THE FUTURE OF ETHNOPHARMACOLOGY: SEEKING A TRANSDISCIPLINARY AND CULTURALLY GERMANE SCIENCE

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Summary

This chapter discusses the efforts and difficulties to accommodate and integrate the diversity of disciplines and goals that compose the field of ethnopharmacology. Perspectives and future trends on ethnopharmacology research are discussed, including advances in laboratory and clinical sciences, the meaning of traditional dietary prohibitions and prescriptions, research implications of dosage schedules used for traditional remedies, ecological factors, ethical and socioeconomic issues and the multicontextual use of plants.

1. Introduction: Defining Ethnopharmacology

A primary difficulty in projecting a future for ethnopharmacology is to identify the objectives of a largely virtual field whose self-identified membership represents a diverse suite of academic and applied disciplines, as well as commercial interests. In earlier times ethnopharmacology was an endeavor characterized more by folkloristic than scientific inquiry; today it is heavily represented among published investigators trained in Pharmacology, Anthropology, Botany, and Pharmacognosy. Contributions are made as well by historians of science, clinicians, ethnographers, agronomists, biochemists, researchers in veterinary medicine, and others. This multivocality frustrates efforts to harmonize objectives and integrate methodologies; at the same time, it creates a dynamic tension that encourages dialogue.

1.1. The International Society for Ethnopharmacology and the Journal of Ethnopharmacology

This essay is part of that dialogue and projects the perspective on ethnopharmacology that was articulated in the formation of the International Society for Ethnopharmacology (ISE). This perspective is reinforced in the objectives of the organization's journal, which serves as a gauge of what ethnopharmacology constitutes. The *Journal of Ethnopharmacology* (JEP) was inaugurated in 1979 with a statement of mission that defined ethnopharmacology as "a multidisciplinary area of research concerned with the observation, description, and experimental investigation of indigenous drugs and their biological activity." The statement of scope emphasized the balance and breadth of disciplinary representation across a range of natural and social sciences:

> *The Journal of Ethnopharmacology will publish original articles concerned with the observation and experimental investigation of the biological activities of plant and animal substances used in the traditional medicines of past and present cultures. The journal will particularly welcome interdisciplinary papers with an ethnopharmacological, an ethnobotanical, or an ethnochemical approach to the study of indigenous drugs. Reports of anthropological and ethnobotanical field studies fall within the journal's scope. Studies involving pharmacological and toxicological mechanisms of action are especially welcome.*

2. Objectives of Ethnopharmacology Research

Mission statement aside, after the first few years of the journal's existence, the majority of articles published in the JEP were not interdisciplinary. In view of the highly skewed over-representation of pharmacology and pharmacognosy in the contents, one could argue that the JEP failed to establish the unique position it sought among journals concerned with natural products. Privileging the pharmacologic assessment of plants reproduces the Euro-American traditions of imperial expansion that have been fueled by the imagination that indigenous populations can only benefit from the transposition of western ideologies and technology. Embedded in this is the, at least implicit, notion that medicines become meaningful only when validated by pharmacologic inquiry. In the spirit of an integrated ethnopharmacology, pharmacology should instead serve as another lens through which to understand how people manage resources and health. On the other hand, a positive outcome has been methodological advances in the bioscientific exploration of traditional medicines that identified active compounds, with the objective to refashion indigenous medicines into suitable "new" botanical drugs or isolate compounds to develop as entirely new drugs.

2.1. Critical Reviews and Challenges for an Integrated Ethnopharmacology

Since the early 1990s, various critical reviews of the field of ethnopharmacology challenged researchers to strive for a more holistic, theory-driven, and culture- and context-sensitive study of the pharmacologic potential of (largely botanical) species used by indigenous peoples for medicine, food, and other purposes. The foundation of these critiques is that much of what is reported as ethnopharmacologic research is comprised by decontextualized catalogues of plants and lists of phytoconstituents and/or pharmacological

