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# BRIEF COMMUNICATIONS

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## Harvesting the best: evidence-based analysis of herbal handbooks for clinicians\*

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### INTRODUCTION

The recent increase and widespread use of herbs and dietary supplements (H/DS) extends across the life-span from pediatric to geriatric patients [1–4]. Patients with chronic conditions are among the heaviest users as they constantly search for additional ways to relieve their symptoms and discomfort [5, 6]. At the same time, a parallel proliferation in the literature has been published on the subject: 405 books on medicinal herbs were published from 1986 to 1989, with more than 1,000 titles appearing between 2000 and 2004 [7]. Clinicians and patients have many sources of information, but selection of the most reliable references is a challenge. Lack of information on potential toxicities, adverse effects, and interactions with medications, other herbs, laboratory tests, and disease states becomes critical in providing health care. Due to time constraints during clinical encounters, many clinicians prefer the convenient presentation and concise entries afforded by handbooks [8].

The objective of this pilot project was to develop criteria for evaluating the quality of tertiary literature on medicinal herbs and dietary supplements and to apply these criteria to selected handbooks intended for clinicians. The tertiary literature is defined here to include textbooks, compendia, and full-text computer databases [9].

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## METHODS

Based on well-respected drug information standards [9–12], the authors established the following categories for evaluation of H/DS handbook entries: botanical names or synonyms, basic pharmacology, dosage forms with adult and pediatric doses, therapeutic uses (both popular and evidence based), contraindications (including pregnancy and lactation), adverse reactions, interactions with drugs, interactions with laboratory tests, and references to current primary literature. The WorldCAT database indicated that 56 handbooks on medicinal plants or herbal medicine were published in English between 2001 and 2005 [13]. The selection criteria for the handbooks included in this pilot study were: date of publication (2001–2005), known and respected medical or complementary and alternative medicine (CAM) publishers [14], and the authors' experience in providing CAM-related information.‡§ Thus, a convenience sample of handbooks was selected from mainstream medical literature, authored by health care professionals, and published by large, well-known medical publishers. The project did not attempt comprehensive coverage of all herb and supplement handbooks for clinicians. The twelve titles are listed in Table 1.

Three herbs were selected (garlic, black cohosh, and yohimbe) to test the proposed methodology. Garlic is one of the most commonly used supplements. Black cohosh is a gender- and population-specific therapy, and yohimbe is a relatively toxic, more obscure, and less commonly used herb.

Handbook entries for these herbs were compared to the comprehensive monographs from the tertiary "gold standard" resources: Micromedex–AltMedDex, Natural Medicines Comprehensive Database, and Natural Standard [15–18]. "Gold standard" was defined in the current study as the method, procedure, or measurement that is widely accepted as being the best available, against which new developments should be compared. These comprehensive monographs were selected based on reviews in the literature as well as the

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authors' experience in using them to answer questions [19, 20]. Based on the content in these monographs and the authors' evaluation categories, the content rating system was developed (Table 2).

## RESULTS

Using the objective criteria created by the authors, twelve handbooks were evaluated. The highest possible rating for any handbook was forty-five points, indicating a rating of five in all nine categories. To demonstrate this process, Table 3 illustrates how the ratings were applied to information on garlic. The four handbooks that received the highest ratings were: *Natural Standard Herb and Supplement Handbook: The Clinical Bottom Line*, *Mosby's Handbook of Herbs and Supplements and Their Therapeutic Uses*, *Mosby's Handbook of Herbs & Natural Supplements*, and *Professional's Handbook of Complementary & Alternative Medicine*. The information presented in these four books was more descriptive, better referenced, and more complete than in the other handbooks. Table 4 shows the comparative ratings for the handbooks studied and illustrates their strengths and weaknesses.

## DISCUSSION

In this project, three experts in the fields of information and dietary supplements developed evaluative criteria that can provide preliminary guidance on the selection of H/DS handbooks. Handbooks were reviewed based on the developed criteria and compared to the "gold standard" references. The criteria used to evaluate the handbooks are described in detail in Table 2 and applied in Table 3.

