

# PHYTOCHEMISTRY AND PHARMACY FOR PRACTITIONERS OF BOTANICAL MEDICINE



ERIC YARNELL, ND, RH

# Phytochemistry and Pharmacy for Practitioners of Botanical Medicine

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# Phytochemistry and Pharmacy for Practitioners of Botanical Medicine

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# Introduction

The present renaissance in botanical medicinal accompanies growing awareness among health care practitioners, consumers, government regulators, the media, and industry. Unfortunately, there have been relatively few high quality texts free of commercial interests created specifically for health care practitioners in the field of botanical medicine. The result is frustration among those practitioners who desire clear, scientific information designed specifically for them.

Practitioners of botanical medicine have only themselves to blame for the present state of affairs. They have not made it a strong priority to create the textbooks for themselves. There is a great danger in this failure, for it leaves things much more open for the mainstream medical machine to turn botanical medicine into a sort of quaint subset of pharmaceutical drug therapy that has become so dominant. Anyone who has seriously studied or utilized botanical medicine knows, however, that herbs are not the same as pharmaceutical drugs, though they share some similarities. If we as practitioners and adherents of natural, holistic botanical medicine fail to define for field for ourselves, it will be co-opted. One need only look at recent history to see that this process is already well under way.

This is not to say that allopathic practitioners should not use herbs however they feel comfortable. Every time an allopath chooses to use *Ginkgo biloba* standardized extracts to treat early Alzheimer's disease patients instead of a pharmaceutical, botanical medicine of a sort is being practiced with all its benefits and drawbacks. However, this is only a tiny slice of what botanical medicine can be about. Botanical medicine practitioners are not so inhibited and limited. Therefore quality information is required to realize the full potential of botanical medicine.

The goal of this textbook is to as thoroughly as possible document two interrelated realms of botanical medicine—phytochemistry and pharmacy—in a clinically-applicable manner. Plants, fungi, lichen, mosses, etc. undoubtedly operate due to the physiochemical properties of their constituents. Mystical, undefined energetic forces do not give herbs their power. Anyone who chooses to believe that is perfectly welcome to; however, this book will not deal with the issue of "herbal energetics" or lend any support to the theories of that belief system (quite the opposite).

Some will say that this textbook is allopathic. Perhaps that is true. The best medicine is the one that can adopt whatever works best, rather than adopted a set ideology and sticking to it regardless of the evidence. The basic sciences of physiology, pathology, biochemistry, and so forth are critical for understanding the uses and toxicology of botanical medicines. Just because allopaths developed pharmacology and have applied it to pharmaceutical drugs does not mean that applying the same principles to herbs turns herbs into drugs or botanical medicine into pharmaceutical drug medicine. Hard-core allopathic pharmacology can comfortably and easily coexist with natural medicine.

In fact, botanical medicine can help break down some of the rigidities that can lead to inaccuracy in pharmacology. The fact that these massively complex entities we call botanical medicines are effective puts cracks in the allopathic pharmacological dogma of "one molecule, one action, one use" that seems to subconsciously pervade medicine. The reality is that even single molecule, synthetic, pharmaceutical drugs have multiple actions, multiple uses, and multiple interactions. Continued research on whole plants, fungi, lichen, mosses, etc. and complex extracts from these life forms will only improve and clarify pharmacology.

This book is not primarily a therapeutic manual, though it is designed with a practicing clinician and students intending to becoming clinicians in mind. Aspects of phytochemistry that are not terribly relevant to clinicians are excluded. This book is designed as a reference to provide highly useful information to clinicians and industry regarding preparation of effective botanical extracts, as well as evaluating the quality of extracts already prepared. It is also intended to provide greater understanding of the pharmacodynamics and pharmacokinetics of botanical medicines to practitioners. A chemistry and biochemistry background is assumed of the reader, and without these, much of this text will be confusing or even incomprehensible.

Some extraction processes will be immediately relevant to every day practice with herbs, particularly in detailing to patients how to prepare their own infusions and decoctions. Others will be of concern in choosing between similar dose forms, such as in choosing whether to use a cream, ointment, gel, powder, fomentation, poultice or other topical applications for optimal therapy of skin lesions. Other information is necessary to develop a solid clinical practice in botanical medicine, though it may not necessarily be remembered in the future, only form a foundation so that other information will make sense later.

This text is relevant in many real world considerations of plant extracts. For example, if a practitioner does not intend to prepare his or her own tinctures, it is still necessary to be able to evaluate available products to choose a therapeutically active one. A tincture of *Commiphora molmol* (myrrh) made with only 25% ethanol should cause a practitioner's eyebrows to rise, for he or she would know that myrrh's major active constituents reside in the resin fraction, and that this will only dissolve in approximately 90% ethanol or some other organic solvent.

Each chapter ends with a short glossary and some study questions to maximize utility of this text for students. These questions have been developed from teaching pharmacognosy at the North American College of Botanical Medicine in Albuquerque, NM, the Southwest College of Naturopathic Medicine in Tempe, AZ, and Bastyr University in Seattle, WA.

Constructive comments about this text are always welcome.