

# HERBAL MEDICINES: Perioperative Considerations

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The use of herbal medicines has increased significantly in the past 5 years. Many patients taking natural therapies do not reveal to their physicians that they are taking alternative remedies, unless specifically asked. Natural does not mean safe because these products have chemical properties similar to manufactured drugs. Many of these herbal remedies may interact with other conventional drugs administered peri-operatively causing increased bleeding, inadequate anesthesia, and stroke. They may also interfere with medications necessary for proper patient care.

According to a 1997 survey, approximately 42 percent of all American patients who consult a physician employ unconventional herbal therapy.<sup>1</sup> More importantly, 63% of these patients do not inform their physicians of herbal therapy use unless specifically asked.<sup>2</sup> More than 30% of patients undergoing orthopedic types of surgery take herbal remedies.<sup>3</sup>

Between January 1993 and October 1998, 2,621 adverse events associated with dietary supplements (including 101 deaths), were reported to the US Food and Drug Administration. These numbers are considered to be artificially low due to a high number of under-reported cases. Such high numbers should alarm physicians to be more attentive to identifying patients taking these medications.<sup>4</sup> During the perioperative course, patients routinely receive many medications thus increasing the risk of potential herb-to-drug interactions. A single herbal medication may adversely affect the patient during the perioperative period through a number of different mechanisms including direct intrinsic pharmacological effects, alteration of the action of conventional drugs at the effector sites, and alteration of the absorption, distribution, metabolism, and elimination of conventional drugs.

Forty-five percent of those who take herbal medicines take multiple products. Many patients take herbal supplements in order to "self-treat" their condition before consulting their physician. A history of the use of several herbal medicines should prompt physicians to suspect the presence of undetected disorders causing symptoms that may lead to

self-medication with herbal remedies.<sup>4</sup>

The most commonly-used compounds from most frequently used to least frequently used include echinacea, ginkgo biloba, St. John's wort, garlic, and ginseng. Since these are commonly taken, the surgeon should have a knowledge of possible complications that these medications can cause.<sup>1</sup>

## COMMON COMPOUNDS

### Echinacea

Echinacea is used for prophylaxis and treatment of viral, bacterial, and fungal infections. It may interfere with immunosuppressive drugs including those used for the treatment of rheumatoid arthritis. There are also concerns of potential hepatotoxicity that have been raised. Theoretically, echinacea may potentiate the hepatotoxicity effects of certain anesthetic agents. It is recommended that echinacea be discontinued 1 week before surgery.<sup>4,5</sup>

### Ginkgo

Ginkgo is commonly used for cognitive disorders, peripheral vascular diseases, age-related macular degeneration, vertigo, tinnitus, erectile dysfunction, and altitude sickness. It acts as an antioxidant and inhibits platelet-activating factors. This can be of concern during the perioperative period since platelet function may be altered and increased, intraoperative and postoperative bleeding has been associated with the use of ginkgo. Patients should discontinue taking ginkgo at least 36 hours prior to surgery to reduce the risk of perioperative bleeding.<sup>4,5</sup>

### St. John's Wort

St. John's wort is used in the treatment of mild to moderate depression. It works by inhibiting serotonin, norepinephrine, and dopamine reuptake by neurons. It also induces cytochrome P-450 by doubling its metabolic activity. Many other P-450 substrates are used in the perioperative period including alfentanil, Midazolam hydrochloride, lidocaine, calcium channel blockers, and serotonin receptor antagonists. St. John's wort could interfere

with these medications. Patients should discontinue taking this herbal medication at least five days prior to surgery, especially those who may require postoperative oral anticoagulants.<sup>4,6</sup>

### **Garlic**

Garlic is a medicinal plant used to modify the risk of developing atherosclerosis. It irreversibly inhibits platelet aggregation, and may potentiate the effect of other platelet inhibitors. A case of epidural hematoma related to heavy use of garlic has been reported in the literature. Due to the irreversible inhibition of platelet function, patients should discontinue use of garlic at least seven days prior to surgery especially if the patient requires epidural anesthesia, or if there is a potential for postoperative bleeding.<sup>4,5</sup>