Each category had a number of special considerations, including those relevant to the subject of dietary supplements. For the category "name," the essential entry was a botanical binomial and common name. Experience indicated that numerous variations on both of these were possible; thus, an increasing number of entries counted toward a higher rating. Because herbs are often used as part of ethnic healing, the addition of non-English common names was helpful. Finally, brand names are useful to a harried clinician.

The compact size of handbooks dictates that the "pharmacology" category is described in less detail. The sources receiving higher ratings listed several active ingredients and provided short descriptions of mechanism of action. The highest-rated handbooks also described the pharmacology of individual constituents' actions and their therapeutic classification.

Herbal products are available in a variety of dosage forms ranging from prepared pharmaceuticals to recipes for teas, decoctions, and poultices. The handbooks rated more highly in this category described the available forms for administration and gave accepted doses for adults. The highest-rated entries also included doses for children and gave dosing for specific indications.

In the category "historic/popular/traditional uses," handbooks provided insight for clinicians as to why

**Table 1**  
Handbooks evaluated

- BASCH Em, ULBRICHT CE. Natural standard herb & supplement handbook: the clinical bottom line. St. Louis, MO: Elsevier Mosby, 2005. 963 p. \$39.95. ISBN: 9780323029930.
- BASCOM A. Incorporating herbal medicine into clinical practice. Philadelphia, PA: F.A. Davis Company, 2002. 332 p. \$29.95. ISBN: 9780803609361.
- BRATMAN S, GIRMAN A. Mosby's handbook of herbs and supplements and their therapeutic uses. St. Louis MO: Mosby/Healthgate, 2003. 1334 p. \$37.95. ISBN: 9780323020151.
- FACTS AND COMPARISONS. Guide to popular natural products. 2nd ed. St. Louis: Facts and Comparisons, 2001. 319 p. \$9.95. ISBN: 9781574391127.
- FETROW CW, AVILA JR. Professional's handbook of complementary & alternative medicines. 3rd ed. Philadelphia, PA, and London, UK: Lippincott Williams & Wilkins, 2003. 976 p. \$39.95. ISBN: 9781582552436.
- JOHNSON LP. Pocket guide to herbal remedies. Malden, MA: Blackwell Science, 2002. 200 p. \$28.95. ISBN: 9780632046244.
- KUHN MA, WINSTON D, DER MARDEROSIAN AH. Herbal therapy and supplements: a scientific and traditional approach. Philadelphia, PA: Lippincott, 2000. 430 p. \$32.95. ISBN: 9780781726433.
- KRINSKY D, LAVALLE JB, HAWKINS E, PELTON R. Natural therapeutics pocket guide: 2003. 2nd ed. Hudson, OH: Lexi-Comp, 2003. 680 p. \$39.95. ISBN: 9781930598998.
- LIBSTER M. Delmar's integrative herb guide for nurses. Albany NY: Delmar Publishers, 2002. 960 p. \$42.95. ISBN: 9780766827100.
- Nursing 2004 herbal medicine handbook. 2nd ed. Springhouse, PA: Springhouse, 2004. 640 p. \$39.95. ISBN: 9781582552312.
- ROTLATT M, ZIMENT I. Evidence-based herbal medicine. Philadelphia, PA: Hanley & Belfus, 2002. 464 p. \$39.95. ISBN: 9781560534478.
- SKIDMORE-ROTH L. Mosby's handbook of herbs & natural supplements. 2nd ed. St. Louis, MO: Mosby, 2004. 1073 p. \$37.95. ISBN: 9780323025358 (3rd edition available in 2005).

