

# 1 INTRODUCTION

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*“Plant use makes no sense without understanding the culture in which it is used.”*

B. C. Bennett

This book is a result of long-term cooperation among specialists from various scientific fields such as biology, anthropology, psychology, philology, botany and ecology. All of them are interested in studying the relationship that exists between people and plants, focusing primarily on how plants are used, managed and perceived in different cultures and societies.

The content of this book is divided into seven chapters, starting with the introduction and description of the methodological framework. Each chapter contains original contributions from authors who have done research in a particular region in Europe, America, Africa or Asia. The book is finished by an overview of authors' profiles focused on future plans in research and fieldwork.

This publication would not have been possible without the financial support of Mendel University in Brno. The book provides texts to university students, offering them a rich study material for improving their academic reading skills and learning scientific terminology.

Regarding the form of contributions, we have decided to use the standard structure of the scientific paper, making the content easily accessible and understandable for students and researchers. So, the result is close to a compendium of texts collected from authors from different countries such as the United States, Peru, Colombia, Mexico, South Africa, France, and the Czech Republic. They have different writing styles and scientific approaches, more so than in a book written by a single author. The editor of this book ended up with this particular group of scholars thanks to the very good personal relations established during his doctoral studies.

However, the scope of all the contributors is identical, though, as mentioned above, some of them are also interested in other topics, such as agriculture, medicine, history and arts.

The sections of the book are quite accurately organized geographically, but there is an obvious focus on the American continent, especially South America. The remaining continents Europe, Africa, and Asia are only introduced by one primary contribution, because it was never the editor's intention to provide a global guide of ethnobotany. We are rather determined to publish the first book on ethnobotany and phytotherapy in the Czech Republic.

## 1.1 History of Ethnobotany

Ethnobotany is the scientific study, which was established as a combination of ethnology (study of culture) and botany (study of plants). Researchers approach the subject from two perspectives – the practical or utilitarian and the philosophical. Notable definitions of the discipline stress the research of the interrelationship/interaction of man and the plant world (Jones, 1941; Ford, Jones, 1978; Schultes, Von Reis, 1995); the influence of plants on human culture (Balick & Cox, 1997); or the complete registration of the uses and concepts about plant life in primitive societies (Berlin, 1992; Schultes in Plotkin & Famolare, 1992: 7–13).

The term “ethnobotany” was used for the first time in 1895 by John William Harshberger while he was teaching at the University of Pennsylvania (Harshberger, 1895). However, the history of the field began long before that, and practical interests in ethnobotany go back to the beginning of civilization when people relied more on plants as a way of survival. The first humans were practicing ethnobotanists, who had to classify plants into categories and distinguish those species that were beneficial from those that caused harm (Choudhary, Singh & Pillai, 2008: 39).

Theophrastus (ca 370–285 B.C.), the father of botany, described the uses of plants and established generic names of economically important species (e.g. *Crataegus*, *Daucus*, and *Asparagus*)

that are still commonly used. Caius Plinius Secundus, better known as Pliny the Elder, recorded information about cultivating medicinal plants in his “Natural History” (Bennet, 2013).

In 77 AD, the Greek surgeon Dioscorides published “De Materia Medica”, a catalogue of approximately 600 plants from the Mediterranean, also containing the information on their actual use, especially for medical purposes, gathering, toxicity, and edibility (Dioscorides 2000). Dioscorides also stressed the economic potential of plants, thus anticipating the founding of Economic Botany concerned with their value (Wickens, 2004). Nevertheless, the herbal did not venture into the field until after the Middle Ages, even though it remained the standard reference point for nearly 1,500 years.

Unlike their predecessors who repeated what was known in the 16<sup>th</sup> century, European herbalists recorded new observations on the use of plants. In 1542, Leonhart Fuchs, a Renaissance artist, catalogued 400 plants native to Germany and Austria in his “De Historia Stirpium”, followed by John Ray’s “Historia Plantarum”, where the first definition of “species” was provided, and Carl von Linné’s “Species Plantarum”, including information on about 5,900 plants (Fuchs, 1551; Ray, 1686; Linnaeus, 1797).<sup>1</sup>

Linné, whose Latinized name is synonymous with modern taxonomy, is famous for inventing the binomial method of nomenclature, where all species get two part name (genus, species) (Loonen, 2008).<sup>2</sup> He also published detailed observations on plant use by the Sami people in Lapland, pioneering modern ethnobotanical study (von Linné, 1971).

The peak of botanical exploration occurred in the 19<sup>th</sup> century, the era of Alexander von Humbolt and Captain James Cook’s discoveries in the South Pacific. English botanist Richard Spruce, one of the great Victorian botanical explorers, spent 15 years exploring the Amazon (mostly in Brazil). His collections form an important ethnobotanical resource indexed at the Royal Botanic Gardens, Kew, and London, which started to operate during the period too.

Botanical specimens from North and Central America were collected by British botanist and early American archaeologist Edward Palmer, a field assistant for the Bureau of American Ethnology (McVaugh, 1956). Notes on aboriginal life and indigenous plant use in North America are also among unpublished post-Walden writings by Henry David Thoreau (Thoreau, 1906).

The field of so-called “aboriginal botany”, concerning all forms of plants used by indigenous people for food, medicine, clothing etc., was founded after the data was collected. The term was used for the first time in 1874 by Stephen Powers. A crucial part of the study in this field was folk classification, which refers to how members of a language community name and categorize plants. Native nomenclature often says a lot about the plant’s characteristics, growing or effects (whether it is poisonous or nutritive, or purgative, astringent, sedative, or without any active principle) (Powel, 1877: 419).

