

Evaluation of the Four Most-used Alternative Medicine Databases to Answer Common Herbal Information Questions

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ABSTRACT. Selecting the right tool to answer herbal product questions is essential for medical and information professionals. This study's objective was to compare and evaluate the four most-used alternative medicine databases in terms of adverse reactions, therapeutic use, interactions, and dosage of specific herbal products. MICROMEDEX (AltMedDex and POISINDEX), *The Review of Natural Products* (eFacts), Natural Medicines Comprehensive Database, and Natural Standard were compared for their completeness in

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answering patient questions related to garlic, Echinacea, saw palmetto, ginkgo, and cranberry. The results of this study will be helpful in making better database usage or purchasing decisions by librarians, pharmacists, and other medical professionals.

KEYWORDS. Alternative medicine databases, AltMedDex, database comparisons, drug information centers, eFacts, herbal databases, MICROMEDEX, Natural Medicines Comprehensive Database, Natural Standard, POISINDEX, *The Review of Natural Products*

INTRODUCTION

Over the last decades, herbal supplements have gained popularity among patients and consumers. According to American Botanical Council data, total sales of herbal dietary supplements have grown steadily from 2004 to 2005, indicating a 3.4% and 2.1% increase, respectively, compared to 2003.¹ The Slone Epidemiology Center reported a 20% increase in use of herbals/natural supplements from 2004 to 2005, and a noticeable rise in use among the pediatric population (5.3% compared to 2.6% in 2004) was noted.² Herbal medicines have become more popular with the general public for a variety of reasons including the desire for patients to participate in their own health care, situations in which people trust “natural” approaches more because of dissatisfaction with traditional medicines,³ and easier access to electronic herbal information for patients.

Medical care providers, in general, and pharmacists, in particular, are often viewed by their patients as the reliable source of drug and herbal information. The pharmacist’s role as a provider of patient information continues to grow.⁴⁻⁶ Due to the rising number of people interested in alternative therapies, pharmacists must be able to provide scientifically valid, current, reliable, and timely information about the adverse effects, drug-herb interactions, toxicology, etc., of herbal treatments. In order to perform this task successfully, pharmacists must be aware of the variety and availability of different reference sources in the herbal therapy field. Thus, selecting the right reference tool to answer a specific herbal product question becomes essential in this process. In addition to online databases such as MEDLINE that can be searched for primary herbal literature,

commercially available alternative medicine-specific databases are useful in assisting or enhancing decision making.

In published articles on the topic, the advantages and disadvantages of electronic databases and print reference sources were evaluated based on their ability to answer questions about herbal products.⁷ Several studies were done by pharmacists, others by librarians. These studies employed different evaluation methods, from questionnaires filled out by researchers in which the quality of answers was categorized (fully answered, partially answered, not answered)⁸ to a quite complicated set of criteria for evaluating reference books and drug reference sources for inclusion of up-to-date, evidence-based information on dosing, side effects, and interactions.⁹

It appears that while the majority of researchers in this area used a similar numerical approach for evaluating various reference sources, there is no widely accepted method for numerically expressing the quality of electronic databases from the point of view of the information provided. Many studies done by pharmacists have used one rational approach, that is, namely evaluating databases based on the drug information professionals' ability to answer questions received at various drug information centers.¹⁰⁻¹¹ In these studies, a large pool of questions (50-500) was used to provide researchers with reliable statistical data.

OBJECTIVE

The objective of this study was to compare and evaluate the ability of the four most-used alternative medicine databases used at a specific drug information center to answer herbal queries. The most-used resources were MICROMEDEX[®] (AltMedDex and POISINDEX), *The Review of Natural Products* (eFacts), Natural Medicines Comprehensive Database, and Natural Standard[®]. These resources were examined for their abilities to fully answer the most frequently asked patient questions about herbal supplements. For this purpose, a rubric was designed to measure the completeness of each database's response to the question of interest. The results of the study may be helpful in making better database usage or purchasing decisions by librarians, pharmacists, and other medical professionals.

METHODS

Database and Question Selection

Four major alternative medicine databases used at the Drug Information/Complementary and Alternative Medicine Center of the Massachusetts College of Pharmacy and Health Sciences (Boston) were selected for evaluation: MICROMEDEX (AltMedDex and POISINDEX), *The Review of Natural Products* (eFacts), Natural Medicines Comprehensive Database, and Natural Standard. These databases were chosen because they are high-quality resources for answering herbal/alternative medicine questions, are licensed for use throughout the college, and are the most highly used resources at the center. Usage statistics from 2006–2007 were used to identify the most frequently asked patient questions at the center. All questions were categorized into four types: adverse reaction (n=97), therapeutic use (n=81), interactions (n=39), and dose/schedule (n=71). The top-selling herbal dietary supplements in the United States were determined from the 2005 list provided by the American Botanical Council. The monographs related to garlic, Echinacea, saw palmetto, ginkgo, and cranberry were used to answer the four most frequently asked patient questions. The databases were evaluated based on the completeness of answers to the questions of interest. It was presumed that since these herbal supplements were the most popular in recent years, all four databases in this study would include extensive information about them.

