

Herbal Reference Sources for Health Care Professionals
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The herbal supplement market is booming in the United States. Consumers no longer have to be experts to harvest and prepare medicinal plants—prepared herbal supplements are easily bought in the grocery store, the pharmacy, and even in the convenience store. All total, consumers spent 3.2 billion dollars in 1997 and 14.7 billion dollars two years later on herbal and other supplements (cited in HerbalGram 1997; Money 2000, respectively). World-wide, herbal medicines are a \$62 billion industry (Reuters 2000). A study showed that although patients may be *highly* satisfied with their conventional care and health care practitioner, 39% will still augment their care with alternative medicine and therapies, either by self-prescription or under the care of an alternative health care practitioner (Astin 1998). Other studies have come to the same conclusion; even patients who are pleased with their care will use alternative medicine practices, mainly to enhance rather than replace conventional services (Druss & Rosenheck 1999; Spigelblatt, Laine-Ammara, Pless, & Guyver 1994). However, most physicians are not made aware of their patients' frequency and/or type of traditional medicines and therapies used (Druss & Rosenheck 1999). Likewise, a Canadian study showed that many parents of pediatric patients neglect to mention alternative medicines and therapies to the conventional physician (Spigelblatt, Laine-Ammara, Pless, & Guyver 1994).

Often, consumers supplement or supplant their prescription medications with natural medicinals. These substances have the power to heal as well as to harm. They can also weaken or strengthen the effects of prescription medications and interfere with surgery (e.g. affect the viscosity of blood). Although books on herbal products abound, most are targeted towards the consumer. Many layman herb books do not discuss toxicity, herb-drug interactions, and dosage. The goal of this paper is to review and recommend herbal scientific resources that will satisfy the information needs of the health care professional. I tended to choose works that act as a ready reference on how herbals can impact conventional medical treatment rather than as a diagnosing and prescribing source.

Readers will note the absence of certain well-known works, such as from V. E. Tyler, noted plant expert and dean of pharmacy emeritus at Purdue University, because they did not meet the criteria of this user group. Likewise, I did not include certain well-known webpages. Some of those websites were famous because of the comprehensiveness of their links rather than for original content.

Electronic and print resources not only had to include the medical areas listed above, but needed to be in a format to allow for rapid scanning. Today's researchers are conducting more scientific studies on medicinal plants. Therefore, I not only looked for sources that included references from peer-reviewed, scientific journals, but also at the book's publication date. How often is the work updated? If the book is old, the references are most likely out-of-date, too. If a source only referenced other herbal books that didn't have scientific references either, I didn't include it. Other features I noted—were any of the studies Phase III or the gold-standard Phase IV clinical trials? In

addition, some works suggested a duration of use of the herb, others listed signs of overdose, and still others described the herb's current regulatory status—all issues important to the health care professional.

I located the following print and electronic resources through various means: learning of electronic resources from librarian listservs like ResPool and MEDLIB and reputable webdirectories (Librarian's Index to the Internet, Digital Librarian, Martindale's Health Science Guide), consulting knowledgeable PharmDs and PharmD students interning at Drug Information Centers (University of Florida and Nova Southeastern University), reviewing the holdings of my university's allied health library, noting works cited in the literature, and systematically searching the Internet. Unfortunately, there were some sources I was unable to verify and review and therefore, did not include them in the list. However, there were two books and two databases I included despite this because they came so highly recommended. The resources profiled are deliberately in alphabetical rather than ranked order. Yet, they are all useful for various purposes; the health care professional will probably choose to use several out of individual preference.

Print Resources:

(Most of the materials are books; I was unable to evaluate more than the few serials listed below.)

Books

American Herbal Products Association's Botanical Safety Handbook. McGuffin, Michael, Hobbs, Christopher, Upton, Roy, & Goldberg, Alicia. (eds.). Boca Raton, FL: CRC Press, 1997. 231p. ISBN 0849316758.

The authors selected herbs that are commonly used today and rated them for safety. The common name, plant part, additional reading, editors' note, and standard dose are given. The book also includes three appendices: herbal constituent profiles, herbal action profiles, and herb listings by classification. One drawback is that the herb monographs are in alphabetical order by scientific name. Therefore, the non-botanist has to look up the common name in the index first. However, there are some reader-friendly features: limitations in scope are given, a sample record is delineated, and the safety rating description is repeated at the bottom of each page.

