



Survey and Documentation of Phytotherapeutic Resources of The Oraon and Bhuiyan Tribes in Sundargarh District of Odisha, India

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Abstract

This investigation explores the ethnobotanical wisdom of the Bhuyan and Oraon tribes within Sundargarh district, highlighting their traditional utilization of phytotherapeutic resources. As biodiversity faces threats and traditional knowledge risks disappearance, our study aims to document and analyse the indigenous practices surrounding medicinal plants. Utilizing semi-structured interviews, this research engaged with members of the Oraon and Bhuiyan tribal communities to gather comprehensive data on the medicinal plant species employed, including their uses, preparation methods, and application modes. These interviews were supplemented by the identification of plant species with the assistance of local flora guides and taxonomic verification. Our research records a significant variety of plant species, underscoring the tribes' extensive pharmacopeia. It underscores the cultural and therapeutic importance of these plants, presenting an opportunity for future pharmacological research and conservation efforts. The study highlights the tribes' dependency on these natural resources for healthcare and their extensive knowledge passed down through generations, emphasizing the vital role of traditional medicine in sustaining their communities. By presenting the phytotherapeutic practices of the Bhuyan and Oraon tribes, this paper contributes valuable insights into the potential integration of traditional wisdom with modern scientific research. It calls for increased recognition and protection of indigenous knowledge systems and biodiversity, advocating for policies that ensure the preservation and respect of these invaluable resources for future exploration and benefit.

Keywords: *Phytotherapeutic Resources, Oraon and Bhuiyan Tribes, Sundargarh District.*

Introduction

Throughout history, humans across the globe have developed a vast compendium of plant knowledge, passed down through generations both orally and in written form. While contemporary science has honed these insights with precise methodologies for studying flora, ethnobotanical research continues to be a cornerstone for discovering new applications in medicine, agriculture, and various industries. This body of knowledge is particularly rich among tribal communities, who, despite their endogamous

nature and geographical isolation, have maintained a close relationship with their surrounding natural environments (Chopra *et al.*, 1986). These communities, often situated in diverse ecological settings from dense forests to hilly terrains, live in harmony with nature, subsisting as hunters, gatherers, and cultivators of forest land.

In India, Orissa (Odisha) stands out for its dense tropical forests inhabited by 62 distinct tribal groups, totaling 7 million people, each

with its unique empirical knowledge of local plant life. Sundargarh district, established in 1948 and sprawling across an area of 9675 Sq.km, is a prime example of this rich cultural and ecological tapestry. Bordered by several districts and states, Sundargarh's varied geography of forests, hills, and rivers, along with its significant tribal population, underscores the district's profound connection to its phytomedicinal wealth. Among these tribes, the Oraons and Bhuiyans are particularly noteworthy for their extensive ethnomedicinal practices (Sahoo, 2021), which reflect an in-depth understanding of local plant species and their health benefits. This deep-rooted wisdom, embodying centuries of observation and interaction with the natural world, presents an invaluable resource for potential breakthroughs in pharmaceuticals and beyond, underscoring the critical need for documentation and preservation amidst the

forces of modernization and environmental change.

Study Area

Located within the latitudinal and longitudinal coordinates of 21°35'N to 22°32'N and 83°32'E to 85°22'E, Sundargarh district is nestled in the northwestern part of Odisha, India. It shares its northern boundary with Ranchi district in Jharkhand, its western and northwestern edges with Raigarh in Chattisgarh, while to the south, it is flanked by the districts of Jharsuguda, Sambalpur, and Debagarh in Odisha, and to the east, it borders Singhbhum in Jharkhand alongside Keonjhar and Angul districts in Orissa. Sundargarh's landscape is characterized by its varied terrain, featuring uneven tablelands, extensive, untamed forests, and fragmented hill ranges cut through by rocky watercourses, rivers, and springs, with the Ib and Brahmani rivers marking significant waterways.

