

Top 9 Herbal Hazards in Anesthesia

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ABSTRACT

Herbs are products made from plants used to treat disease or improve quality of life. Herbal supplements have been used for centuries, and their use is increasing. Herbal products have intrinsic pharmacological activity and side effects that when combined with medications can have severe adverse effects.

With the increasing use of herbal supplements and patients' failure to mention them to providers, there is a definite need to ask patients pre-operatively for their use of supplements to prevent potential adverse events.

Due to the lack of research, the American Society of Anesthesiologists has determined that there is insufficient data to provide exact dosage recommendations for individual herbs.

Therefore, we have reviewed the literature to examine the safety, pharmacodynamics, and pharmacokinetics of the top nine herbs most frequently seen among patients.

INTRODUCTION

From 1990-1997, the use of herbal supplements **increased** 380% in the United States (US)

Herbal products have intrinsic pharmacological activity and side effects that when combined with medications can have severe adverse effects

Ruiz & Maldonado (2014) found that one out of every six patients take some type of dietary supplement together with prescribed medications

70% of those taking herbal supplements fail to tell their physicians



REGULATIONS & RECOMMENDATIONS

The Food and Drug Administration (FDA) does not hold herbal remedies to the same standards and regulations as the pharmaceutical industry

Dietary Supplement Health and Education Act of 1994

Exempted dietary supplements including herbal preparations from FDA oversight

This allowed herbal supplements to be offered publicly without premarketing approval or submission to the FDA

Due to the lack of research, the American Society of Anesthesiologists (ASA) has determined that there is insufficient data to provide exact dosage recommendations for individual herbs

ASA recommendations:

1. Ask the patient to physically bring all substances, including prescription and over-the-counter, the day of surgery
2. Ask patients to stop taking these supplements two weeks prior surgery

REVIEW OF LITERATURE

TOP 9 HERBALS ASSOCIATED WITH ANESTHETIC IMPLICATIONS

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|------------------|--------------------|
| 1. Echinacea | 6. Kava |
| 2. Ephedra | 7. Saw Palmetto |
| 3. Garlic | 8. St. John's Wort |
| 4. Ginkgo Biloba | 9. Valerian |
| 5. Ginseng | |

Echinacea - Promoted to prevent and treat bacterial, viral, and fungal infections. Known to cause inhibition of hepatic microsomal enzymes, caution should be used when administering phenytoin, rifampin, and barbiturates as toxicity can quickly develop.

Ephedra - Treats the common cold, bronchitis, fever, asthma, and low blood pressure. Ephedra is a sympathomimetic. Long-term use of Ephedra depletes endogenous catecholamines leading to intra-operative cardiovascular instability and tachyphylaxis to other sympathomimetic drugs. Interacts with volatile anesthetics agents as well as cardiac glycosides causing cardiac dysrhythmias.

Garlic - Has antiplatelet, antioxidant, and antihypertensive effects. Active component named ajoene that inhibits collagen induced platelet aggregation. Increases bleeding time & risk of perioperative bleeding.

Ginkgo biloba - Used for nervous system and cognitive disorders. Has anti-platelet activity and can exacerbate blood loss.

Ginseng - Mood enhancement, immunomodulation, and an aphrodisiac. Hypertension is a serious side effect of prolonged use. Monitor the patient for signs and symptoms of undiagnosed hypertension that may include end-organ damage, volume depletion and autonomic instability. It also increases the risk for bleeding perioperatively.

Kava - Anxiolytic and sedative properties. Potentiates GABA neurotransmission; therefore, it has additive effects of both barbiturates and benzodiazepines.

Saw Palmetto - Inhibits alpha-1 adrenergic receptor to help alleviate the symptoms of benign prostatic hypertrophy. It also inhibits cyclooxygenase, which can help with inflammation but can hinder blood clot formation. High doses can lead to pancreatitis and cholestatic hepatitis.

St. John's Wort - Treats depression and anxiety. Mechanism of action is thought to involve inhibition of serotonin, norepinephrine, and dopamine re-uptake. Induces CYP 450 3A4 isoform leading to a decrease plasma concentrations of fentanyl, midazolam and lidocaine.

Valerian - Sedative and anxiolytic properties. MOA, inhibiting the breakdown and reuptake of the GABA neurotransmitter. Patients can become physically dependent on Valerian, provider should be vigilant for signs and symptoms of withdrawal.