properties. While this work is technically-competent bioscience, it lacks synthesis—only a very small percentage of ethnopharmacology researchers reflect on the range of botanicals, the environments from which they are drawn, and the diverse chemistries they embody. Also, there is little incremental growth of knowledge within and beyond this corpus of evidence. Intellectually and substantively, each study is a stand-alone. Many laboratories are satisfied to report the results of the 15 or 20 species examined and then, rather than build on that knowledge, test the therapeutic potential of another group of plants against the same, or even a different, biological target. Few researchers in ethnopharmacology seem to be interested in the people whose knowledge and identity are embodied in these plants. While some studies are based on plants drawn from indigenous pharmacopoeias, most of what is published as ethnopharmacology has a weak, if any, ethnographic component. While laboratory-exclusive studies provide valuable baseline data, they disappoint from the standpoints of both practice and theory—a small percentage of researchers seek to make order of the iterative lists of active plants and their constituents, and fewer still offer theoretical advances. Further, only a small number of these studies offer insights into the experience of real people in specific cultural and eco-political settings, or project the findings against some higher level of abstraction that helps us to understand human-plant interactions. On the basis of these critiques, as well as deliberations within and outside the ISE, in 2001 the JEP Board issued a revised mission statement to underscore the importance of integrated, theory- and issue-driven research in ethnopharmacology:

> *The Journal of Ethnopharmacology publishes original articles concerned with the observation and experimental investigation of the biological activities of plant and animal substances used in the traditional medicine of past and present cultures. The journal will particularly welcome interdisciplinary papers with an ethnopharmacological, an ethnobotanical or an ethnochemical approach to the study of indigenous drugs. Reports of anthropological and ethnobotanical field studies fall within the journal's scope. Studies involving pharmacological and toxicological mechanisms of action are especially welcome. Clinical studies on efficacy will be considered if contributing to the understanding of specific ethnopharmacological problems. The journal also welcomes review articles in the above mentioned fields especially on novel methodologies relevant to disease states.*

The ISE President's editorial stressed the importance of addressing the social and political implications of research design and application, especially for indigenous peoples whose knowledge and resources have been appropriated in the course of natural products development, which largely benefits the West. It was further emphasized that ethnopharmacology research should be understood within the broader context of biodiversity conservation, sustainable resource management, and intellectual and biological property rights. This revised statement better reflects contemporary circumstances and globalization processes in which indigenous people's ideologies and material cultures become increasingly commoditized and politicized on a scale of global proportions. This broad, integrated vision of ethnopharmacology has substantial potential for scholarly and practical advances in the next decades. It remains to be seen whether this is a mandate that will shape research into the future, or whether—as has occurred in the past—this statement resonates the collective culture of the ISE but not necessarily the individuals who identify with that entity.

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Bibliography

Elisabetsky E. (1991). Sociopolitical, economical and ethical issues in medicinal plant research. Journal of Ethnopharmacology **32**, 235-239. [This article reviews intellectual property rights and other issues raised primarily by ethnobiologists and economic botanists in the context of medicinal plant research]

Elisabetsky E. and Setzer R. (1985). Caboclo Concepts of Disease, Diagnosis and Therapy: Implications for Ethnopharmacology and Health Systems in Amazonia. IN: *The Amazon Caboclo: Historical and Contemporary Perspectives*. E.P. Parker ed, Williamsburgh: Studies on Third World Societies Publication Series, vol. 32, pgs:243-278. [This paper discusses how context free observations have little value in ethnopharmacology, using Amazonian caboclo health/disease concepts as examples]

Etkin N.L. (2001). Perspectives in ethnopharmacology: forging a closer link between bioscience and traditional empirical knowledge. *Journal of Ethnopharmacology* **76**, 177-182. [This article extends an earlier content analysis of the *Journal of Ethnopharmacology* and *Pharmaceutical Biology* to characterize topical trends in these publications and to call for an integrated, theory-driven ethnopharmacology.]

Etkin N.L. and Ross P.J. (1997). A discipline maturing: past trends and future direction in ethnopharmacology. *Salute e Malattia: Indirizzi e Prospettive*. (ed by A. Guerci), 85-95. Genoa, Italy: Erga Edizioni. [This work offers a content analysis of the *Journal of Ethnopharmacology* to identify topical trends and ask whether ethnopharmacology can be characterized with respect to research objectives.]

Etkin N.L and Ross P.J. (1991). Should We Set a Place for Diet in Ethnopharmacology? *Journal of Ethnopharmacology*, 32:25-36. [This article makes the point that pharmacodynamic plants should be addressed across the spectrum of their use—including as food, cosmetics, etc. —in order to more accurately assess people's exposure to pharmacologic potential of ingested substances.]

Heinrich M. (2001). Editorial: Journal of Ethnopharmacology: an interdisciplinary journal devoted to indigenous drugs. *Journal of Ethnopharmacology* **76(2)**, 137-138. [This message from the President of the International Society for Ethnopharmacology reflects on the objectives of the field and introduces the revised mission statement for the journal.]