A publication by Leopold Glueck, a German physician working in Sarajevo, is considered to be the first modern ethnobotanical work. He studied the traditional medical uses of plants done by rural people in Bosnia from an emic (originated from *phonemic*) view (Cunningham, 2012).<sup>3</sup>

1 Recording plant uses was not just a European activity. Martín de la Cruz authored the 16<sup>th</sup> century Aztec herbal that became known as the “Badianus Manuscript”. His discussion of 251 therapeutic and psychoactive Mexican plants was the first written herbal from the New World. Hipólito Ruíz López and José Antonio Pavón y Jiménez collected botanical specimens in the viceroyalty of Peru and published them in “Flora Peruviana et Chilensis” (1798–1802). Chinese, Arab, and Indian texts, generally less-well known in the Western World, are equally rich in plant use lore. However, the study of rich historical material is usually an objective of historical economic botany, not ethnobotany (Bennet, 2013).

2 The post-Linnean botanists did not limit their research to taxonomy, e.g. Alphonse de Candolle wrote a classical work on the origin of cultivated plants (de Candolle, 1885).

3 “Emic and etic are technical terms proposed by the linguist Kenneth Pike (1967), originally derived from the suffixes of the words ‘phonemic’ and ‘phonetic’; the former refers to any unit of significant sound in a particular language and the latter refers to the system of cross-culturally useful notations that represent these vocal sounds (McCutcheon, 1999).”

At the beginning of the 20<sup>th</sup> century, Harsberger's neologism "ethnobotany" was adopted, although it was only a semantic substitution. The paradigm shift which led to a more methodological and conceptual approach evolved progressively. The beginning of ethnobotany as an academic discipline is deeply connected with its founding father, biologist Richard Evans Schultes.

Firstly, ethnobotany became more ecological, focusing on relationships, interrelationships, and interactions. Researchers started considering plants as integral parts of the ecosystem in which they are found. Secondly, ethnobotany has become cultural, and the scientists now attempt to understand plant use from the cultural perspective. Finally, Ford & Jones (1978) redefined the discipline's scope from "man" to "people" and Cotton (1996) employed the less pejorative term "traditional" instead of "primitive".<sup>4</sup>

The current framework of ethnobotany emphasizes different skills that are required from the scientist: botanical training necessary for the identification and preservation of plant specimens, anthropological training that helps the researcher to understand cultural concepts, linguistic training that allows the field-worker to transcribe local terms and understand native morphology, syntax and semantics (Choudhary *et al.*, 2008: 39).

The investigation of utilitarian features of plants has dominated current research agenda. Ethnobotany as a discipline is currently oriented towards the exploration of new plant resources, collecting of genetic materials, drug discovery or plant-derived medicines and products development (Balick & Cox, 1997; Plotkin *et al.*, 1992; Todelo in Schultes & Von Reis, 1995: 75–92). The cultural meaning of plants is seldom investigated. For this reason, the main aim of this book is to contribute to the research on social and cultural aspects of the plant use.

## 1.2 Phytotherapy – Defining the Discipline

Eichele (2010) defines phytotherapy as the use of plants or plant extracts that are usually not part of a healthy diet for medicinal purposes. It refers to traditional medicinal or folk medicine practice, also known by other terms such as herbalism, botanical medicine, medical herbalism, herbal medicine, and herbology (Kadiri, Adekunle & Ayodele, 2010).

Phytotherapeutic agents are herbal preparations regularly marketed as standardized products in liquid, solid or viscous form.<sup>5</sup> They consist of complex mixtures of one or more plants which contain active ingredients, plant parts or plant material in the crude or processed state. Sometimes, fungal and bee products are included, as well as minerals and certain animal parts.

The agents are usually prepared by maceration, percolation, distillation (volatile oils) or evaporation of the solvents, and later administered in a highly concentrated form so as to ensure their therapeutic effect.

Phytotherapy or herbal medicines always play an important role in traditional medicine, and nowadays its importance is again increasing. Plants still make an important contribution to primary health care. According to the World Health Organisation (WHO), because of poverty and lack of access to modern medicine, about 65–80% of the world's population living in developing countries in Africa, Asia and Latin America depend essentially on traditional medicine based on the plants use (Shirwaikar, Verma & Lobo, 2009).

Many patients also prefer herbal medicines because of their good tolerability. However, the concept that herbal drugs are safe and free from side effects is not always true, because

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4 "An important question is whether there is a fundamental difference between the way traditional people use plants and the way modern societies use them. I contend that this distinction is artificial. Etymologically, there is no reason to restrict ethnobotany to traditional societies. The prefix 'ethno' refers to any people or cultural group not just traditional societies (Bennet, 2013)."

5 Currently there are several regulatory models for herbal medicines available: prescription drugs, over-the-counter substances, traditional medicines and dietary supplements (Shirwaikar, Verma & Lobo, 2009).

they can contain hundreds of constituents, some of which are very toxic (e.g. pyrrolizidine alkaloids) (EFSA, 2011).

In comparison with well-defined synthetic drugs, active standardization, stability and quality control may not be easy because the active principles of herbal drugs are frequently unknown. Well-controlled double-blind clinical and toxicological studies to prove their efficacy and safety are rare.

Security concerns are usually caused by a lack of effective quality control in the context of a growing, largely unregulated market. Other concerns are the consequence of using herbal products and conventional medicines simultaneously (drug-drug interactions), self-administration/medication (excessive ingestion, insufficient knowledge about the constituents and the dose of the drug, causing unexpected side effects), exposure to potentially toxic phytoconstituents and contaminants, and omission of alimentary restrictions.

However, modern herbal medicinal products attempt to fulfil high standards and are subject to many clinical development plans. Organizations like the European Scientific Co-operative on Phototherapy (ESCOP) aim at advancing the scientific status of phytotherapy. The monographs produced by ESCOP are considered as established sources accepted by European regulatory authorities.

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