Assessment

Two librarians independently conducted evaluations by using a scoring rubric intended to measure the completeness of the response from each database to each type of question. A scoring rubric was designed based on the four question categories and the completeness (no information, minimal, partial, extensive) of response to questions (see Figure 1). Each answer was given a value number from 0 (no information) to 3 (extensive information), with additional points possible for information related to therapeutic use, interactions, and dose/schedule. The scores were totaled and databases were ranked from higher to lower in their ability to completely answer the questions.

FIGURE 1. Scoring Rubric

Adverse Reactions/ Side Effects (3 points max.)	Therapeutic Use (3 points max.)	Interactions (5 points max.)	Dose/Schedule (3 points max.)
0-no information	0-no information	0-no information	0-no information
1-minimal information (1-2 types of health systems)	1 point each for: <ul style="list-style-type: none"> • folk use 	1 point each for: <ul style="list-style-type: none"> • with herbs 	1 point each for: <ul style="list-style-type: none"> • adult dosage
2-partial information (3-4 types of health systems)	<ul style="list-style-type: none"> • scientific use • effectiveness 	<ul style="list-style-type: none"> • with drugs • with foods • with lab tests 	<ul style="list-style-type: none"> • pediatric dosage • dosage forms
3-extensive information (5+ types of health systems)		<ul style="list-style-type: none"> • with diseases 	

RESULTS

The database that received the overall highest ranking for completeness was Natural Standard (67), followed by Natural Medicines Comprehensive Database (59), MICROMEDEX (AltMedDex and POISINDEX) (51), and *The Review of Natural Products* (eFacts) (41). The individual scores for the herbs researched in Natural Standard were garlic (13); Echinacea (13); saw palmetto (13); ginkgo (14); and cranberry (14). Scores for the herbs researched in Natural Medicines Comprehensive were garlic (13); Echinacea (11); saw palmetto (13); ginkgo (12); and cranberry (10). The individual scores for the herbs researched in MICROMEDEX (AltMedDex and POISINDEX) were garlic (11); Echinacea (11); saw palmetto (10); ginkgo (11); and cranberry (8). Scores for the herbs researched in *The Review of Natural Products* were garlic (9); Echinacea (7); saw palmetto (7); ginkgo (10); and cranberry (8). See Figure 2 for detailed information on garlic, as an example.

Several important database features must be pointed out. The only database in this study that covers all possible types of interactions is Natural Medicines. Natural Standard includes drug/herb/food and laboratory interactions, and the other two databases offer even fewer types of interactions. Though well-referenced, MICROMEDEX (AltMedDex and POISINDEX) monographs sometimes provide fewer

FIGURE 2. Scores for Garlic

Adverse Reactions/ Side Effects	Therapeutic Use	Interactions	Dose/Schedule	Total
MICROMEDEX - 3	MICROMEDEX - 3	MICROMEDEX - 2	MICROMEDEX - 3	11
The Review of Natural Products - 3	The Review of Natural Products - 3	The Review of Natural Products - 1	The Review of Natural Products - 2	9
Natural Medicines - 3	Natural Medicines - 3	Natural Medicines - 5	Natural Medicines - 2	13
Natural Standard - 3	Natural Standard - 3	Natural Standard - 4	Natural Standard - 3	13

current citations than Natural Standard or Natural Medicines databases. At the same time, the POISINDEX part of MICROMEDEX is still the strongest source of poisoning and toxicology information. Evidence-based summary evaluations are important indicators that are characteristic of only one database—Natural Standard—for which it should be praised, since the focus of this study is a summary of clinical studies in the field of herbal medicine. All of the scientifically valid data on a particular herb is summarized in the monograph evidence table, which includes the health condition(s) treated by this herb, description of the study, description of the study design testing the effectiveness of the herb, and comments. This is followed by an evidence discussion that details the efficacy of the herb for each medical condition mentioned in the table, based on the clinical trials conducted.

CONCLUSION

All four databases proved to be essential resources of high-quality clinical data on herbal products. Natural Standard scored the highest in its ability to answer common drug information center questions the most completely. An assumption could be made that researchers may find what they are looking for in one place and save search time or even subscription money in the process. While this may be a tempting approach, researchers should be cautious about using herbal information from only one source and should consult a variety of resources before drawing a conclusion about a particular herbal

remedy. This is especially true because monographs' statements sometimes disagree or contradict each other, which must be taken into consideration. It will necessary to conduct additional comparative studies in the future as the number of databases continues to increase in the market, and their extensive evaluation is essential for pharmacists and other medical professionals.

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