The American Pharmaceutical Association Practical Guide to Natural Medicines. 1st ed. Peirce, Andrea. New York, NY: The Stonesong Press, Inc., 1999. 728p. ISBN 0688161510.

Herb entries are described by scientific and common names, a numerical safety rating, an overview, uses, forms available, dosage, benefits, and cautions. There are also some sketches of the herbs and short indices and appendices. This book can be used by the educated consumer as well as health care practitioner.

Drug Information: A Guide to Current Resources. 2nd ed. Snow, Bonnie. Lanham, MD: Scarecrow Press, Inc., 1999. 752p. ISBN 0810833212.

Drug Information is a Medical Library Association publication. The author reviews print and electronic resources in nearly all aspects of drug information topics. This is an important resource to the librarian as well as to the health care professional.

The Healing Power of Herbs: the Enlightened Person's Guide to the Wonders of Medicinal Plants. 2nd ed. Murray, Michael T. Rocklin, CA: Prima Health, 1995. 410p. ISBN 1559587008.

Section II of the book, "Materia Medica," covers 37 common herbs. The uses, general description, chemical composition, history and folk use, pharmacology, clinical applications, dosage, and toxicity are given.

Herbal Medicine: Expanded Commission E Monographs. Blumenthal, Mark. (ed.). Austin, TX: American Botanical Council, 2000. 519p. ISBN 0967077214.

This expansion of the original work was created to address the criticism of The Complete German Commission E Monographs, which was criticized for lack of references, despite the credibility of the scientists. This book is a fantastic resource; over 300 herbs are profiled. Each entry is accompanied by a color photo and the common, scientific, pharmacopeial, and other names. An overview, description, chemistry and pharmacology, uses, contraindications, side effects, use during pregnancy and lactation, interactions with other herbs, dosage and administration, additional resources, and footnotes are given.

Herbs: Everyday Reference for Health Professionals. Chandler, Frank. (ed.). Ottawa, Canada: Canadian Pharmacists Association, 2000. 240p. ISBN 0920169414.

This book was produced under the auspices of the Canadian Pharmacists Association and the Canadian Medical Association. The preliminary sections give an overview of herbal medicine practices and issues. Herbs are described by scientific names and synonyms, common names, plant parts used, chemical constituents, uses (supported by peer-reviewed human data; supported by other human, animal and in vitro studies; described in pharmacopeias and traditional systems of medicine; describes in recognized folklore references but without clinical or scientific support) pharmacology, toxicology, warnings (contraindications, adverse effects, interactions, general precautions), dosage and directions for use, and dose and formulations. NOTE: I was unable to review this book, but it was repeatedly highly recommended.

Natural Medicines Comprehensive Database: Consensus of Current Scientific Information on Herbal Medicines and Dietary Supplements of Practical Importance to the Health Professional. 2nd ed. Jellin, Jeff M., Batz, Forrest, & Hitchens, Katy. Stockton, CA: Therapeutic Research Facility, 1999. 1310p. ISBN 0967613620.

This publication is produced by the editors of the Prescriber's Letter and the Pharmacist's Letter and is updated regularly. The book's website, <http://www.NaturalDatabase.com> is updated daily. Herbs are described by common and scientific name; traditional uses; a safety rating; effectiveness rating; mechanism of action; adverse reactions; interactions with herbs and supplements, drugs, foods, lab tests, and diseases or conditions; dosage and administration; and comments. NOTE: I was unable to review this book, but it was repeatedly highly recommended.

PDR for Herbal Medicines. 2nd ed. Montvale, NJ: Medical Economics Company, Inc., 2000. 1103+p. ISBN 1563633612.

Over 700 herbs are profiled; nearly 400 color photos and a drug-herb interaction guide are featured. Information includes scientific and common names, description, actions and pharmacology, indications and usage, contraindications, precautions and adverse reactions, overdose, and dosage. The book also has numerous indices: scientific and common names, indications, Asian indications, homeopathic indications, therapeutic category, and side effects. The PDR series, although widely used, are generally not the pharmacist's first choice, since the monographs are a commercial venture: they are provided by the drug companies who pay for this "advertising."

Professional's Handbook of Complementary & Alternative Medicines. Fetrow, Charles W. & Avila, Juan R. Springhouse, PN: Springhouse Corporation, 1999. 762p. ISBN 0874349710.