### **Ginseng**

Ginseng is known to protect the body against stress, and restore homeostasis. This herbal medication has the ability to lower blood glucose in patients with and without diabetes, which may create unintended hypoglycemia in patients who have fasted before surgery. It also has irreversible effects on the coagulation pathway and inhibits platelet aggregation. It is recommended that the use of ginseng be discontinued at least seven days prior to surgery.<sup>4,6</sup>

### **Kava**

Kava is often taken as an anxiolytic, and a sedative. It acts as a potentiator of GABA inhibitor. It increases the effects of barbiturates. This may explain the mechanism underlying a reported case of coma following anesthesia due to an alprazolam-kava interaction. Heavy use of this medication may cause a kava dermatopathy characterized by reversible scaly cutaneous eruptions. The pharmacokinetic data and possibility for the potentiation of the sedative effects of anesthetics suggest that patients taking kava should discontinue it 24 hours prior to surgery.<sup>4,6</sup>

### **Valerian**

Valerian is used as a sedative. The effects appear to be mediated through modulation of GABA neurotransmission and receptor function. Valerian should be expected to potentiate the sedative effects of anesthetics. Caution should be taken with abrupt

discontinuation of use in patients who may be physically dependent on valerian because of the risks of withdrawal. If taper discontinuation is not feasible, the physician can advise patients to continue taking valerian up until the day of surgery. Benzodiazepines can then be used to treat withdrawal symptoms should they develop during the postoperative period.<sup>4,7</sup>

### **Ephedra**

Ephedra, also known as ma huang, is used to promote weight loss, increase energy, and treat respiratory tract conditions. It is commonly used among young athletes. Ephedra causes dose-dependent increases in blood pressure and heart rate. Sympathomimetic effects from ephedra have been associated with more than 1,070 reported adverse events including fatal cardiac and central nervous system complications.

Ephedra causes vasospasm of coronary and cerebral arteries. Patients who have consumed ephedra and later are anesthetized with halothane may be at risk of developing intraoperative ventricular arrhythmias. Long-term use of this herb may contribute to perioperative hemodynamic instability. Ephedra should be discontinued at least 24 hours prior to surgery.<sup>4,6,8,9</sup>

## SUMMARY

It is generally accepted that use of the herbal products discussed above should be avoided until complete healing is obtained. It is important that physicians elicit and document a history of herbal medications during the preoperative evaluation, just as they do for prescription drugs. Physicians should be familiar with the perioperative effects of the most commonly used herbal medications in order to be ready to prevent, recognize, and treat potential serious problems associated with their use. It may be advantageous to add a section to the new patient form history form that specifically asks about the use of herbal medications.

## REFERENCES

1. Tsen LC, et al. Alternative medicine use in presurgical patients. *Anesthesiology* 2000;3:148-51.
2. Eisenberg DM, et al. Trends in alternative medicine use in the United States. *JAMA* 1998;80:1569-75.
3. McLeskey CH, et al. The incidence of herbal and selected nutraceutical use in surgical patients. *Anesthesiology* 1999;91:1168.
4. Ang-Lee MK, Moss J, Yuan C. Herbal medicines and perioperative care. *JAMA* 2001;286:208-16.
5. Fugh-Bergman A. Herb-drug interactions. *Lancet* 2000;355:134-8.
6. Johns-Cupp M: Herbal Remedies. Adverse effects and drug interactions. *Am Fam Physician* 199;59:1239-44.
7. Garges HP, Varia I, Doraiswamy PM. Cardiac complications and delirium associated with valerian root withdrawal. *JAMA* 1998;820:1566-7.
8. Murphy JM. Preoperative considerations with herbal medicines. *AORN J* 1999;69:173-82.
9. Haller CA, Benowitz NL. Adverse cardiovascular and central nervous system events associated with dietary supplements containing ephedra alkaloids. *New Engl J Med* 2000;343:1833-38.