



Ethnobotany and its links to medical sciences and public health: quo vadis?

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➤ Ethnobotanical knowledge in a changing world

Medicinal plants traditionally used in diverse cultures have always held a special fascination for botanists, ethnographers, linguists, pharmacognosists, pharmacologists, phytotherapists, and medical anthropologists. For centuries, folk knowledge regarding medicinal and food uses of plants has been primarily transmitted orally. While some of these traditions seem to have survived across generations relatively intact, many others have changed or disappeared, and “new” remedies and uses of plants have emerged. Worldwide folk medical and food plant knowledge is in a very dynamic state: in most areas of the planet, local or traditional knowledge and practices regarding medicinal plants coexist with modern phytotherapeutics and allopathic medicines.

In this complex mosaic, field studies with the goal of documenting, preserving, and

comparing botanical data related to traditional medicinal practices are increasingly seen as crucial for a better understanding of how the environment, people, and health are interconnected within a given socio-ecological system. These types of studies represent the core of modern ethnobotany.

➤ The long journey of ethnobotany

Identifying the precise starting point of the ethnobotanical approach has been difficult and often controversial, given that records of the perceptions and uses of plants can be traced back to several ancient texts, e.g., *De Materia Medica* of Pedanius Dioscorides (1st century AD).

The crucial arguments in this context are related to: (a) what we mean by perception and use, and in particular who experiences or experienced these; and (b) the degree of empathy with which scholars in the field

refer to traditional practices among folk classes (and not within scholarly circles), i.e. to those we call “Traditional Knowledge Holders”.

The English term “ethnobotany” was coined in 1896 by the American botanist John Harshberger (1), who used this word in reference to the study of the uses of plants by aboriginal peoples. The start of ethnobotanical research is inextricably linked to the birth of ethnographic and anthropological disciplines. In view of this, it may be said that Europe actually anticipated the origin of ethnobotany a few years or even decades prior to Harshberger’s article with the work of a number of diverse scholars representing an interesting variety of disciplines and approaches (2, 3). Four notable examples include: the German pastor and physician Johann Wilhelm Ludwig von Luce (1756–1842), who recorded over the course of a few decades the folk remedies on the island of Saaremaa in Estonia (4); Giuseppe Ferraro (1845–1907), one of the most prolific Italian folklorists of the nineteenth century, who authored three small articles on the folk uses of plants in his home town of Carpeneto d’Acqui (Northern Italy) (5–7); the Austrian dermatologist Leopold Glück, who practiced for many years in Sarajevo (Bosnia) and reported in his in-depth 1894 survey the folk uses of plants mentioned by his peasant patients (8); and the Polish physician, ethnographer, and archaeologist Julian Talko-Hryniewicz (1850–1936), who researched for many years the folk medicines of South Ruthenia (Ukraine) (9).

SUMMARY

Ethnobotany is an interdisciplinary science which investigates the relationships between plants and human societies. Born in the 19th century, on the wave of the anthropological sciences, the interest in folk practices related to plants had a revival in the 1970s with the establishment of modern ethnobiology. The current trends in medico-ethnobotanical research comprise two main directions: “classical ethnobotany”, which continues to investigate the medicinal and wild food plant knowledge among isolated and rural communities, and “urban ethnobotany”, which explores plant uses and perceptions among migrants in Western urban environments. While the former has particular relevance in the fields of environmental conservation, cultural heritage, and herbal sciences, the latter provides information crucial in shaping culturally sensitive approaches in the pluralistic provision of health care.

Key words

Ethnobotany, ethnomedicine, biological conservation, herbal sciences, migrant health

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➤ Current trends

Although more than a century had passed since these earlier studies, an ethnobotanical resurgence occurred at the end of the 1960s, particularly in North America, with the start of modern ethnobiology. This modern inception can be traced to Brent Berlin's research at Berkeley on ethnolinguistics (folk classification systems of plants and animals among indigenous peoples) (10) and later to the foundation of the International Society of Ethnobiology by Darrell Posey in 1988, in which an emphasis was placed on a common platform for both scientists and Traditional Knowledge Holders and indigenous communities devoted to preserving the vital link between human societies and the natural world.

At the same time, ethnopharmacology emerged in the 1990s as the interdisciplinary study concerning the bio-evaluation of drugs (especially medicinal plants) traditionally used by indigenous peoples and local communities. Ethnopharmacological studies contributed not only to an in-depth understanding of the bio-pharmacology of traditional herbal remedies, but also – well before the expansion of the nutraceutical sciences – to clarify the link between traditional foods and preventive medicine (11).

During the last decade, ethnobotanical field studies have multiplied exponentially all over the world, particularly in emerging countries. In Europe, for example, there have been approximately 130 scientific articles representing field ethnobotanical studies conducted during the last 30 years and published (in English) in international journals and indexed in international databases; most of these studies have focused on the Mediterranean region (Fig. 1) (12).