The authors have a pharmD degree. Herbs are described by common trade names, common forms, source, chemical components, actions, reported uses, dosage, adverse reactions, interactions, contraindications and precautions, special considerations, points of interest, and analysis. Some entries are accompanied by a sketch of the herb. The book also has numerous short appendices: selected herbal agents with limited clinical data, herbal agents listed as unsafe by the FDA, potentially unsafe plants, herbal agents to avoid during pregnancy, potential drug-herbal agent interactions, therapeutic monitoring guidelines, study data on herbal agents by disorder, herbal agents resource list, and herbal agent information sheet. This is a great book, and it can easily fit in a lab coat pocket, too.

Quick Access: Professional Guide to Conditions, Herbs & Supplements. Newton, MA: Integrative Medicine Communications, 2000. 472p. ISBN 0967077257.

The book's layout is easy to read. Common herbs are described by scientific and common name, an overview, botanical description, part used, constituents/composition, commercial preparations, uses and indications, pharmacology, dosage, duration, side effects/toxicology, warnings and contraindications, and regulatory and compendial status. Although I tended to avoid works that prescribed by ailment, this book was the exception. Various illnesses and injuries are profiled with medical history-type information and followed by treatment suggestions. What is unique about this source is that conventional treatments and drug therapies are listed as well as the alternative ones. The book also describes supplements. The work's "Cross Reference Guide" divides the information and makes scanning by various categories easy.

Textbook of Natural Medicine: Volume 1. 2nd ed. Pizzorno, Joseph E. Jr. & Murray, Michael T. New York, NY: Churchill Livingstone, 1999. 1030p and 146p index. ISBN 0443059454.

Section 5 of this volume profiles 124 herbs and minerals and focuses on sources, metabolism, deficiency signs and symptoms, nutrient interactions, clinical applications, dosage, and toxicology. Each entry includes its chemical structure.

Toxicology and Clinical Pharmacology of Herbal Products. Cupp, Melanie Johns. (ed.). Totowa, NJ: Humana Press Inc., 2000. 325p. ISBN 0896037916.

The book is edited by a PharmD and the contributors are from pharmacy backgrounds. The foreword succinctly portrays some of the differences between herbalists and physicians and some of the controversies and trends in herbal medicine. The following twenty-eight chapters cover some of the most common herbs. Herbs are described by sources, history and traditional uses, current promoted uses, available products, pharmacology, drug interactions, toxicology, regulatory status, and more.

Serials

(These are all peer-reviewed.)

HerbalGram. Quarterly. American Botanical Council, the Herb Research Foundation. ISSN 0899-5648.

This journal can be read by the healthcare practitioner and educated consumer alike. It reports on scientific studies on medicinal plants.

Journal of Ethnopharmacology. Bimonthly. Elsevier. ISSN 0378-8741.

This highly-technical journal focuses on scientific studies of indigenous drugs.

Review of Natural Products—formerly The Lawrence Review of Natural Products. Monthly. Facts and Comparisons. ISSN 1089-5302.

This loose-leaf book on herbs is updated monthly. The short herb monographs include the scientific and common names, botany, history, chemistry, pharmacology, toxicology, and a summary. A sidebar of patient information gives uses and side effects. Unfortunately, the monographs lack dosage information.

Electronic Resources:

(I've tried to include free databases and websites as well as fee-based ones.)

Alt-HealthWatch

via <http://www.ebsco.com/home/> (EBSCO)

This fee-based, full-text and image database culls its articles from many sources like journals, magazines, and newsletters. Users can be assured of getting many relevant hits from this database, since its focus is on alternative medicine. I strongly recommend for users to choose "Peer Reviewed Journal" under the type of publication option. Users can also look at the list of journals available in Alt-HealthWatch.

Combined Health Information Database (CHID)†

<http://chid.nih.gov/>

This database contains many unique citations and is updated quarterly. It focuses on health information and education resources produced by federal agencies. It offers a simple and advanced search, the latter which can search by general material designation and by language.

Complementary and Alternative Medicine (CAM) Citation Index*†

<http://nccam.nih.gov/nccam/databases.html>

This database is under the auspices of NIH. It's comprised of citations on alternative and complementary medicine which are selected from Medline. Its range is from 1963 to the present.

DrugKnowledge System

via MicroMedex <http://www.micromedex.com/products/pd-drugk.htm>

This is a fee-based series of databases. One Drug Information Center I visited was happy with the Poisindex database. The DrugDex database looks promising, too. NOTE: I did not try them out, but they were recommended by PharmDs and PharmD interns who use them.