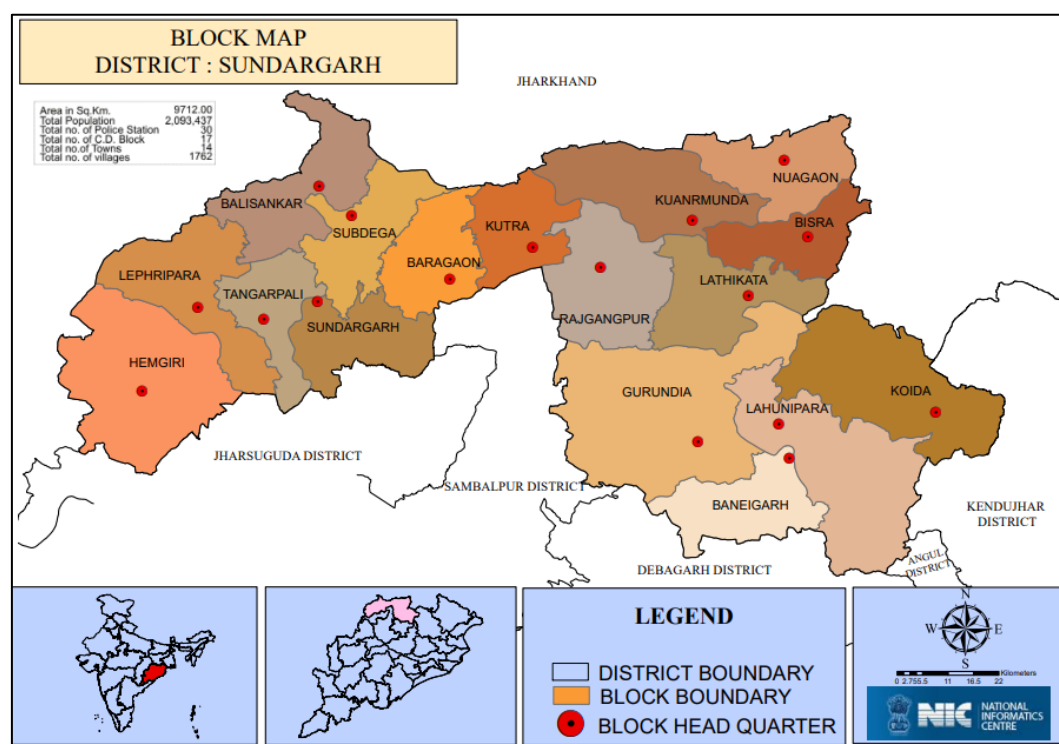


FIG 1: Block Map District: Sundargarh

This mineral-rich district boasts a diverse array of flora, contributing to its abundant natural heritage. The climate exhibits a consistent rainfall pattern, particularly during the Southwest monsoon from June to September and the retreating Northeast

monsoon during December and January, with the annual precipitation averaging between 160 to 200 cm. Temperature variations in the district range from a minimum of 11°C to a maximum of 44°C, with May being the warmest month and December the coldest.

Approximately 36% of its geographical expanse is covered with semi-evergreen or tropical dry deciduous forests.

Sundargarh is home to a significant tribal population, accounting for about 50.7% of its rural demographic, composed of 40 distinct ethnic tribal communities. Among these, the Oraon, Munda, Kharia, Kisan, Bhuiyan, and Gond tribes are some of the most prominent, showcasing the district's vibrant cultural diversity.

Materials and Method

The ethnobotanical survey was carried out intermittently in the district in 2023 to study the tribal use of plants for phytomedicinal purposes mostly in the blocks of Hemgiri, Rajgangpur, Lephripara, Kutra, Sundargarh, Bargaon, and Tangarpalli of Sundargarh district, which are inhabited by significant populations of the Bhuyan and Oraon tribes. The research involved interaction with members of the two communities and collaboration with local medicine experts, known as 'Baidas', from different tribal communities, who provided insights on plant use, including local nomenclature, therapeutic applications, preparation techniques, and dosages. This information was then verified

with other community members actively using these plants.

Plant Collection: The process of gathering medicinal plants utilized by tribal communities adhered to established collection guidelines and involved the preservation of these specimens using herbarium techniques. Detailed information regarding the plants, the specific parts used, and their application in treating various diseases, including the precise methods of preparation and dosage, was meticulously documented. Field-collected specimens were labelled and transported to the laboratory for further analysis. There, with the assistance of regional botanical guides, the plants were accurately identified, and the specimens representing phytomedicinal flora were archived within the herbarium collection. Accurate plant identification was supported by reference works such as Haines (1921-25) and Saxena & Brahman (1996), and comparison with voucher specimens at the herbarium of the Institute of Minerals and Materials Technology in Bhubaneswar. The documentation focused on a disease-based categorization, detailing the binomial nomenclature, local vernacular name and family name.