The above-mentioned studies, which represent modern ethnobotany, always include the following methodological practices:

- a sound research design, for which the scholars select their study sites following specific criteria;
- a detailed description of the geographical, environmental, historical, and ethnographic background of the study sites;

- a clear definition of the sampling strategy (choice of informants);
- in-depth interviews conducted with Traditional Knowledge Holders and participant observation;
- a precise botanical identification of the quoted or illustrated plants;
- a data analysis conducted via: (a) rigorous comparison with previous ethnobotanical and/or folkloric studies carried out in the same macro-region or surrounding areas; (b) comparison of the accrued data with those from old and new scholarly treatises of medical botany, pharmacognosy, or phytotherapy, especially for the same macro-geographical area (if available).

In particular, the rationale behind modern ethnobotany is not only to record medicinal or wild food plant uses, but also to understand why locals use certain plants and ignore others. In addition, ethnobotanical field studies explore how and why these uses may have changed over time, and how the overall health of the community and its environment may have affected these patterns. If we examine the scientific literature of the last two decades, the most interesting emerging trends of ethnobotanical studies concerning medicinal and wild food plants may be grouped into two main trajectories:

- studies focusing on wild medicinal and food plants in rural, mountainous or

isolated communities (“classical ethnobotany”);

- studies focusing on the uses of medicinal plants among migrant communities (“urban ethnobotany”).

➤ “Classical ethnobotany” and its insights for the environmental and herbal sciences

This trajectory has its main focus on emerging countries as well as remote and less-favoured areas of industrialised countries, which in Europe, for example, are largely located in the southern and south-eastern parts of the continent. Fig. 2 illustrates two European wild medicinal plants whose use was revealed through field studies conducted by the first author and his research group during the last few years, and whose pharmacology and possible phytotherapeutical applications still remain to be thoroughly assessed.

This “classical ethnobotany” trajectory has relevance in diverse fields, but mainly regarding (a) environmental issues; (b) cultural heritage; and (c) herbal sciences. Ethnobotanical studies in rural and less-favoured areas are considered crucial for fostering community-based conservation strategies. Traditional environmental (or ecological) knowledge (TEK), of which tra-

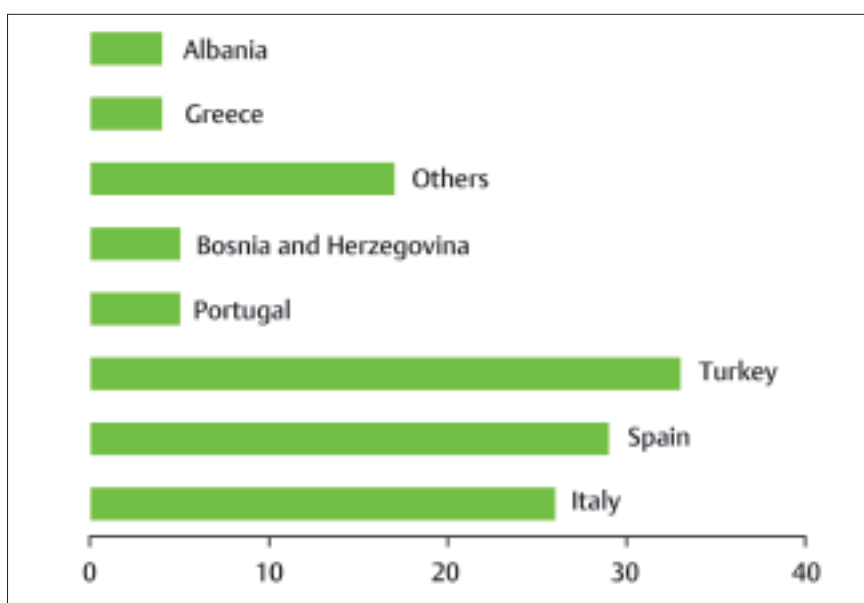


Fig. 1: Location of the ethnobotanical studies conducted in Europe during the last four decades and published in international scientific journals (English) (12).



Fig. 2: Examples of two European herbal remedies discovered in “classical” ethnobotanical works (and poorly known in pharmacology and phytotherapy): fresh aerial parts of *Hypericum hircinum* (used in decoctions against cough in inland southern Italy [35]); and dried flowering aerial parts of *Stachys thymphea* (used in teas against flu and cold, and as a panacea on the Albanian side of Mt. Korab [36]).

ditional uses, perceptions and management of medicinal and wild food plants represent an important part, has been defined as a “cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (13).

TEK has an important narrative to tell: the story of the continuous interactions between peoples and plant resources within a specific socio-ecological system. Today it is widely accepted that stakeholders involved in biodiversity conservation increasingly have to take into account community-based approaches.