Gold Standard Media: Clinical Pharmacology 2000

<http://cp.gsm.com/>

This is a free site of information on prescription drugs and some herbs. Users should be cautioned that some of the information is not up-to-date, nor are the warnings (such as a discontinued status) given consistently in all sections of the site. However, the date last revised is posted on each page. Herbs are described by indications and dosage, administration, contraindications, interactions, adverse reactions, costs, product information, and classification. One area that this site excels at is in the patient education section. Health care practitioners can tick the patient education areas to print a customized handout. The first half is technical, but the second half of the handout is written for the patient, which answers questions like "what if I miss a dose," "what do I need to watch for while using it," and "where can I store it." For some reason, many sites link to RX list, <http://www.rxlist.com>, which only has the verbatim descriptions from Gold Standard Media, and is not as versatile or useful.

Healthmall

<http://www.healthmall.com/herbal.cfm>

This site includes numerous herbal monographs, apparently from Guide to Popular Natural Products by Facts and Comparisons. Herbs are described by scientific and common names, patient information brief blurb, botany, history, pharmacology, and toxicology. The site includes sections on potential herb-drug interactions (by broad classes of drugs) and specific herb-drug interactions, both in a table format and the contact information of Poison Control Centers by state. Under "Sources of Natural Product [Information]" is a listing of journals and databases, as well as books.

HealthMD

<http://www.wholehealthmd.com/>

Click on "Reference Library" and then on "Supplements."

Each entry includes an overview and background of the herb, its health benefits/what ailments it treats, what forms it's available in, dosage, guidelines for use, possible interactions, side effects, and cautions. (Another section of the site, "Drugs," offers this type of information and more on prescription drugs.) There are internal hotlinks to the

aliment or disease description, which are written by a physician and includes other information. Entries can be emailed. This site is by a for-profit herbal supplement company.

HealthSTAR*

<http://igm.nlm.nih.gov/index.html>

This database, partnered by the American Hospital Association and NLM, looks at health care delivery from its clinical and business aspects. Some of its records come from Medline, however, the records on clinical practice guidelines and other clinical areas of health care delivery come from NLMs National Information Center on Health Services Research and Health Care Technology.

HerbMed

<http://www.amfoundation.org/herbmed.htm>

A unique feature of this website is that the links within the description take the user to PubMed where it performs an automatic search on that item. Each herb profile consists of short, one-sentence summaries from scientific studies. These references are linked to the citation and abstract in PubMed. Topics on the over 100 herbs include: human clinical data, case reports, traditional and folk use, contraindications, toxic and adverse effects, interactions, preparations (commercial, suppliers, folk and traditional), mixtures (modern, traditional herbals), mechanisms of action, and links to pictures and PubMed keyword search terms.

International Bibliographic Information on Dietary Supplements (IBIDS) and Computer Access to Research on Dietary Supplements (CARDS)

<http://dietary-supplements.info.nih.gov/>

This site has two databases, IBIDS and CARDS, the latter which is expected to be available later this year. The IBIDS indexing database is produced by NIH and the USDA and has many unique abstracts and citations on dietary supplements (vitamins, herbs, etc.). IBIDS also allows searching by peer-reviewed citations only. The site includes a keyword list and a journals list. The database tries to be international in scope and includes foreign citations if the abstract is in English. Entries from AGRICOLA, AGRIS, and MEDLINE are included, and the site has plans for including additional database citations. The site also has dietary supplement fact sheets, "Vitamins and Minerals" and "Botanicals." Both are under construction and have little resources at this time.

Medline,* Sidiline,* and PreMedline*

via PubMed <http://www.ncbi.nlm.nih.gov/PubMed/>

via Internet Grateful Med <http://igm.nlm.nih.gov/>

Medline weekly indexes articles from respected medical journals, and the scope extends to the preclinical sciences, nursing, dentistry, medicine, and veterinary medicine. Sidiline is only available through IGM and indexes the latest complete month of Medline citations. Entries from PreMedline are the newest citations that haven't been fully indexed yet. As soon as the citation record is complete, it is moved to Medline. PreMedline is updated daily.

