



Review

ETHNOBOTANICAL DIVERSITY, KNOWLEDGE TRANSMISSION AND BIOCULTURAL CONSERVATION AMONG THE ADI COMMUNITIES OF ARUNACHAL PRADESH, INDIA: A CRITICAL NARRATIVE REVIEW

Temin Payum*

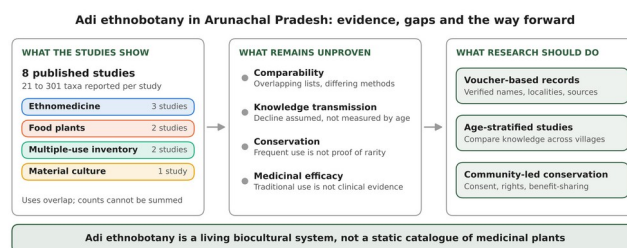
Department of Botany, Jawaharlal Nehru College, Pasighat, East Siang, Arunachal Pradesh, India

E-mail: teminpayum519@gmail.com

HIGHLIGHTS

- Eight studies of Adi plant use report 21 to 301 taxa each; totals cannot be summed.
- Food, medicinal, ritual and building uses of plants overlap in Adi communities.
- Evidence for medicinal efficacy remains ethnographic rather than clinical.
- Claims of knowledge decline need age-stratified, multi-village evidence.
- Voucher-based records and community-led benefit-sharing are research priorities.

GRAPHICAL ABSTRACT



ABSTRACT

Plant knowledge among the Adi communities of Arunachal Pradesh reaches into forest gathering, household meals, healthcare, ritual, and income. Published work, however, is scattered across small local surveys, so shared patterns are hard to identify. This narrative review brings together eight studies on Adi ethnobotany, ethnomedicine, food systems and material culture. The inventories they report range from 21 species used in vernacular architecture to 301 useful taxa in the Komkar-Adi landscape. Because the studies

overlap and use different methods, these numbers cannot be added together. Food and medicinal uses often go together with cultural and economic ones, but claims of medicinal benefit rest on ethnographic accounts, not clinical tests. Future work should rely on voucher specimens and cross-village comparisons, measure how knowledge passes between generations, and keep conservation and benefit-sharing in community hands. Adi ethnobotany is best seen as a living biocultural system rather than a list of medicinal plants.

KEYWORDS: [Adi communities](#) [ethnobotany](#) [traditional ecological knowledge](#) [wild edible plants](#) [medicinal plants](#) [biocultural conservation](#) [Eastern Himalaya](#).

*Corresponding author: Temin Payum, Department of Botany, Jawaharlal Nehru College, Pasighat, East Siang, Arunachal Pradesh, India. Email: teminpayum519@gmail.com

Published by JournalsKart – Jawaharlal Nehru College Multidisciplinary Research Journal, Vol. 1, Issue No. 1, Jul–Sept 2026.

© 2026 Jawaharlal Nehru College, Pasighat. All rights reserved.

1. INTRODUCTION

Ethnobotany studies how people name, collect, grow, prepare, and give plants meaning. In the Eastern Himalaya, steep ecological gradients and the different histories of the Indigenous communities

who live there shape these relationships. Arunachal Pradesh, one of India's most biologically diverse states, offers a strong setting to examine how plant diversity and local knowledge shape each other.

The Adi live in several districts of Arunachal Pradesh, and their plant practices differ from one village or local group to the next. Earlier work includes an overview of traditional plant knowledge (Srivastava & Adi community, 2009), medicinal plant surveys among the Adi-Minyong (Baruah et al., 2013), in Silile-Oyan (Tatan et al., 2020) and in Upper Siang (Arya et al., 2020), and a study of underutilized vegetables (Phurailatpam et al., 2017). Other studies have covered a wider range of useful plants in the Komkar-Adi landscape (Taram et al., 2020), traditional food systems and livelihoods (Singh et al., 2021), and plants used in vernacular architecture (Mylliemngap et al., 2023).

Together, these studies show that Adi plant knowledge goes well beyond medicine. However, their scopes differ so much that comparing them is difficult. Several questions remain open, especially about how knowledge is passed on, how much pressure plant resources face, and who decides how knowledge is used. This review asks what the existing records actually support, where their methods limit wider conclusions, and how future research and conservation can build on them responsibly.

2. METHODS

2.1 Review design and evidence base

This critical narrative review examines eight published studies on Adi plant knowledge, ethnomedicine, edible species, food systems, or material culture. Studies were found through [databases, e.g., Google Scholar and the NIScPR Online Periodicals Repository] using combinations of the terms “Adi”, “ethnobotany”, “ethnomedicine”, “wild edible” and “Arunachal Pradesh”, and by following citations; the last search was made in [month year]. A study was included if it reported primary data on plant use by a named Adi community. The review is not systematic, as it did not include an exhaustive database search, a predefined screening protocol or a meta-analysis. Each study was read for the community and locality it covered, its taxonomic scope, and its main findings.