Moreover, knowledge and practices concerning nature and the universe have been defined by UNESCO in 2003 as part of the intangible cultural heritage which needs to be preserved (14). The main impact of this move is that initiatives intended to preserve the complex interplay between biological and cultural/linguistic diversity also have to consider the ethnobiological knowledge of a given community; this knowledge includes ways of categorising, naming, perceiving, using, and managing plants, animals, and other living organisms, which are culturally specific (15, 16).

Finally, but most importantly, research on traditionally used wild medicinal and food plants in emerging countries may provide

important data for community-based health management and food security and sovereignty (17) by re-introducing lesser-known local herbal and food products. More specifically, medicinal plants that are widely used for specific purposes within a given community, but which are unknown or poorly known in bio-medicine, can become the object of phytochemical, phytopharmacological, and clinical studies, aimed to provide the basis for a rational, evidence-based use of traditional plants, which the most recent WHO Traditional Medicine Strategy document confirms as a crucial objective (18). The latter, in particular, has been the approach of most ethnopharmacological studies conducted



Fig. 3: Example of an herbal remedy discovered in an urban ethnobotanical study (and poorly known in pharmacology and phytotherapy): salted fruits of *Pistacia terebinthus* (consumed against diabetes among the Turkish community of Cologne [33]).

all over the world during the last four decades.

It seems that nowadays another link, which was considered crucial in the past – the connection between ethnobotanical research and drug discovery – is a lot more problematic. As the medical anthropologist Daniel Moerman recently noted: “There has not been a drug added to the Northern pharmacopoeia by an ethnobotanical or ethnopharmacological lead in probably half a century” (Moerman, personal communication in [19]).

➤ “Urban ethnobotany” and migrant health

This trajectory has its main focus on urban environments, with the objective of analysing the uses of medicinal plants by migrants as well as the changes in their uses (from the home country to the host country). This area of research is situated between botany and trans-cultural health studies and challenges the common belief that ethnobotanical knowledge is to be found only in exotic places. However, there are still limited data available for medicinal plant uses by migrant communities, especially in Western countries, and even fewer studies that compare the dynamics of the changing usage of medicinal plants (from the country of origin to the host country).

This challenging research area has been gaining attention worldwide during the last 10 years, and on-going studies are providing important observations, which can serve public health strategies devoted to migrants (20–34). Fig. 3 provides an example from a recent study concerning the use of medicinal plants by urban migrants in central Europe.

Several scientific questions remain unresolved in this fascinating intersection of ethnobotany and medical anthropology and more research is clearly needed to address them (26):

- Do migrants in the host country depend on their own remedies within the domestic domain, including the continued use of medicinal plants (or food plants ingested for health purposes) brought over from their home countries or purchased in local shops?
- How do migrants' healthcare-seeking strategies via specific plants change over time, in response both to the dynamics of identity building and representation within the migrant community, and to external environmental, cultural, social and political changes in the host country, including public healthcare policies?
- What are the expressions of the co-existence of plant-based migrants' own health-seeking behaviour with plants and/or allopathic medicines offered by the biomedical system of the host country? To what extent are institutional health actors in the host country aware of all this?

➤ Conclusion

Given the above observations, it is evident that genuine initiatives aimed at fostering ethnobotanical forefront research and education, as well as training initiatives devoted to post-graduate students, young scholars, and practitioners, need inter-disciplinary approaches, which have to overcome the traditional boundaries of diverse biomedical sciences, and also the historical barriers between natural/biomedical sciences and the social sciences and humanities. This remains a challenging but nevertheless fascinating task in the academic

environment as well as in the arena of health professionals.

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■ Conflict of Interest
The authors declare that they have not had any competing interests during the past 3 years.

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ZUSAMMENFASSUNG

Ethnobotanik und ihre Bedeutung für die Medizin und öffentliche Gesundheit: Quo vadis?

Ethnobotanik ist eine interdisziplinäre Fachrichtung, die die Beziehung zwischen Mensch und Pflanze untersucht. Entstanden im Zuge des Interesses an anthropologischen Fragestellungen im 19. Jh., kam es in der 1970er-Jahren zu einer Wiederbelebung durch die moderne Ethnobiologie. Zwei Trends dominieren die aktuelle Forschung: die klassische Ethnobotanik, welche die Verwendung von Heil- und wild wachsenden Nahrungspflanzen in möglichst isoliert lebenden ländlichen Gemeinschaften untersucht. Und sog. urbane Ethnobotanik, die die Verwendung solcher Pflanzen bei Migranten in westlichen städtischen Siedlungen erfasst. Während Erste Information für den Umweltschutz, das kulturelle Erbe und die Arzneipflanzenforschung liefert, hilft die urbane Ethnobotanik, die Gesundheitsfürsorge von Migranten zu verbessern.

Schlüsselwörter

Ethnobotanik, Ethnomedizin, Naturschutz, Pharmakognosie, Gesundheit von Migranten