**Table 2**  
Evaluation criteria: ratings assigned to information categories in handbook monographs

Information categories	Rating				
	1	2	3	4	5
Name	Common name	Common and botanical	More than 1 common names and botanical	English and non-English common and botanical	Brand names, English and non-English common and botanical
Pharmacology	No information	1 active ingredient	More than 1 active ingredients and short description of mechanism of action	Several active ingredients and mechanism of action	Mechanism of action, number of different active ingredients, description of their individual actions or their therapeutic classification
Dosage forms and doses	No information	Dose in adults, conventional dosage forms	Dose in adults and one specialty population, conventional dosage forms	Dose in adults, specialty populations, conventional and traditional dosage forms*	Dose in adults, pediatric, geriatric and other specialty populations—their brief indications, conventional and traditional dosage forms,* therapeutic range dosing
Historic/popular/traditional uses	No information	Rating 2 is not used by evaluators	One of categories—from historical, popular or ethnic uses	Rating 4 is not used by evaluators	Historical, popular, and ethnic uses
Uses supported by scientific evidence	No information	Research is mentioned but not described	General description of research	Description of specific research studies	Rating of the strength of evidence (evaluation of power of study, sample size, study methodology)
Adverse reactions	No information	Few adverse reactions	Several adverse reactions	Adverse reactions, theoretical versus documented	Adverse reactions, prevalence, theoretical versus documented, adverse reactions in animal versus human studies, mutagenic potential, adverse drug reactions in various dosage forms, lethal doses
Contraindications	No information	Contraindications or precautions	Contraindications and precautions in general population	Contraindications, precautions in general population, precautions in pregnancy and lactation, teratogenic potential	Contraindications, precautions in general population, precautions in pregnancy and lactation, teratogenic potential, special conditions—renal failure, liver failure, etc.
Interactions herbs/drugs/labs	No information	Interactions with most common drugs	Interactions with drugs, other herbs, foods	Interactions with herbs, drugs, foods, disease states, laboratory tests, diagnostic procedures	Interactions with herbs, drugs, foods, disease states, laboratory tests, diagnostic procedures, prevalence of interactions, theoretical versus documented
References	No information	References to tertiary resources	References to tertiary and primary resources	References to tertiary and primary resources integrated in the text	Current and updated (last 2–3 years) references to tertiary and primary resources integrated in the text

\* Conventional = capsules, tablets, syrups, suppositories, intravenous, etc. Traditional = infusions, decoctions, salves, poultices, etc.

