



Original Contributions

Herbal Medicines: Current Trends in Anesthesiology Practice—A Hospital Survey

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Study Objectives: To develop a simple survey to determine the patient population actively utilizing dietary supplements and/or herbs, during the preoperative period.

Design: Prospective study, with survey instrument.

Setting: University medical center.

Patients: 1,017 patients presenting for preanesthetic evaluation prior to outpatient surgery.

Interventions: After undergoing preanesthetic evaluation, patients were asked to complete a survey listing which of the nine most popular nutraceuticals currently available on the market they were using.

Measurements and Main Results: A total of 1017 surveys were submitted over a period of five months, with 32% being poorly completed and thus discarded. Of the remaining 755 valid surveys, 482 patients used at least one nutraceutical agent. 90% of these patients were using vitamins, 43% garlic extracts, 32% Ginkgo Biloba, 30% St. John's Wort, 18% Ma Huang, 12% Echinaceae, 10% Aloe, 8% Cascare, 3% licorice.

Conclusion: A significant population of patients scheduled for an elective surgical procedure are self-administering nutraceutical agents. Some of these agents have the potential to cause serious drug interactions and hemodynamic instability during surgery. Hence, it may be important to identify patients self-administering these medications, during the preoperative period. © 2000 by Elsevier Science Inc.

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Introduction

There has been a significant increase in the proliferation and use of dietary supplements including nutraceuticals over the past two decades. Nutraceuticals include all herbal medications, medicinal foods, and vitamins. Although herbal products are neither prescribed nor often recommended by traditional health care providers, patients seeking conventional and unconventional health care are more commonly using these over-the-counter substances. There are more than 29,000 herbal and related substances presently used or available for consumption in the United States.¹ The majority of patients do not reveal their use of herbs to their health care providers. In part, patients often consider the herbs to be mere supplements and not constituting drugs or other forms of medicine. When presenting for surgical procedures, such patients may pose a

Survey on Nutraceutical Usage

Diagnosis

Procedure

Is the patient on vitamins or nutritional supplements?

Did the patient admit to being on these medications during the routine pre-assessment interview?

Which nutraceuticals is the patient taking (have the patient circle all applicable):

Aloe	Ma Huang	Garlic
Casacare	Gingko biloba	St. John's Wort
Guarana	Licorice	Ecchinacea
Feverfew	Kava-Kava	Vitamins or Other-- which one:

Figure 1. Survey utilized for study.

considerable challenge or risk for anesthesiologists in unexpected anesthetic responses during surgery.^{2,3} To date, there are no data on the incidence and prevalence of herbal and dietary supplemental use among surgical patients. To address this problem, we administered a survey to 1,017 patients presenting for preanesthetic evaluation in the outpatient clinic of the Department of Anesthesiology at the Texas Tech University Health Sciences Center in Lubbock, Texas.

The purpose of this study was to create awareness among clinical anesthesiologists regarding the use of herbal medicines by patients presenting for a preanesthetic evaluation. As some of these herbs are known to cause unexplained and potentially serious intraoperative hemodynamic alterations, increased bleeding tendencies, and other herb-anesthetic interactions, it becomes prudent for the anesthesiologist to possess a reasonable knowledge and an understanding of these important agents.

Materials and Methods

The herbal survey was developed on the basis of a market study involving leading pharmacies and health stores. An inquiry into the names of the most commonly sold herbal products was performed and the most commonly used herbal products/constituents were then incorporated into the study survey.

After approval by the Institutional Review Board at Texas Tech University Medical Center, Lubbock, Texas, the nutraceutical survey was administered. Patients were

first evaluated preoperatively by members of the anesthesiology faculty and the resident staff at Texas Tech University Health Sciences Center, Lubbock. Patients under 18 years of age, patients undergoing emergency surgical procedures, or patients presenting for a repeated surgery during the 5-month survey period, were excluded from the study. The anesthesiology faculty members and residents were formally trained to administer the survey to these patients according to a set protocol. On completion of each preanesthetic evaluation, patients were administered the survey (*Figure 1*) to determine their usage of herbal medicines and related dietary supplements, including multivitamins. As part of each preanesthetic evaluation patients were asked if they were taking any medications or drugs. The number of patients who responded no to this question who were actually taking vitamins or herbal products was also determined. A list of the nine most popular nutraceuticals available over-the-counter (based on our market study of the leading health stores and pharmacies) was included in the survey, and each patient was then asked to circle on the survey the self-administered herbal products. The use of nutraceuticals was then reported in the preanesthetic assessment record of the patient.

The anesthesiology faculty and resident staff administered a total of 1,017 surveys. The survey period extended from May, 1999 to October 1999. Of the 1,017 patients surveyed, 262 surveys had to be discarded due to poor reporting by the patients. The remaining 755 surveys were valid in terms of their utilization to assess the prevalence of herb use in our patient population. A total of 482 patients

Table 1. Herbal Agents and Percentage of Patients Self-administering These Products

Herbal Agent	Patient Population
Garlic	43%
Gingko biloba	32%
St. Johns Wort	30%
Ma Huang (Ephedra)	18%
Echinacea	12%
Aloe	10%
Cascare	8%
Licorice	3%

admitted to be actively taking at least one or more dietary supplement. The remaining 273 patients reported no use of any herbal or related product.