Table 1: Enumeration of plants

Sl. No.	Disease	Vernacular name of the Plant	Botanical name of the Plant	Family	Plants parts used in the process
	Fever	Bhuin Neem	<i>Andrographis paniculata</i>	Acanthaceae	Leaves
	Cold	Muniga Saaga	<i>Moringa oleifera</i>	Moringaceae	Leaves
	Jaundice	Gokulkanta	<i>Hygrophila auriculata</i>	Acanthaceae	Leaves
	Malaria	Gangasiuli	<i>Nyctanthes arbour-tristis</i>	Oleaceae	Leaves
	Throat Pain	Tulsi	<i>Ocimum tenuiflorum</i>	Lamiaceae	Leaves
	Joint Pain	Satawar	<i>Asparagus Racemosus</i>	Asparagaceae	Wild Tuber
	Scorpion Bite	Tamarind	<i>Tamarindus indica</i>	Fabaceae	Seeds
	Smooth Delivery	Salperni	<i>Phyllodium</i>	Fabaceae	Root

			<i>pulchellum</i>		
	anti-helminthic	Dengbhejri	<i>Argemone mexicana</i> L.	Papaveraceae	Seeds, latex
	Antidote for snake venom	Patal garudu	<i>Rauvolfia canescens</i> L.	Apocynaceae	Roots
	expectorant	Harra	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruit
	anthelmintic	Khirkanchan	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Whole plant
	Backache	Jhintika	<i>Indigofera linnaei</i>	Fabaceae	Leaves
	Joint pain	Bhadalia	<i>Olex scandens</i> Roxb.	Olacaceae	Roots
	Antidote for Snake Venom	Arakh	<i>Calotropis gigantea</i> R. Br.	Asclepiadaceae	Leaves, flowers, latex
	hair tonic	Keshdudura	<i>Tridax procumbens</i> Linn.	Asteraceae	Leaves, flowers
	Cough relief	Nirgun	<i>Vitex negundo</i> Linn.	Verbenaceae	Leaves
	Dental care	Karanj	<i>Pongamia pinnata</i> (L.) Pierre	Fabaceae	Seeds, leaves
	Enhancement of lactation in mothers with fresh parturition	Kalum	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Leaves, stems
	Dysentery	Bahada	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Fruit
	indigestion	Apmarang	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Seeds, leaves
	Enhancement of Female Fertility	Nunhia	<i>Portulaca oleracea</i> Linn.	Portulacaceae	Leaves

Table 2: Frequency of plants finding use in specific medical categories

Frequency of plants finding use in specific medical categories		
Medical Category	Specific Ailment	Number of Plant Species
Digestive System Disorders	Indigestion, Dysentery, Jaundice	3
Dental Disorders	Dental Care	1
Dermatological Conditions	Hair Tonic	1
Infections and Infestations	Fever, Cold, Malaria, Throat Pain, Anti-helminthic, Anthelmintic, Scorpion Bite, Antidote for Snake Venom, Antidote for Snake Venom	9
Musculoskeletal Disorders	Joint Pain, Backache, Joint Pain	3
Respiratory System Disorders	Cough Relief, Expectorant	2
Obstetric and Gynaecological	Smooth Delivery, Enhancement of Lactation in Mothers with Fresh Parturition, Enhancement of Female Fertility	3

Conditions		
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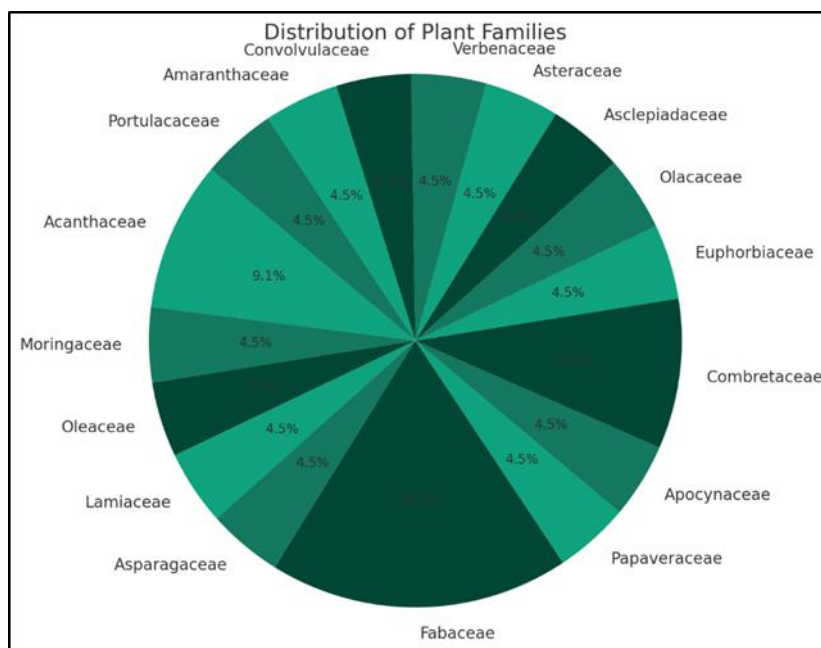