2.2 Analytical framework

Three linked ideas guided the synthesis. The first is the diversity of useful plants and the many ways people use them. The second treats knowledge as a

social practice learned in context. The third is biocultural conservation (Maffi, 2005), which considers the survival of useful plants and the rights of the people who know them together. Species totals were kept separate for each study, since duplicated taxa and different sampling units could not be ruled out.

2.3 Evidence boundaries

Remedies reported in the literature are treated here as records of traditional use, not as proof that they are safe or effective. Statements about declining knowledge, threatened species, or economic potential are treated as hypotheses unless a cited study documented them directly. This review added no interviews, voucher specimens, or laboratory tests.

3. RESULTS

3.1 Variation in inventory size and research scope

The studies record a wide range of plant uses, but their totals do not measure the same thing. Srivastava and Adi community (2009) documented 108 useful species, and Baruah et al. (2013) reported 31 medicinal species from 25 families. Phurailatpam et al. (2017) recorded 43 underutilized vegetable species. Tatan et al. (2020) found 59 ethnomedicinal species in 34 families, while Arya et al. (2020) recorded 38 ethnomedicinal species in 26 families from six villages in Upper Siang. The largest inventory, from the Komkar-Adi landscape, lists 301 useful taxa in 203 genera and 85 families (Taram et al., 2020). Mylliemngap et al. (2023) documented 21 species used in vernacular architecture, and Singh et al. (2021) identified 39 bioculturally important food species, 22 of which they analyzed for nutritional content. Figure 1 sets these counts side by side. None of these estimates the Adi’s full ethnobotanical flora.

Table 1. Published studies of Adi plant knowledge included in this review.

Study	Primary emphasis	Reported scope / contribution
Srivastava & Adi community (2009)	Traditional plant knowledge	108 useful species
Baruah et al. (2013)	Adi-Minyong ethnomedicine	31 medicinal species; 25 families
Phurailatpam et al. (2017)	Underutilized vegetables	43 underutilized vegetable species

Study	Primary emphasis	Reported scope / contribution
Arya et al. (2020)	Upper Siang ethnomedicine	38 species; 26 families
Tatan et al. (2020)	Sille-Oyan ethnomedicine	59 species; 34 families
Taram et al. (2020)	Komkar-Adi biocultural landscape	301 taxa; 85 families; 48 ethnomedicinal species
Singh et al. (2021)	Traditional food systems	39 local food species; nutrient analysis of 22
Myllemngap et al. (2023)	Vernacular architecture	21 species

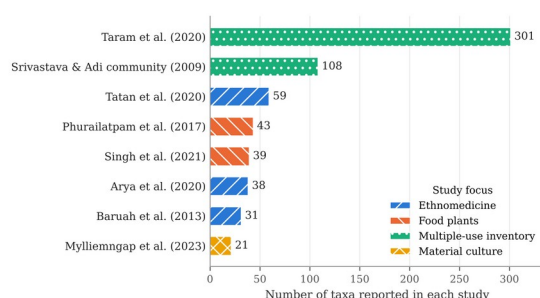


Figure 1. Number of taxa reported by each reviewed study of Adi plant knowledge, grouped by study focus. Counts are study-specific, overlap between studies, and differ in scope and method; they cannot be summed into a total for Adi communities.

3.2 Medicinal knowledge: practice versus validation

Medicinal knowledge involves choosing the right plant and plant part, preparing it in a particular way, and knowing what it is used for. Studies among the Adi-Minyong (Baruah et al., 2013), Upper Siang (Arya et al., 2020) and Sille-Oyan (Tatan et al., 2020) show how much healthcare still happens at home. In the Komkar-Adi landscape, Taram et al. (2020) found 48 ethnomedicinal species used for 35 ailments. Yet the fact that a preparation is traditionally used for a complaint does not, on its own, show that it works, what dose is safe, or whether it is toxic.

Species mentioned in these studies include *Clerodendrum colebrookianum*, *Coptis teeta*, *Curcuma longa*, *Ageratum conyzoides*, *Solanum spirale* and *Paris polyphylla* (Baruah et al., 2013; Taram et al., 2020; Tatan et al., 2020). Before any of these records is used to select plants for pharmacological work, the plant's identity, the part

used, the preparation, the locality and the source should be checked against voucher-backed records.

3.3 Food plants and livelihood relationships

Edible plants are just as central to Adi ethnobotany, as the vegetable survey of Phurailatpam et al. (2017) and the food-system study of Singh et al. (2021), which added nutrient analysis of selected species, make clear. What people eat depends on the season, household access, the need for a varied diet, and exchange. Some plants serve as both food and medicine, but their nutritional value and any medicinal effects need separate assessment. Selling such plants can support livelihoods, provided harvests remain sustainable and income is shared fairly.

