

# INTEGRATING ETHNOGRAPHIC AND ECOLOGICAL PERSPECTIVES FOR ETHNOPHARMACOLOGY FIELD RESEARCH

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## Summary

The perspective on ethnopharmacology advanced here integrates ethnography with natural science inquiry to explore how cultural constructions of health, landscape, and resource management are related to physical features of the environment and phytochemical variation. This chapter presents a theory-driven methodology for an ethnopharmacology that explores the connections between medical ethnography and complex ecological relations. The specific theoretical frame is that local knowledge both emerges from and undergirds the complex relations among people, ideologies and material cultures, plants and other species, and the physical environment. The objectives of this transdisciplinary approach are more comprehensive than those of research grounded narrowly in discovery of natural products and drug development. Illustrated first is how rigorous ethnographic field methodologies can be applied to characterize medicinal plant use within communities. Discussion emphasizes the importance of developing ethnographic depth and the combination of primary and subsidiary methods that are used serially and/or in parallel. Following is a discussion of how these methodologies can be integrated with ecological field studies to address (1) the relationships between medicinal plant collection, ecological variables, and phytochemical variation; (2) the ecological impacts of diverse patterns of medicinal plant collection; and (3) the effects of medicinal plant use on ecological interactions. The conclusion is that the employment of new combinations of ethnographic and ecological field methods can help to address theoretical questions in ethnopharmacology as well as contribute information that can be directly applied to the conservation of biocultural diversity.

## 1. Introduction

An ethnopharmacology that overlaps the methodologies of anthropology, botany, and pharmacology has significant potential to contribute to the theoretical frames of those fields.

The objective of this chapter is to present a theory-driven methodology for an ethnopharmacology that explores the connections between medical ethnography and complex ecological relations. The theoretical frame asserts that local knowledge both emerges from and undergirds the complex relations among people, ideologies and material cultures, plants and other species, and the physical environment. Over the last two decades, methodologies and field techniques used by anthropological ethnopharmacologists have advanced beyond the generation of inventories that simply enumerated plants used for particular conditions, and/or listed medicinal applications and constituents for certain species. Today, more rigorous research plans are grounded in the understanding that catalogues do little to characterize the complex circumstances

in which people identify, prepare, administer, dose, and judge the efficacy of medicines. These advanced research designs take into account developments in plant ecology, phylogenetics, and phytochemistry, including how phytochemicals are variably distributed among families, genera, species, populations, individuals, and even tissues of the same plant. The genes that code phytoactivity are further mediated by a variety of ecological parameters, e.g. soil composition, rainfall, UV radiation, proximity of other plant and animal species (including mammalian and other herbivores, and pathogens), and by human efforts to manage natural resources. This can lead to significant phytochemical variation over time (even over 24 hours) and space (including very short distances), and helps to explain why the use of a particular species can vary significantly across and within both human and broader ecological communities.

The foregoing underlines the merits of characterizing the details of medicinal plant use in a particular ecocultural setting. To conduct a rigorous ethnographic study, ethnopharmacologists are encouraged to draw on the traditions of anthropological (ethnographic) field research in which several primary and various subsidiary methods are “triangulated”—used serially and/or in parallel. Using integrated methodologies to elicit and observe through a variety of formats increases the reliability of data. An additional recommendation is to engage participatory research that includes community members in all phases of inquiry—ranging from study design to data analysis—as well as a commitment to translating findings directly into sustainable medicinal plant utilization. The next section outlines how ethnographic field methodologies can be used to characterize medicinal plant use within communities, and is followed by consideration of how these methods can be integrated with ecological field studies in novel ways to address research questions that consider the multi-faceted relationships between cultural and ecological aspects of medicinal plant use.

## **2. Anthropological (Ethnographic) Field Methods**

This discussion summarizes what has evolved over the last 75 years or so into a conventional suite of ethnographic field methods. Incremental testing and refining of these methods, and variably compounding them into theory-driven methodologies, has infused ethnographic science with a rigor that assures collection of reliable data on diverse human circumstances. This chapter specifies these methods to ethnopharmacology and illustrates how they can be integrated with ecological field methods.