**Table 3**  
Example of rating of information on garlic

Information categories	Rating				
	1	2	3	4	5
Name	Garlic	Garlic, <i>Allium sativum</i>	Garlic, Nectar of Gods, Stinking Rose, <i>Allium sativum</i>	Garlic, Nectar of Gods, Stinking Rose, Ajo, Banlasun, La-huan, <i>Allium sativum</i>	Garlic, Nectar of Gods, Stinking Rose, Ajo, Banlasun, La-huan, <i>Allium sativum</i> , Kwai, Kyoic
Pharmacology	Nothing	Alliin	All previous plus allucin, Organosulfur constituents	All previous plus antioxidant effects	All previous plus S-allyl cysteine, S-allyl mercapto-cysteine: radical scavengers, active cancer cells; S-allyl cysteine: potent inhibitor of hepatic cholesterol synthesis; children: 900mg dehydrated garlic
Dosage Forms and Doses	Nothing	Tablets or capsules, 600–900 mg daily (3 divided doses)	All previous plus children: 900 mg dehydrated garlic	All previous plus Garlic oil; 4–12.3 mg daily; tincture (1–5 dilution in 45% ethanol) 2–4 ml of 3 times a day	All previous plus fresh garlic 4 grams (approximately one clove) once daily; aged garlic extract 600 mg–7.2 grams per day; Ajoene as a 0.4% cream, 0.6% gel, and 1% gel applied twice daily for 1 week
Historic/popular/traditional uses	Nothing	Rating 2 is not used by evaluators	Warding off evil spirits, healing wounds, curing infections	Rating 4 is not used by evaluators	All previous plus diuretic, stimulant, cathartic, aphrodisiac, for enhancing circulation, fighting stress and fatigue, treatment of fungal infections, and maintaining healthy liver function
Uses supported by scientific evidence	Nothing	Treatment of hyperlipidemia	Several trials to document efficacy in reducing serum lipid levels	When used for 4–25 weeks, garlic seems to lower total cholesterol levels by about 4%–12%; as a comparison, conventional “statin” drugs typically decrease cholesterol levels by 17%–55%; garlic does not seem to affect high-density lipoprotein (HDL) cholesterol	Multiple trial reported small reduction in total serum cholesterol and LDL; one RCT studied effects of Kwai garlic in 20 patients with serum cholesterol levels of 220 mg/dl or higher for 12 weeks; at the end, serum cholesterol and high-density lipoprotein (LDL) levels were lowered by 6% and 11%, respectively, when compared with placebo
Adverse reactions	Nothing	Flatulence, garlic odor, bad breath	All previous plus rash, skin burns, asthma flares	All previous plus oral use of garlic can also cause changes to the intestinal flora, which might result in gastrointestinal upset; asthma has been reported in people working with garlic; garlic's effect on platelet function is well known and can possibly increase the risk of bleeding; 3 case reports—consumption of dietary garlic has caused platelet dysfunction, prolonged bleeding time, retrobulbar hemorrhage (bleeding behind the eye), postoperative bleeding, and spinal epidural hematoma	All previous plus animal studies, but not human: blood sugar lowering and increased release of insulin
Contraindications	Nothing	Discontinue prior to surgery	All previous plus exercise caution when taking with anticoagulant agents	All previous plus pregnancy: theoretically unsafe in medicinal amounts, reports of abortifacient activity; in one study, 800 mg daily during the third trimester, no reported adverse outcomes; insufficient reliable information about topical use during pregnancy and lactation	All previous plus in one study, 800 mg daily during the third trimester, no reported adverse outcomes; insufficient reliable information about topical use during pregnancy and lactation; one study, garlic constituents distributed to amniotic fluid after a single dose; several small studies, garlic constituents secreted in breast milk, altering the flavor of breast milk
Interactions herbs/drugs/labs	Nothing	Garlic interacts with anticoagulants, antithrombotic agents, contraceptive drugs, cyclosporine, non-nucleoside reverse transcriptase inhibitors, saquinavir	All previous plus eicosapentaenoic acid, fish oil, and other supplements with anticoagulant properties	All previous plus garlic can affect blood pressure, cholesterol, and international normalized ratio; it can affect bleeding disorders, ulcers	All previous plus most of the interactions are theoretical
References	Nothing	McGUFFIN M, HOBBS C, UPTON R, GOLDBERG A, EDS. <i>American Herbal Products Association's botanical safety handbook</i> . Boca Raton, FL: CRC Press, 1997.	All previous plus SILAGY CA, NEIL HA. <i>J Hypertension</i> 1994;12:463–8. McMAHON FG, VARGAS R. <i>Pharmacotherapy</i> 1993;13:406–7; AUER W, EIBER A, HERTKORN E, ET AL. <i>Br J Clin Pract Symp</i> 1990; 69(suppl):3–6.	All previous plus integrated in the text	All previous plus RAHMAN K, BIL-LINGTON D. <i>J Nutr</i> 2000;130: 2662–5. ZHANG XH, LOWE D, GILES P, ET AL. <i>J Nutr</i> 2001; 131:1471–8.