3.4 Cultural uses and local specificity

Plants also carry ceremonial and cultural meaning. Baruah et al. (2013) recorded ritual uses for some species among the Adi-Minyong, and Myllemngap et al. (2023) showed that plant knowledge extends to building, documenting 21 species used in Adi vernacular architecture. Such findings belong to the communities in which they were recorded, and a plant used in one village should not be presented as a custom shared by all Adi. Responsible documentation records local names, the setting in which a plant is used, and permission to publish.

4. FINDINGS

4.1 Knowledge transmission: a critical research gap

People learn plant knowledge by doing, through gathering, farming, cooking, and time spent with people who know more. The studies reviewed here do not show a region-wide pattern of either loss or continuity between generations. Without comparable age-stratified samples, it is too early to say that young people know fewer plants.

A better design would compare knowledge across age groups and villages, accounting for occupation, schooling, mobility, access to forests, and the fact that some knowledge is held only by specialists. Researchers could combine free listing, plant recognition tests, guided walks, and semi-structured interviews, provided they keep apart recognizing a plant, knowing how to use it, and having only heard about it. Repeating such studies over time would

show whether differences reflect real change or simply generational differences.

4.2 Biocultural conservation: ecological and cultural dimensions

Plant populations and plant knowledge are connected, but they change for different reasons. Habitat loss or heavy harvesting can make useful plants harder to find, while social change can affect how knowledge is passed on. A biocultural approach looks at both and avoids reducing conservation to a list of species. Home gardens, cultivation, and community stewardship may help protect useful plants alongside their habitats, but this needs to be shown, not assumed.

4.3 Ethics, consent and benefit-sharing

Documentation should rest on informed consent, appropriate institutional review, clear attribution and a real say for communities over sensitive knowledge. Knowledge with commercial value needs particular care. Researchers should follow the Biological Diversity Act, 2002 (as amended in 2023), its access and benefit-sharing rules, and the International Society of Ethnobiology Code of Ethics (2006). They should also ensure that publications do not reveal restricted cultural practices or vulnerable plant populations without permission.

4.4 Priorities for applied conservation

In practice, communities and researchers could first agree on which plants matter most locally, confirm their identities with herbarium vouchers, measure their abundance and harvest pressure, and then decide together whether cultivation or controlled collection makes sense. A plant should not become a conservation priority simply because it is called medicinal, since ecological evidence and community views both count. *Coptis teeta* and *Paris polyphylla*, which appear in the reviewed inventories and are widely reported as species of conservation concern [cite current IUCN status], would be sensible places to start.

5. DISCUSSION

5.1 Research gaps

The studies show how broad Adi plant knowledge is, yet several important questions remain. The first is comparability. Plant counts depend on how broadly use categories are defined and how large an area was sampled, and overlapping inventories cannot be

combined until names and vouchers are reconciled. The second is change across generations, which ethnobotanical debates often assume but which has not been shown within particular Adi communities. The third concerns conservation, because a widely used plant is not necessarily rare or overharvested. The fourth is medical translation, as traditional uses cannot be presented as pharmacological or clinical findings until they have been properly tested.

Future research would benefit most from a coordinated comparison across several Adi localities, conducted in partnership with communities and bringing together taxonomy, food systems, knowledge transmission, and habitat data. Such a study could show what is shared and what differs, without treating Adi culture as a single, uniform whole.

5.2 Research design principles for future Adi ethnobotany

Four principles follow from this evidence. First, clearly define the community and sampled area, rather than treating “Adi” as a single unit. Second, link every plant-use record to a verified taxon, checked against an authoritative nomenclatural database, along with its locality and source, in line with recommended reporting standards (Weckerle et al., 2018). Third, keep descriptive counts separate from statistical inference, because indices such as use value and relative frequency of citation depend on consistent interviews and clearly defined denominators (Phillips & Gentry, 1993; Tardío & Pardo-de-Santayana, 2008). Fourth, plan documentation and publication with knowledge holders, including decisions about restricted information and sharing any benefits.

Table 2. Proposed research framework and corresponding evidence requirements.

Research dimension	Recommended approach	Evidence needed
Plant identity	Guided walks, specimens, herbarium verification	Voucher number; accepted name; locality
Use documentation	Semi-structured interviews and observation	Use category; plant part; preparation; source
Knowledge transmission	Age-stratified, multi-village comparison	Comparable sampling and recognition measures

Research dimension	Recommended approach	Evidence needed
Resource sustainability	Participatory assessment and ecological surveys	Abundance; harvest intensity; regeneration
Community rights	Consent and agreed data-governance procedures	Permission, attribution and benefit-sharing plan

5.3 Limitations of this review

This is a focused narrative review of eight published studies, not an exhaustive systematic review. Species lists were not reconciled across studies, and no new ethnographic, ecological or pharmacological data were collected. The review therefore cannot give a total number of useful plants for all Adi communities, say how common particular practices are, measure knowledge loss or confirm that any remedy works.