FIG 2: Distribution of Plant Families

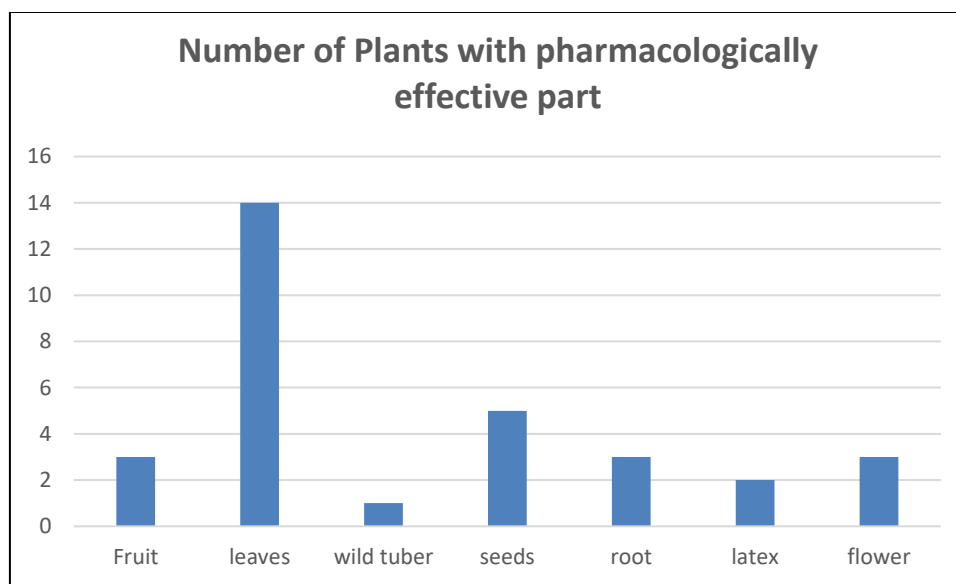


FIG 3: Number of Plants with Pharmacologically Effective Part

Results and Discussion

The ethnobotanical wisdom of the tribals in Sundargarh district, accrued and honed over countless generations, manifests a profound understanding of the local flora. In the present study, it was observed that 17 angiospermic plant families comprising 22 genera were commonly utilized, with Fabaceae emerging as the most predominant family. Notably, leaves were most frequently harnessed as phytomedicines, reflecting their significant role in tribal healthcare practices. In the

traditional medicine practices of Sundargarh's tribes, oral administration of plant-based preparations is standard. Root-derived pastes and powders are taken in doses of 3 to 10 grams to treat various ailments, with treatment durations tailored to specific conditions. Remedies are sometimes combined with dietary regulations, such as bland diets or intake with milk, particularly for gastrointestinal issues and gynecological health. Administration of remedies is often linked to specific times or conditions, such as

phases of the menstrual cycle or stages of pregnancy, indicating a nuanced understanding of timing in therapeutic applications. This approach to healthcare is integral to the tribes' cultural heritage and showcases a sophisticated understanding of the therapeutic potential of local flora.

The custodians of this knowledge, often resistant to divulge their insights to outsiders, underscore the precarious nature of this intangible heritage. The authors recognize the pressing imperative to document this invaluable knowledge, a treasure trove at risk of vanishing amidst the tide of modernization and cultural dilution. Amidst the backdrop of this research, it was evident that Non-Timber Forest Products (NTPFs) faced danger of getting lost from tribal knowledge, attributable to both the decline of traditional forests and the erosion of indigenous knowledge and cultural valuation.