**Table 4**  
Summary of handbook ratings

Title of handbook	Criteria										Results
	Names and synonyms	Pharmacology	Dosage forms and dose	Historic/popular/traditional uses	Uses with scientific evidence	Contra-indications	Adverse reactions	Interactions	References		
BASCH E, UL-BRIGHT C. Natural standard herb & supplement handbook: the clinical bottom line	G: 5 BC: 4 Y: 4	G: 1 BC: 3 Y: 2	G: 5 BC: 5 Y: 5	G: 5 BC: 3 Y: 3	G: 5 BC: 5 Y: 5	G: 4 BC: 4 Y: 4	G: 4 BC: 4 Y: 3	G: 3 BC: 4 Y: 3	G: 4 BC: 4 Y: 4	G: 36 BC: 32 Y: 33 Mean 34	
SKIDMORE-ROTH L. Mosby's handbook of herbs & natural supplements	G: 4 BC: 3 Y: 4	G: 3 BC: 3 Y: 3	G: 4 BC: 2 Y: 3	G: 3 BC: 3 Y: 3	G: 3 BC: 4 Y: 4	G: 4 BC: 3 Y: 5	G: 2 BC: 2 Y: 3	G: 3 BC: 4 Y: 4	G: 4 BC: 5 Y: 4	G: 30 BC: 29 Y: 33 Mean 31	
LIBSTER M. Delmar's integrative herbs guide	G: 2 BC: 3 Y: 0	G: 2 BC: 4 Y: 0	G: 1 BC: 5 Y: 0	G: 5 BC: 5 Y: 0	G: 3 BC: 4 Y: 0	G: 4 BC: 3 Y: 0	G: 2 BC: 2 Y: 0	G: 2 BC: 2 Y: 0	G: 4 BC: 4 Y: 0	G: 28 BC: 32 Y: None Mean 30 (2 books of 3)	
FELTROW CW, AVILA JR. Professionals handbook of complementary & alternative medicines	G: 5 BC: 5 Y: 5	G: 3 BC: 2 Y: 3	G: 2 BC: 2 Y: 3	G: 5 BC: 3 Y: 3	G: 4 BC: 4 Y: 4	G: 4 BC: 4 Y: 5	G: 2 BC: 2 Y: 3	G: 2 BC: 2 Y: 3	G: 3 BC: 2 Y: 3	G: 30 BC: 26 Y: 32 Mean 29	
BRATMAN S, GIRMAN A. Mosby's handbook of herbs & supplements & therapeutic uses	G: 2 BC: 2 Y: 2	G: 3 BC: 5 Y: 2	G: 1 BC: 2 Y: 3	G: 5 BC: 3 Y: 3	G: 5 BC: 4 Y: 5	G: 4 BC: 5 Y: 5	G: 5 BC: 3 Y: 2	G: 2 BC: 2 Y: 2	G: 4 BC: 2 Y: 2	G: 31 BC: 28 Y: 26 Mean 28	
ROTLATT M, ZIMENT I. Evidence-based herbal medicine	G: 2 BC: 3 Y: 2	G: 5 BC: 4 Y: 3	G: 2 BC: 3 Y: 2	G: 3 BC: 3 Y: 1	G: 4 BC: 4 Y: 4	G: 2 BC: 4 Y: 5	G: 3 BC: 3 Y: 4	G: 2 BC: 4 Y: 3	G: 3 BC: 5 Y: 5	G: 26 BC: 30 Y: 29 Mean 28	
FACTS & COMPARISONS. Guide to popular natural products	G: 3 BC: 3 Y: 0	G: 5 BC: 4 Y: 0	G: 1 BC: 2 Y: 0	G: 5 BC: 3 Y: 0	G: 4 BC: 4 Y: 0	G: 3 BC: 4 Y: 0	G: 2 BC: 2 Y: 0	G: 2 BC: 1 Y: 0	G: 3 BC: 4 Y: 0	G: 28 BC: 27 Y: 0 Mean 28 (2 books of 3)	
BASCOMB A. Incorporating herbal medicine into clinical practice	G: 2 BC: 2 Y: 0	G: 3 BC: 3 Y: 0	G: 2 BC: 2 Y: 0	G: 5 BC: 5 Y: 0	G: 4 BC: 4 Y: 0	G: 4 BC: 4 Y: 0	G: 2 BC: 2 Y: 0	G: 2 BC: 2 Y: 0	G: 3 BC: 4 Y: 0	G: 27 BC: 28 Y: 0 Mean 28 (2 books of 3)	
KUHN MA, WINSTON D. Herbal therapy & supplements: a scientific and traditional approach	G: 3 BC: 3 Y: 2	G: 3 BC: 3 Y: 4	G: 2 BC: 3 Y: 3	G: 3 BC: 3 Y: 3	G: 2 BC: 2 Y: 3	G: 3 BC: 4 Y: 5	G: 2 BC: 3 Y: 3	G: 2 BC: 2 Y: 2	G: 5 BC: 3 Y: 5	G: 25 BC: 23 Y: 30 Mean 26	
Nursing 2204 herbal medicine handbook	G: 5 BC: 3 Y: 5	G: 2 BC: 3 Y: 3	G: 2 BC: 3 Y: 2	G: 3 BC: 1 Y: 1	G: 1 BC: 1 Y: 2	G: 2 BC: 4 Y: 5	G: 2 BC: 2 Y: 3	G: 4 BC: 2 Y: 4	G: 1 BC: 1 Y: 1	G: 22 BC: 20 Y: 26 Mean 23	
KRINSKY D, LAVALLE JB, HAWKINS E, PELTON R. Natural therapies pocket guide	G: 2 BC: 2 Y: 2	G: 3 BC: 4 Y: 3	G: 2 BC: 2 Y: 2	G: 3 BC: 3 Y: 3	G: 2 BC: 1 Y: 1	G: 3 BC: 4 Y: 5	G: 1 BC: 2 Y: 2	G: 1 BC: 2 Y: 3	G: 4 BC: 5 Y: 3	G: 21 BC: 25 Y: 24 Mean 23	
JOHNSON L. Pocket guide to herbal remedies	G: 3 BC: 3 Y: 3	G: 1 BC: 1 Y: 1	G: 2 BC: 2 Y: 2	G: 3 BC: 1 Y: 1	G: 1 BC: 1 Y: 2	G: 2 BC: 2 Y: 4	G: 2 BC: 2 Y: 2	G: 1 BC: 2 Y: 3	G: 1 BC: 1 Y: 1	G: 16 BC: 15 Y: 19 Mean 17	