Many anthropologists agree that one year is the standard duration for conducting research in a field site for the first time—12 uninterrupted months of in-residence, rigorous observation and interaction, speaking the local language(s). If long-term research is not possible, a series of shorter rapid assessments can generate credible data, and sustained data collection may include the participation of resident study participants. Without the principal investigator “on seat” this would constitute a sort of participatory research that assures the recording of seasonal, epidemiological, sociocultural, and other continuities and discontinuities that influence the use of medicinal plants. Botanists and pharmacologists are more likely to be interested in rapid assessment, rather than conventional in-depth ethnography, and will want to take advantage of these characteristics of rapid assessment techniques:

- problem-oriented, intended to help decision-makers develop programs or policy, e.g. about sustainability, or incorporating certain medicinal species into primary health care,
- participatory, including local partners such as healers and government health aids,
- narrowly circumscribed to plants used in preventive and therapeutic medicines,
- small sample size,
- sampling of representative sectors such as healers, mothers and other household members responsible for home- or self-care, and
- focus on cultural patterning rather than intracultural complexity, to discern commonly used plants and patterns of plant collection, management, preparation, administration, and assessment of medicinal efficacy and resource management.

### **2.1. Informed Consent and Research Ethics**

Indigenous populations' control of their biological and cultural resources weakened appreciably during the colonial and neocolonial eras. In the last two decades researchers, national governments, international bodies, indigenous people's organizations, and NGOs and other development entities have become more attentive of the protection of intellectual property rights (IPR) and sharing benefits and knowledge with local communities. Current legislation that protects IPR is complex, contentious, and inadequate. A substantial literature addresses guidelines for ethical conduct and appropriate compensation to local communities.

### **2.2. Identifying/Inviting Study Participants**

Researchers should keep in mind the potential that, even in a small community that on the surface appears culturally homogeneous with few social asymmetries, there exists substantial intra-population variability in knowledge and practice relevant to health, ecology, and resource management. Much ethnopharmacology research has reproduced the biomedical paradigm in seeking information from indigenous healers, midwives, and other specialists. Although these individuals are indeed knowledgeable, they are relevant for only certain contexts of disease prevention and therapy. The mediation of health entails ongoing community activities, beginning with home- or self-treatment and extending through a variety of specialty levels. A comprehensive research strategy is designed to explore the full range of knowledge and practice. Given the nature of human circumstances it is often difficult in field situations to select a random sample. One should strive for a sample of adults that are representative of the range of education, age, income, religion, language, ethnicity, occupation, language, and other demographics.

### **2.3. Key Respondents/Informants**

As part of the research team, the key respondent is a link between the researchers and the study community—an individual with whom the outsiders establish special rapport, including his/her grasp of the research objectives. The key respondent is not necessarily representative of the whole community or even a segment of it, and may not be a

specialist in medicinal plants (or anything else). Ideally, as a close rapport evolves, key respondents conceptualize cultural data in the ethnopharmacologist's frame of reference: they are instructive in identifying domains of knowledge about health and illness, plants, and knowledgeable (and socially available) people; they help to give locally appropriate shape to survey instruments and specific questions, and collect and interpret data; they are knowledgeable of at least the basic parameters of ecological diversity and resource management. The identification of key respondents is an early, but not the first, step in the research process. The research team should first engage in preliminary participant observation.

## 2.4. Participant Observation

Researchers in ethnopharmacology are advised to enter the community slowly, especially as current sensitivities about biopiracy makes us suspect in many parts of the globe. It is helpful to visit on several short-spaced occasions, first to introduce oneself and explain objectives to the whole community, then to establish research permission, and finally to organize the logistics of moving in and setting up residence. Participant observation is engaged from the first introductions to the community and continues for the duration of research. More than simply "hanging around" it requires that researchers pay careful attention to identify social relations and central individuals (e.g. medical specialists, medicinal plant collectors or vendors, resource managers), and to characterize the range of variation in lifestyle, daily activity patterns, ecologies, and so on. Participant observation allows the researcher to substantiate (or not) that what they learned in the context of an interview, for example, is what the study participants meant to convey. In rapid assessments, fewer details of community life and ecology will be learned, but participant observation is still an important component of the research. Particularly meaningful contexts for participant observation in ethnopharmacological research include: joining the activities of plant collectors and medicine preparers; overhearing discussions about illness and health, and resource management; attending routine preventive, diagnostic, and therapeutic events—including self-treatment—as well as formal healing ceremonies. These varieties of experiential observation assist the researcher to achieve a depth of insight that typically is not accomplished through interviews about abstract matters.

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### Biographical Sketches

**Nina Etkin** is Professor and Graduate Chair, and directs the Medical Anthropology Program, at the University of Hawai'i at Manoa. Her research centers on two domains that are linked through a co-evolutionary theoretical perspective: (1) Studies of ethnomedicine juxtapose ethnographic data on the cultural construction and social negotiation of health to pharmacologic assessments of indigenous plant medicines and foods, in northern Nigeria, eastern Indonesia, and Hawai'i. (2) Investigations of human biological variability focus on the pathophysiology of inherited red blood cell disorders and their

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