Conclusion

This wealth of traditional healthcare practices underscores a holistic approach to wellness, where the health of the body is managed through a deep and respectful partnership with the natural world. The practices not only demonstrate an extensive pharmacopeia of medicinal plants but also a cultural tradition of health and wellness that is both sustainable and deeply rooted in the natural environment. The tribal communities of Sundargarh district harbour a rich, yet largely untapped, reservoir of indigenous knowledge, particularly in the realm of ethnomedicine. While some aspects of their traditional medicinal practices have been documented, the vast majority remains to be explored. This deep-seated ethnomedical wisdom holds the potential to guide the discovery of novel, clinically valuable compounds derived from plant sources, offering promising pathways for the advancement of modern medicine.

References

1. Sharma, K. A., Kumar, R., Mishra, A., & Gupta, R. "Problems associated with clinical trials of Ayurvedic medicines." *Revista Brasileira de Farmacognosia* 20.2 (2010): 276–281.
2. Kshirsagar, R., & Singh, N. P. "Some less known ethnomedicinal uses from Mysore and Coorg districts, Karnataka state, India." *Journal of Ethnopharmacology* 75 (2001): 231–238.
3. Weiner, M. A. "Ethnomedicine in Tonga." *Economic Botany* 25 (1971): 423–450.
4. Kameswararao, B., Kesavulu, M. M., & Apparao, C. "Evaluation of antidiabetic effect of *Momordica cymbalaria* fruit in alloxan-diabetic rats." *Fitoterapia* 74 (2003): 7–13.
5. Wadkar, K. A., Magdum, C. S., Patil, S. S., & Naikwade, N. S. "Antidiabetic potential and Indian medicinal plants." *Journal of Herbal Medicine and Toxicology* 2 (2008): 45–50.
6. Devi, S., Kumar, D., & Kumar, M. "Ethnobotanical values of antidiabetic plants of MP Region, India." *Journal of Medicinal Plants Studies* 4.3 (2016): 26–28.
7. Ignacimuthu, S., Ayyanar, M., & Sankaran, S. K. "Ethnobotanical investigations among tribes in Madurai District of Tamil Nadu." *Journal of Ethnobiology and Ethnomedicine* (2006): 25–30.
8. Saini, S. M., Kumar, V., Prakash, O., Arya, R., Rana, R., & Kumar, D. "Traditional medicinal plants curing diabetes: A promise for today and tomorrow." *Asian Journal of Traditional Medicines* 7 (2012): 178–188.
9. Chopra, R. N., Nayar, S. L., & Chopra, I. C. *Glossary of Indian Medicinal Plants*. New Delhi: Council of Scientific and Industrial Research, (1986).
10. Yeo, J., Kang, Y. M., Cho, S. I., & Jung, M. H. "Effects of a multi herbal extract on type 2 diabetes." *Chinese Medicine* 6 (2001): 1–10.
11. Jain, S. K., Sinha, B. K., & Saklani, A. "Some interesting medicinal plants known among several tribal societies of India." *Ethnobotany* 1 (1989): 89–100.
12. Mudgal, V., & Pal, D. C. "Medicinal plants used by tribals of Mayurbhanj (Orissa)." *Nelumbo* 22.1–4 (2015): 59–62.
13. Dash, B., & Dash, N. C. "Indigenous plant medicine for fertility regulation: A study on the Bhumija tribe of Odisha." *Adivasi* 54.1–2 (2014): 9–15.