G: garlic; BC: black cohosh; Y: yohimbe.

**Table 5**  
Top-rated handbooks

Handbook titles	Strengths (4–5 rating)	Weaknesses (1–2 rating)
BASCH E, ULBRICHT C. Natural standard herb & supplement handbook: the clinical bottom line	Names and synonyms, dosage, use with scientific evidence, contraindications, and references	Pharmacology
BRATMAN S, GIRMAN A. Mosby's handbook of herbs & supplements & therapeutic uses	Pharmacology (for more commonly used herbs), uses with scientific evidence, contraindications	Names, dosage, interactions
SKIDMORE-ROTH L. Mosby's handbook of herbs & natural supplements	Names and synonyms, uses with scientific evidence, contraindications, interactions, references	Adverse reactions
FELTROW CW, AVILA JR. Professionals handbook of complementary & alternative medicines	Names and synonyms, contraindications, uses with scientific evidence	Dosage, adverse reactions, interactions

patients self-medicate with a particular herb. The more extensive entries included mention of uses by ethnic groups, as a part of traditional healing or religious rituals and lore. The criteria were written based on the hope that discussion of ethnic uses would appear under the "historic/popular/traditional uses" category. However, none of the handbooks addressed this topic, and it was eliminated from the criteria.

Entries for "uses with scientific evidence" varied from mere mentions to specific descriptions of research related to an indication. The best sources rated or discussed the strength of the evidence.

As health care professionals learn more about herbal toxicities and adverse reactions, information on "contraindications" and "adverse reactions" becomes an essential feature in a quality reference. Evaluation of contraindications content revealed that information varied from precautions in the general population to the incorporation of precautions in pregnancy and lactation and teratogenic potential. The handbooks rated most highly for this category discussed dangers for special conditions such as patients with renal failure, liver failure, and other conditions that might affect herb metabolism. Better "adverse reactions" entries added information on prevalence and distinguished between theoretical versus documented adverse reactions. A detailed listing added one or more of the following, adverse reactions in animal studies versus human studies, mutagenic potential, adverse reactions related to various dosage forms, and lethal doses.