Results

Approximately one in three (32%) of patients admitted to self-administering one or more herb-related compound. Further, the results of the present study reveal that nearly 70% of patients who were taking one or more herbal related agent did not report this information when asked about it during routine anesthetic assessment. Demographic data of the survey population include 58% males and 42% female patients, age range from 18 to 80 years, 53% Caucasians, 33% Hispanics, and 14% blacks and other ethnic groups (Table 1). The most common agent used by far was multivitamin supplements (90%). Garlic (43%), ginkgo biloba (32%), and St. John's Wort (30%) were the most common herbal products that patients

admitted to be taking at the time of the survey was conducted (Table 1). Ma Huang, Echinacea, and Aloe were taken by 10% to 18% of patients questioned. Cascare and Licorice were only self-administered by 8% and 3% patients, respectively (Table 1).

Discussion

According to one estimate, 20% of the adult population in the United States use herbal medicines along with prescription drugs.⁴ In recent years, expenditures on herbal therapies alone have risen to an excess of \$5 billion per year.⁵ Approximately 42% of adult Americans have used at least one alternative therapy (including yoga, relaxation techniques, *etc.*) in recent years.⁴ Patients with chronic ailments (*e.g.*, diabetes, arthritis, AIDS, cancer), resort to alternative modalities to cure/ameliorate these disease symptoms. Moreover, insurance companies have begun to reimburse alternative medicines.⁶ Reimbursements of chiropractic treatment, acupuncture, and naturopathy have been mandated by law in at least 45 states, thus highlighting the importance of physician awareness for nonconventional forms of treatments. Clearly, all physicians, regardless of their specialty, should be aware of some of the potential risks and serious drug interactions caused by various herbs and other nutraceuticals. Although a detailed review of these herbs and their related risks and benefits are beyond the scope of our survey findings, we have highlighted here some of the potential risks and drug interactions associated with commonly used herbs from an anesthesiologist's view point.^{2,3,7}

Excessive use of herbs such as garlic, ginger, ginkgo biloba, and ginseng can alter bleeding time, which can cause

Table 2. Some Commonly Used Herbs, Their Adverse Actions, and Anesthetic Considerations

Herb	Adverse Effects	Anesthetic Considerations
Echinacea	Unpleasant taste sensation, tachyphylaxis, potential hepatotoxicity	May potentiate barbiturate toxicity
Garlic	Halitosis, prolongation of bleeding time, hypotension	Increased risk of intraoperative hemodynamic instability
Ginger	Prolongation of bleeding time	Increased risk of intraoperative hemodynamic instability
Gingko biloba	Platelet dysfunction	Increased intraoperative and postoperative bleeding tendencies. May decrease effectiveness of intravenous barbiturates
St. John's wort	Dry mouth, dizziness, constipation, and nausea	Pseudoephedrine, MAOIs, SSRIs should be avoided
Ginseng	Hypertension, insomnia, headache, vomiting, epistaxis, prolonged bleeding time, hypoglycemia	Increased risk of intraoperative hemodynamic instability
Kava kava	Characteristic ichthyosiform dermatopathy	May potentiate effect of barbiturates/benzodiazepines, thereby causing excessive sedation
Feverfew	Aphthous ulcers, gastrointestinal irritability, headache	Increased risk of intraoperative hemodynamic instability
Ephedra (Ma Huang)	Hypertension, tachycardia, cardiomyopathy, CVA, cardiac arrhythmias	May interact with volatile anesthetics, <i>e.g.</i> halothane, and fatal cardiac dysrhythmias. Profound intraoperative hypotension controlled with phenylephedrine and not pseudoephedrine.

MAOI = monoamine oxidase inhibitor, SSRI = selective serotonin reuptake inhibitor, CVA = cerebrovascular accident.

Modified from Sabar R, Kaye AD, *Anesthesiology News* 2000;26(3):42.

an increased risk of bleeding during surgery.⁸⁻¹³ Ginkgo biloba, Kava Kava, and echinacea can interact with barbiturates that are used freely in the practice of anesthesiology, and can cause increased sedation.^{3,7} Herbs such as Ephedra (Ma Huang) and ginseng, if taken on a long-term basis, can cause hypertension, and ephedra may interact with volatile anesthetics such as halothane, desflurane, or isoflurane.¹⁴ A brief outline of important drug-herbal interactions and anesthetic considerations is described in *Table 2*.

Conclusion

There has been a tremendous upsurge in the usage of nutraceuticals in recent times, and the results of this study demonstrate that patients are not informing clinical anesthesiologists prior to their elective surgery. Moreover, there is little, if any, motivation for herbal manufacturers to conduct scientific clinical trials of these products. More than 100 deaths, related to the use of herbs, have been reported in the medical literature.¹² The anesthesia literature, unfortunately, has not addressed this important issue, although the American Society of Anesthesiologists (ASA) has recently provided some commentary on the anesthetic care of the patients who use herbal supplements. The ASA has suggested that all herbal medicines should be discontinued two to three weeks before an elective surgical procedure so as to avoid potential intraoperative catastrophic events. A detailed history of usage of herbal products might be recorded and made a routine part of the preanesthetic evaluation. Future studies are warranted to develop guidelines regarding the care and treatment of patients who are self-administering herbal products. Furthermore, additional studies are needed to better define the pharmacological properties of nutraceuticals and their many derivatives, as well as their potential anesthetic interactions.

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