14. Das, J., Acharya, B. C., & Mallick, S. N. "Traditional ethno-medicinal plants used for treatment of diabetes by Bhuyan tribes in Sundargarh district of Odisha, India – An ethnobotanical survey." *Plant Science Today* 10.3 (2023): 58–67.
15. Mohanty, S. P., & Rautaray, K. T. "An ethno-medicinal exploration of Bargarh, Odisha, India: Herbal drugs used by traditional healers in gynaecological and associated disorders." *Journal of Ayurveda and Integrated Medical Sciences* 5.5 (2020): 272–275.
16. Khatoon, G. "Ethnomedicinal uses of plants: A study among the Juang tribe of Keonjhar district of Odisha." *International Journal of Ayurveda and Pharma Research* 8.1 (2020): 22–29.
17. Sahu, G., Gardia, D., & Mishra, A. K. "Ethnomedicinal documentation of medicinal plants used by tribal peoples of Nua-pada district, Odisha, India." *Journal for Research in Applied Sciences and Biotechnology* 1.3 (2022): 128–130.
18. Kumari, A., Deb, A., Prusty, A. K., Suman, S., Rout, D. S., & Amar, A. K. "Preservation of the indigenous medicinal knowledge network of the Bonda tribe." *Indian Journal of Extension Education* 60.4 (2024): 40–46.
19. Prusti, A. B., & Behera, K. K. "Ethno-medico botanical study of Sundargarh district, Orissa, India." *Ethnobotanical Leaflets* 11 (2007): 148–163.
20. Sahoo, P. P. "Indigenous health care practices among the Oraon tribe of Bisra block, Sundargarh district, Odisha." *Society and Culture Development in India* 1.1 (2021): 55–67.
21. Mallick, S. N., Ram, J. P., & Parida, N. "Study of ethnomedicinal values of some shrubs in Rourkela Steel City and its surroundings, Sundargarh, Odisha." *International Journal of Applied Biology and Pharmaceutical Technology* 5.3 (2014): 123–130.
22. Basuri, T. S., Mohapatra, R., Dhal, N. K., & Kharat, S. N. "A meta-analysis study on plants used by tribes of various districts of Odisha for treatment of liver disease." *International Journal of Pharmaceutical Chemistry and Analysis* 10.1 (2023): 36–42.
23. Khatoon, G. "Ethnomedicinal uses of plants: A study among the Juang tribe of Keonjhar district of Odisha." *International Journal of Ayurveda and Pharma Research* 8.1 (2020): 22–29.
24. Mohanty, S. P., & Rautaray, K. T. "An ethno-medicinal exploration of Bargarh, Odisha, India: Herbal drugs used by traditional healers in gynaecological and associated disorders." *Journal of Ayurveda and Integrated Medical Sciences* 5.5 (2020): 272–275.
25. Kumari, A., Deb, A., Prusty, A. K., Suman, S., Rout, D. S., & Amar, A. K. "Preservation of the indigenous medicinal knowledge network of the Bonda tribe." *Indian Journal of Extension Education* 60.4 (2024): 40–46.
26. Acharya, B., Behera, A., Sahu, P. K., & Behera, S. "Sustainable health practices: Ethnobotanical insights into seasonal plants of Kalahandi, Western Odisha, India for food and medicine." *Ethnobotany Research and Applications* 29 (2024): 1–26.
27. Sahu, G., Gardia, D., & Mishra, A. K. "Ethnomedicinal documentation of medicinal plants used by tribal peoples of Nua-pada district, Odisha, India." *Journal for Research in Applied Sciences and Biotechnology* 1.3 (2022): 128–130.
28. Panda, S. K. "Ethno-medicinal uses and screening of plants for antibacterial activity from Similipal Biosphere Reserve, Odisha, India." *Journal of Ethnopharmacology* 151.1 (2014): 158–175.
29. Rout, P. G., & Panda, T. "Ethnobotanical survey of medicinal plants used for the treatment of diarrhoea and dysentery by the tribals of Similipal forest, Mayurbhanj, Odisha, India." *World Essays Journal* 10.1 (2022): 9–18.
30. Raj, P., & Nayak, K. V. "Health status and health seeking behaviour of Oraon female adolescents in Jharkhand." *International Journal of Social Science* 7.3 (2019): 387–396.
31. Mohanta, Y., & Lenka, C. "Use of indigenous knowledge and culture in preserving health: A study on tribal in Mayurbhanj district of Odisha." *International Journal of Home Science* 3.2 (2017): 426–429.