MotherNature's Encyclopedia of Herbs and Botanical Abstracts

http://www.mothenature.com/ency/Index/Herb_Index.asp

The entries have a color photo of the herb and internal hotlinks to the ailment or disease description. Each herb is described by where grown and parts used, what ailments it treats, active ingredients, dosage, side effects and interactions, and historical use. The site also offers similar information and more under its "Encyclopedia of Vitamins, Minerals, and Supplements" section and its "Drug Interactions" section. However, the site does not claim to be comprehensive in its drug interactions section, and users should be cautioned to check both the herbs section and the drug interactions section. Although the areas are internally hotlinked to each other, users should not rely on that. The site is by a for-profit herbal supplement company.

NAPRALERT (Natural Products Alert)

<http://www.cas.org/>

This fee-based database is produced by the University of Illinois and available through STN: Chemical Abstracts Service. It is mentioned repeatedly in the literature and furnishes ethnomedical and pharmacological citation information on herbs. Further information on it is found at <http://www.national.chiropractic.edu/academ/napralert.html>. NOTE: I was unable to review this database, but it was repeatedly highly recommended.

Natural Medicines Comprehensive [Online] Database

<http://www.NaturalDatabase.com>

The data for this fee-based database is from the research of physicians, pharmacists, pharmacologists, dieticians, and researchers. Nearly all herbs sold in Canada and the US are in this database. They are described by scientific and common names, common uses (as opposed to prescribed uses), safety rating, effectiveness rating, mechanism of action and active ingredients, dosage and routes of administration, comments, and references. Two sections of note are adverse reactions and interactions. The adverse reactions section also lists known allergies—i.e. patients who have an allergic reaction to one herb may be sensitive to other herbs from the same family. The interactions section not only lists interactions with herbs and other dietary supplements, but with drugs, foods, lab tests, and diseases and conditions, too. Another section offers a link to another database that users can search for brand names containing that ingredient. NOTE: I was unable to review this database, but it was repeatedly highly recommended.

The Natural Pharmacist

<http://www.tnp.com/home.asp>

I really like this site. Under the "herbs and supplements" section are herb monographs that include an overview, pharmacology, contemporary uses, research studies on its effectiveness, mechanism, dosage, risks and side effects, safety issues, drug interactions, and additional cautions. I like that principle proposed uses, other proposed uses, *and* incorrect uses are listed at the top of each monograph. This herb monograph section also links to a "drug interactions" section, (although I'm not sure why it's separate from the drug to herb interaction *professional* section). A section of common diseases and ailments have internal links to herb monographs. There is a section for health

professionals (registration is free) that has drug to herb and herb to drug interactions. There are also herb to drug interaction monographs (although I don't know why they are in an additional section). The site also has several good articles on herbal medicine for the health professional.

The Special Nutritionals Adverse Event Monitoring System (SN/AEMS)†

<http://vm.cfsan.fda.gov/~dms/aems.html>

This site is a searchable FDA database of reported adverse effects of dietary supplements, medical foods, and infant formulas. The information is culled from consumer and healthcare practitioner reports and is not comprehensive. However, some entries are unique.

Toxline*†

<http://igm.nlm.nih.gov/>

This is an abstracting database which is updated monthly. This database focuses on the effects of chemicals and drugs including their pharmacology, physiology, biochemistry, and toxicology.

Lastly, there is another issue that faces healthcare practitioners. What about the immigrant patient who only knows the vernacular plant name in his native tongue? What about the tourist who arrives from overseas with herbal medicines labeled in a foreign language? There are numerous books, and a few websites, which list the vernacular names of the herb, and in the case of Chinese medicine, the herbal compound name and the individual herbs that comprise it. However, one has to be aware that in some dialects, the same name could refer to different plants (Iwu, 1993). Vernacular plant name books are usually found under the Library of Congress Subject Heading, "Plant names, popular" or under the Dewey system as "Popular plant names." These polyglot sources also provide some information on the herb. I looked at many of them, and came to this conclusion: use these sources ONLY to learn the English-language common name and/or scientific name. Now that the substance has a recognizable name, health care professionals should consult the above-mentioned resources for reliable information on the herbal medicine.

*These databases use controlled vocabulary, Medical Subject Headings (MESH). NLM and NIHs National Center for Complementary and Alternative Medicine (NCCAM) are collaborating on expanding the currently limited scope of MESH terms on alternative medicine (<http://nccam.nih.gov/nccam/what-is-cam/medline.html>). Updates to terms can be viewed at MESH Browser <http://www.nlm.nih.gov/mesh/MBrowser.html>.

†These databases may pull up few articles, however, the citations may be unique. Therefore, I would recommend using them for research purposes rather than for reference.

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