6. CONCLUSIONS

Among the Adi, plants tie together food, home healthcare, cultural practice and livelihoods. Published studies record many species, but their main lesson is not the total number. It is how many parts of community life depend on plants. Research should now move from isolated inventories to comparative, voucher-backed studies of how knowledge is passed on and how plants are cared for. Working ethically with Adi knowledge holders is essential if documentation is to support conservation without separating knowledge from the people who keep it alive.

DECLARATIONS

Acknowledgement. The author is grateful to the Principal, Jawaharlal Nehru College, Pasighat, for institutional infrastructure support.

Conflict of interest. The author has no competing interests to declare.

REFERENCES

- Arya, O. P., Myllemngap, W., & Pandey, A. (2020). Ethnomedicinal plants used by Adi community of Upper Siang District of Arunachal Pradesh in North-East India. *Pleione*, 14(2), 265–276. <https://doi.org/10.26679/Pleione.14.2.2020.265-276>
- Baruah, S., Borthakur, S. K., Gogoi, P., & Ahmed, M. (2013). Ethnomedicinal plants used by Adi-Minyong tribe of Arunachal Pradesh, eastern Himalaya. *Indian Journal of Natural Products and Resources*, 4(3), 278–282. <https://nopr.niscpr.res.in/bitstream/123456789/22480/1/IJNPR%204%283%29%20278-282.pdf>
- International Society of Ethnobiology. (2006). ISE code of ethics (with 2008 additions).
- Maffi, L. (2005). Linguistic, cultural, and biological diversity. *Annual Review of Anthropology*, 34, 599–617.
- Myllemngap, W., Arya, O. P., & Sundriyal, R. C. (2023). Ethnobotanical knowledge and socio-ecological significance of vernacular architecture of Adi community of Arunachal Himalaya in North-Eastern India. *Indian Journal of Traditional Knowledge*, 22(3), 567–575.
- Phillips, O., & Gentry, A. H. (1993). The useful plants of Tambopata, Peru: I. Statistical hypotheses tests with a new quantitative technique. *Economic Botany*, 47(1), 15–32. <https://doi.org/10.1007/BF02862203>
- Phurailatpam, A. K., Senjam, R., Kartek, K., Ngangbam, P., Chanu, T. M., & Heisnam, P. (2017). Underutilized vegetables with medicinal properties used by the Adi tribes of Arunachal Pradesh. *Medicinal Plants – International Journal of Phytomedicines and Related Industries*, 9(4), [page range]. <https://doi.org/10.5958/0975-6892.2017.00047.8>
- Singh, R. K., Bhardwaj, R., Singh, A., Payum, T., Rai, A. K., Singh, A., Wangchu, L., & Upadhyay, S. (2021). Mainstreaming local food species for nutritional and livelihood security: Insights from traditional food systems of Adi community of Arunachal Pradesh, India. *Frontiers in Nutrition*, 8, 590978. <https://doi.org/10.3389/fnut.2021.590978>
- Srivastava, R. C., & Adi community. (2009). Traditional knowledge of Adi tribe of Arunachal Pradesh on plants. *Indian Journal of Traditional Knowledge*, 8(2), 146–153. <https://nopr.niscpr.res.in/handle/123456789/3953>
- Taram, M., Borah, D., Mipun, P., Taram, V., & Das, A. P. (2020). Evaluation of ethnobotanical knowledge in Komkar-Adi biocultural landscape of Eastern Himalayan region of India. *Asian Journal of Ethnobiology*, 3(2), 70–87. <https://doi.org/10.13057/asianjethnobiol/y030204>
- Tardío, J., & Pardo-de-Santayana, M. (2008). Cultural importance indices: A comparative analysis based on the useful wild plants of Southern Cantabria (Northern Spain). *Economic Botany*, 62(1), 24–39. <https://doi.org/10.1007/s12231-007-9004-5>
- Tatan, T., Mehra, T. S., Semba, S., Mohammed, H., & Puwein, F. (2020). Plants used as ethnomedicine by the Adi tribes of Silile-Oyan Circle of Arunachal Pradesh: Source for livelihood and medicine.

- International Journal of Current Microbiology and Applied Sciences, 9(12), 2941–2951.
<https://doi.org/10.20546/ijcmas.2020.912.349>
13. Weckerle, C. S., de Boer, H. J., Puri, R. K., van Andel, T., Bussmann, R. W., & Leonti, M. (2018). Recommended standards for conducting and reporting ethnopharmacological field studies. *Journal of Ethnopharmacology*, 210, 125–132.