32. Prusti, A. B., & Behera, K. K. "Ethnomedicobotanical study of Sundargarh district, Orissa, India." *Ethnobotanical Leaflets* 11 (2007): 148-163.
33. Satpathy, K. B., & Brahmam, M. "Some medicinal plants used by tribals of Sundargarh district, Orissa, India." *Journal of Economic and Taxonomic Botany* 16.3 (1992): 679-683.
34. Mukherjee, A., & Namhata, D. "Medicinal plantlore of the tribals of Sundargarh district, Orissa." *Ethnobotany* 2 (1990): 57-60.
35. Panda, S. P., Prasad, R., & Barman, R. D. "Some potential medicinal plants used by the tribals of Angul district, Odisha, India." *Exploratory Animal & Medical Research* 13 (2023): 71-77.
36. Das, J., Acharya, B. C., & Mallick, S. N. "Traditional ethno-medicinal plants used for treatment of diabetes by Bhuyan tribes in Sundargarh District of Odisha, India – An ethnobotanical survey." *Plant Science Today* 10 (2023): 58-67.
37. Banik, G., Bawari, M., Dutta Choudhury, M., Choudhury, S., & Sharma, G. D. "Some anti-diabetic plants of Southern Assam." *Assam University Journal of Science and Technology* 5.1 (2010): 114-119.
38. Devi, U., Dwivedi, H., Khan, H., & Aminuddin. "An ethnomedicinal study of some medicinal plants of Boudh District, Odisha." *Hippocratic Journal of Unani Medicine* 12.1 (2017): 135-151.
39. Sinha, P., Das, P. K., & Mallick, S. N. "Ethnobotanical study of medicinal plants sold at weekly fairs of Karanjia in Mayurbhanj district, Odisha, India." *International Journal of Botany Studies* 6.6 (2021): 515-520.
40. Das, S., Ameeruddin, S., Das, S., & Leelaveni, A. "Medicinal plant knowledge and ethnomedicinal uses of tribal people of Niyamagiri Hill, Kalahandi District, Odisha, India." *Asian Journal of Research in Botany* 6.4 (2021): 20-41.
41. Devi, A. P. "Plants used by Meitei community of Manipur for the treatment of diabetes: An ethnobotanical survey." *Assam University Journal of Science and Technology* 7 (2021): 63-66.
<https://doi.org/10.1007/s10529-020-02784-2>
42. Patra, D. & Nayak, R. K. "Ethnomedicinal uses of medicinal plants for the treatment of skin diseases by the tribal communities of Keonjhar district of Odisha, India." *Journal of Medicinal Plants Studies* 12.2 (2024): 35-39.
43. Joshi, P., & Behera, D. "Ethnobotanical studies on the tribal communities of Sundargarh district, Odisha, India." *Journal of Ethnobiology and Ethnomedicine* 16.1 (2020): 1-12.
44. Kar, M. K., Swain, T. R., & Mishra, S. K. "Antidiabetic activity of *Clerodendrum serratum* (L.) Moon leaves in Streptozotocin-induced diabetic rats." *Asian Journal of Pharmaceutical and Clinical Research* 7.5 (2014): 260-263.
45. Das, Julie. "Folk treatment for asthma by Bhuyan tribes of Sundargarh district, Odisha." *Odisha Journal of Social Science* 6.2 (2019): 82-91.
46. Hariwal, M., Verma, S., Shah, P., Patel, P., & Kumar, S. "Some potential traditional ethnomedicinal plants among tribals of India." In: Srivastava, A. K., Ahirwar, R. K., Yadav, D., & Kumar, D. G. (eds.) *Ethnomedicinal Plants for Drug Discovery: Current Developments* (2024): 27-53.
47. Dash, A. K., Upadhyay, V. P., & Patra, H. K. "Ethnobotanical assessment of plant species of Hadagarh Wildlife Sanctuary, Odisha, India." *Geo-Eco-Trop* 45.2 (2021): 375-382.
48. Pandey, A. K., Pradhan, S., & Bux, F. "Quantitative ethnobotany of medicinal plants used by indigenous communities of Gandhamardan Mountain Chains at Bargarh District of Odisha, India." *Ethnobotany Research and Applications* 28.5 (2024): 1-29.
49. Bhoi, D. K., & Ahirwar, R. K. "Traditional medicine insights: exploring ethnomedicinal leafy vegetables of the Bhunjia and Paharia tribes in Sunabeda Wildlife Sanctuary, Odisha, India." *Genetic Resources and Crop Evolution* 72 (2025): 2077-2101.
50. Acharya, B., Behera, A., Dilnawaz, F., et al. "Ethnognecological properties of some selected local herbal plants from western Odisha: an ethnobotanical survey." *Envi-*

- ronment, Development and Sustainability* 27 (2025): 4849–4879.
51. Mandal, P. "Further interpretation of the microlithic occurrences of South Koel River Basin, North Western Odisha." *Kolkata Society for Asian Studies* 7.1 (2021): 32-47.
52. Hebbar, D. R., Behera, B., Kumar, N., Sharma, A., Hossain, E., Kumar, S., & Sharma, B. P. "Validation of traditional therapeutic practices on *Boswellia serrata* for the treatment of asthma and other respiratory problems." *African Journal of Biomedical Research* 27.3s (2024): 6367-6372.

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