Johns T. (1997). Behavioral Determinants for the Ingestion of Food Phytochemicals. In: *Functionality of Food Phytochemicals*. Johns, T. and Romeo, J.T. eds., Recent Advances in Phytochemistry vol 31, Plenum Press, NY, pp:133-154. [Human food choices are shaped in part by the organoleptic qualities of those foods—smell, texture, taste, etc.]

Johns T. and Chapman L. (1995). Phytochemicals Ingested in Traditional Diets and Medicines as Modulators of Energy Metabolism. In: *Phytochemistry of Medicinal Plants*, J.T.Arnason, R.Mata, J.T.Romeo eds., Plenum Press, New York, pp.161-188. [This article discusses the impact on human health of globalization and dietary simplification, including increasing consumption of a narrow range of energy-dense foods.]

Nunes D.S. (1996) Chemical Approaches to the Study of Ethnomedicines. In: *Medicinal Resources of the Tropical Forest: Biodiversity and its Importance to Human Health*. Balick, M; Elisabetsky, E. and Laird, S. (eds) *Columbia Univ. Press*, New York, USA. Pp 41-47. [This chapter discusses phytochemistry in relation to traditional modes of preparation of home plant-based medicines.]

Prinz A. (1990). Misunderstanding between ethnologists, pharmacologists, and physicians in the field of

ethnopharmacology. *Ethnopharmacologie: Sources, Methodes, Objectifs*, (ed. by J. Fleurentin, P. Cabalion, G. Mazars, J. Dos Santos, and C. Younos). 95-99. Metz, France: ORSTOM Editions. [This work compares the perspectives, objectives, and methods of ethnographers, pharmacologists, and physicians to encourage a multidisciplinary ethnopharmacology.]

Rivier L. and Bruhn J.G. (1979). Editorial. *Journal of Ethnopharmacology* **1**, 1. [This outlines the mission and scope of the journal.]

Stavric B. (1997). Chemopreventive Agents in Food. In: *Functionality of Food Phytochemicals*. Johns, T. and Romeo, J.T. eds., Recent Advances in Phytochemistry vol 31, Plenum Press, NY, pp: 53-88. [A wide variety of phytochemicals present in both mundane and exotic foods may play a role in the prevention of cancers and other diseases.]

Wattenberg, L.W. (1998) Chemoprevention of Carcinogenesis by Minor Dietary Constituents: Symposium Introduction. *Pharmaceutical Biology*, 36:6-7. [Phytochemicals that occur irregularly or in small quantities in foods may be important in the prevention of cancers.]

Biographical Sketches

Nina Etkin is Professor and Graduate Chair, and directs the Medical Anthropology Program, at the University of Hawaii- 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 protection against malaria infection. Professor Etkin has published extensively, forging intellectual and practical links to understand the dialectic of nature and culture in diverse ecologic and ethnographic settings. She has just completed a book entitled *Edible Medicines: An Ethnopharmacology of Foods*. Her edited volumes include *Eating on the Wild Side* (1994, University of Arizona Press), *Plants for Food and Medicine* (1998, Kew Royal Botanic Garden), *Medicines: Meanings and Contexts.* 1994, University of Amsterdam Press), and *Plants in Indigenous Medicine and Diet* (Gordon and Breach Science Publishers, 1986). Professor Etkin is past President of the International Society for Ethnopharmacology.

Dr. Elaine Elisabetsky, Ethnopharmacologist and Professor at the Federal University of Rio Grande do Sul (Porto Alegre, Brazil) researched and taught for ten years in the Brazilian Amazon. Her focus of research includes ethnopharmacology among cablocos (rural peasants), Amerindian Peoples (Guajajara and Kayapó), and rubber tappers (extractive reserves), conservation and sustainable development. She has given specific attention to locally held concepts of health and disease, and stresses that a culturally relativistic perspective is necessary in conducting ethnopharmacologic field and laboratory work. She has developed plant selection criteria that combine traditional knowledge and a working hypothesis for pharmacological scrutiny aiming to maximize the potential for successful drug development based on ethnopharmacologic collections. She specializes in identifying and characterizing psychopharmacological properties of medicinal plant extracts or isolated compounds. She has been President of the Brazilian Society of Ethnobiology and Ethnoecology, and International Society for Ethnopharmacology, and was a founding member for the International Society of Ethnopharmacology and the International Society of Ethnobiology. She is a member of the editorial boards of the *Journal of Ethnopharmacology*, *Phytomedicine*, *Pharmaceutical Biology* and *Revista Brasileira de Plantas Medicinais* and *Evidence Based Alternative and Complementary Medicine*.