Increased knowledge of interactions between H/DS and pharmaceuticals, other herbs, and laboratory tests has focused attention on this category. Better handbooks listed interactions with other herbs, foods, disease states, laboratory tests, or diagnostic procedures. Because many interactions are strictly hypothetical, notes as to the prevalence of an interaction and whether it is theoretical or documented are the gold standard.

Because these handbooks are written for clinicians grounded in evidence-based medicine, all entries should have references to the primary scientific literature. The highest rating meant that the handbook had current and updated references to tertiary and primary resources integrated in the text. This category highlighted the advantage of the online "gold standard" databases, because they are easily and frequently updated as compared to print handbooks. Table 5 provides a description of strengths and weaknesses of

the best titles; the best features of the other titles are described in Table 6. These tables can assist librarians and other health care professionals with selecting titles based on their information needs.

Upon completion of this review, it was discovered that some of the categories needed revision for the sake of clarity or because the handbooks did not perfectly fit into the criteria, sometimes falling somewhere in between categories. For example, the criteria were based on the supposition that updating references and citing primary literature is common practice. As the evaluation process continued, it became apparent that few handbooks met this standard. Consequently, the criteria evolved so that lower ratings indicated citation of current tertiary sources. The criteria were also adjusted to reflect the fact that when primary references were used, often many were old and a recent literature review had not been done. The reviewers' standard was lowered to reflect the range of information offered by the handbooks and still be able to objectively differentiate between the titles.

Several handbooks intended for nurses were included. The overall impression was that these nursing titles offered more patient education material. In addition, they often integrated conventional and complementary medicine approaches. This finding would lead the authors to add an evaluation category addressing patient education to future, more comprehensive reviews.

One of the major liabilities of this evaluation was that it was based on the subjective judgment or interpretation of the evaluators. The authors attempted to make the criteria as objective as possible but there potentially was still room for subjective differences in interpretation of how some of the criteria should be applied. Also, two of the evaluators were pharmacists, so it was possible that a practitioner from another health care profession would evaluate the references differently.

## CONCLUSIONS

Objective criteria for evaluating the content of herbal information references were developed and employed in this project. In this evaluation of commonly used herbal handbooks, the best resources of this kind for a busy health care practitioner were identified. This methodology may provide a useful tool for medical librarians and health care professionals in selecting handbooks on herbs and dietary supplements.

**Table 6**  
Strengths of other handbooks listed by category

Category	Book
Names and synonyms	Nursing 2004 herbal medicine handbook
Pharmacology	ROTLATT M, ZIMENT I. Evidence-based herbal medicine LIBSTER M. Delmar's integrative herb guide for nurses
Dosage forms and dose	LIBSTER M. Delmar's integrative herb guide for nurses
Historic/popular uses	FACTS AND COMPARISONS. Guide to popular natural products (for most common herbs) BASCOM A. Incorporating herbal medicine into clinical practice LIBSTER M. Delmar's integrative herb guide for nurses
Uses with scientific evidence	ROTLATT M, ZIMENT I. Evidence-based herbal medicine FACTS AND COMPARISONS. Guide to popular natural products BASCOM A. Incorporating herbal medicine into clinical practice LIBSTER M. Delmar's integrative herb guide for nurses
Contraindications	KUHN MA, WINSTON D, DER MARDEROSIAN AH. Herbal therapy and supplements: a scientific and traditional approach BASCOM A. Incorporating herbal medicine into clinical practice LIBSTER M. Delmar's integrative herb guide for nurses
Adverse reactions	ROTLATT M, ZIMENT I. Evidence-based herbal medicine
Interactions	ROTLATT M, ZIMENT I. Evidence-based herbal medicine Nursing 2004 herbal medicine handbook
References	BASCOM A. Incorporating herbal medicine into clinical practice LIBSTER M. Delmar's integrative herb guide for nurses KUHN MA, WINSTON D, DER MARDEROSIAN AH. Herbal therapy and supplements: a scientific and traditional approach ROTLATT M, ZIMENT I. Evidence-based herbal medicine

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