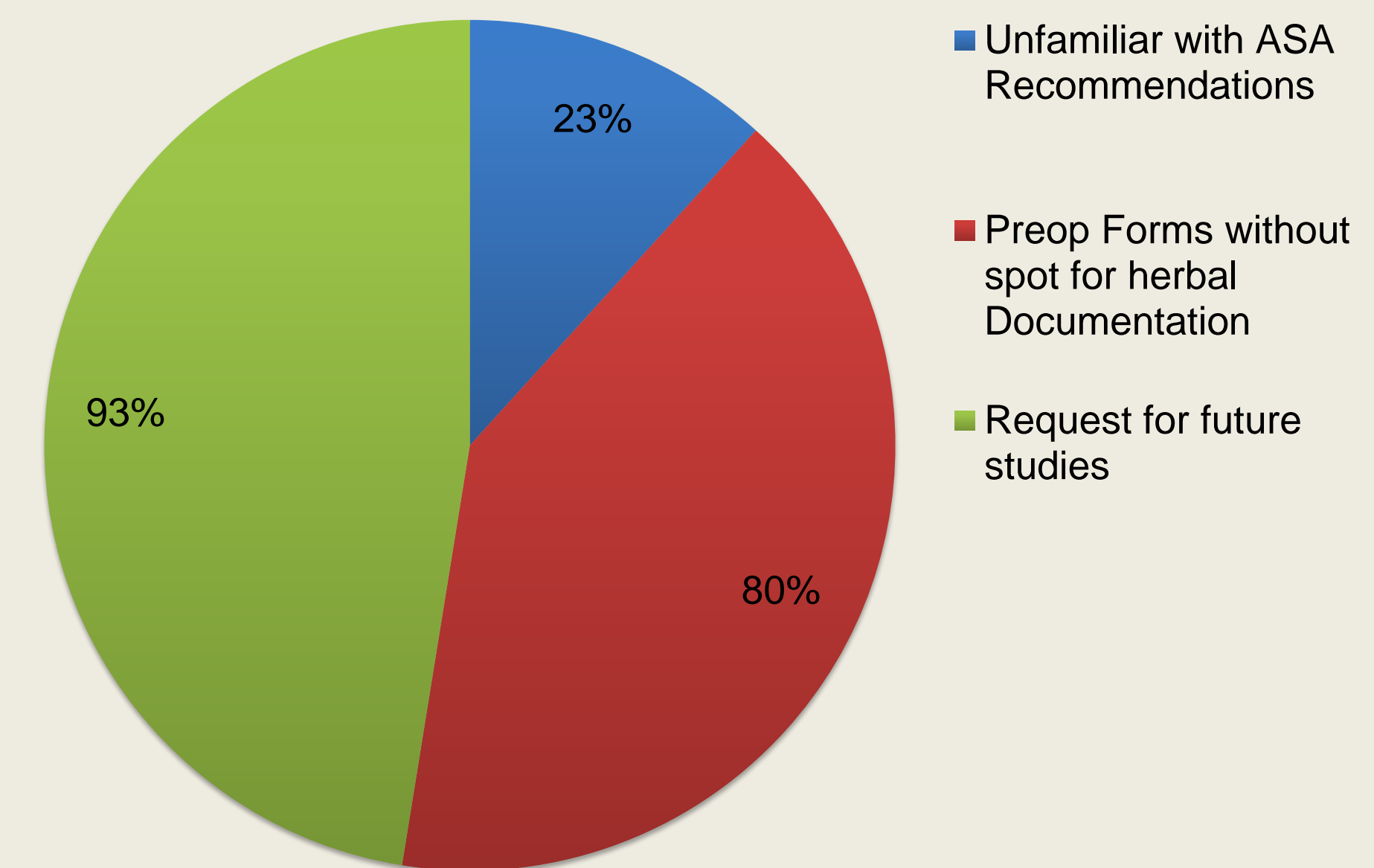
CURRENT PROBLEM

Approximately 38 million adults in the US (18.9% of the population) use herbs or other natural substance

Studies found 40-70% of patients do not tell their physicians about supplement consumption

Ang-Lee et al. found that herbal interactions with anesthesia are **not** well known among providers

2005 HERBAL SURVEY BY AANA



CONCLUSIONS

It is evident from the current literature that there is potential for harm to patients undergoing anesthesia while simultaneously taking herbals

Inquiry of herbal/drug interactions *must* be a routine component of preoperative assessment

As herbal medicine consumption continues to increase, anesthesia providers should become accustomed with their usage and possible intraoperative complications

REFERENCES AVAILABLE UPON REQUEST