statement

Gaurav Nag: Investigation, Writing-original draft, Methodology, Formal analysis, Data analysis. V. K. Kanungo: Conceptualization, Supervision, Writing-review and editing, Validation. Sarvesh Kaushik Patel: Photography, Writing-review and editing.

Declaration Of Competing Interest

The authors declare that they have no conflict of interest.

References

Bala, L. D., and Singh, R. (2016). An ethnobotanical study of medicinal plants in Chitrakoot area District Satna, Madhya Pradesh India. *International Journal of Botany Studies*, 1(5), 14-18.

Chand, G., Kanungo, V. K., and Naik, M. L. (2021). Ethnomedicinal plants and its use in Manipur block of Gariaband district in Chhattisgarh, India. *International Journal of Botany Studies*, 6(3),451-456.

Dahare, D. K., and Jain, A. (2010). Ethnobotanical Studies on Plant Resources of Tahsil Multai, District Betul, Madhya Pradesh, India. *Ethnobotanical Leaflets*, 2010(6), 7. https://opensiuc.lib.siu.edu/ebl/vol2010/iss6/7

Islam, A. R., Hasan, M., Islam, T., Rahman, A., Mitra, S., and Das, S. K. (2020). Ethnobotany of medicinal plants used by Rakhine indigenous communities in Patuakhali and Barguna District of Southern Bangladesh. *Journal of evidence-based integrative medicine*, 25. https://doi.org/10.1177/2515690X20971586

Jain, S. K. (1986). Ethnobotany. *Interdisciplinary Science Reviews*, 11(3), 285292.

Mahalik, G., Satapathy, K. B., and Sahoo, S. (2015). Ethnobotanical survey of plants used in treatment of urinary disorders in Dhenkanal district of Odisha, India. *Journal of Environmental Science, Toxicology and Food Technology*, 9(8), 58-63. https://doi.org/10.9790/2402-09815863

Masih, S. K. (1990). Ethno-botany studies in tribal area of Bastar and Jabalpur. [Ph.D. thesis, Rani Durgawati University, Jabalpur, M.P.].

Mudgal, V., Khanna, K. K., and Hajra, P. K. (1997). *Flora of Madhya Pradesh*. Vol. II, Botanical Survey of India, Calcutta.

Patel, D. K. (2012). Medicinal plants used for diabetes and for dental problem in central part of Chhattisgarh, India. *Journal of Phytology*, 4(3), 40-44. https://updatepublishing.com/journal/index.php/jp/article/view/2769

Sahu, P. K., Masih, V., Gupta, S., Sen, D. L., and Tiwari, A. (2014). Ethnomedicinal plants used in the healthcare systems of tribes of Dantewada, Chhattisgarh India. *American Journal of Plant Sciences*, 5, 1632-1643. https://doi.org/10.4236/ajps.2014.511177

Sandey, H., and Sharma, A. (2016). Study on ethnomedicinal plants of Achanakmar-Amarkantak Tiger reserve of Chhattisgarh. *Journal of Science Letters*, 1, 216-222.

Singh, A., Singh, M. K., Singh, R. (2013). Traditional Medicinal Flora of the District Buxar (Bihar, India). *Journal of Pharmacognosy and Phytochemistry*, 2(2):41 49.

Singh, N. P., Khanna, K. K., Mudgal, V., and Dixit, R. D. (2001). *Flora of Madhya Pradesh*. Vol. III, Botanical Survey of India, Calcutta.

Upasana, S., & Bharti, A. K. (2015). Ethnobotanical Study of Plants of Raigarh Area, Chattisgarh, India. *International Research Journal of Biological Sciences*, 4(6), 36-43. http://www.isca.in/IJBS/Archive/v4/i6/8.ISCA-IRJBS-2015-060.pdf

Verma, D. M., Balakrishnan, N. P., Dixit, R. D. (1993). *Flora of Madhya Pradesh*. Vol. I, Botanical Survey of India, Calcutta.

Xiong, Y., Sui, X., Ahmed, S., Wang, Z., and Long, C. (2020). Ethnobotany and diversity of medicinal plants used by the Buyi in eastern Yunnan, China. *Plant Diversity*, 42(6), 401-414. https://doi.org/10.1016/j.pld.2020.09.004