Kava

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Uses

- Treatment of anxiety, stress, nervousness
- Treatment of insomnia
- Treatment of muscular aches and pains
- Traditionally used in the South Pacific during religious and cultural ceremonies to achieve relaxation and for medicinal purposes

Perioperative Risks

- No data exist to quantify risk of adverse effects
- ASA recommends stopping herbal supplements as long as 2 wk prior to elective procedures.

Worry About

- Risk of hepatotoxicity, especially when combined with other hepatotoxic drugs
- Oversedation when combined with ethanol or other sedative drugs
- Potential to affect hemodynamic stability and coagulation

Overview/Pharmacology

- Oral administration: Peak effect 1.8 h, elimination half-life 9 h, metabolized in liver by cytochrome P450.
- Effects on various ion channels leading to decreased excitability of CNS.
- Enhanced binding and regulation of GABA receptors, leading to anxiolysis, sedation, muscle relaxation, and anticonvulsive effects
- Inhibition of limbic system, leading to decreased emotional excitability and mood enhancement
- Weak Na channel antagonism, leading to potential anticonvulsant effects
- Inhibition of calcium channels, leading to inhibition of vascular smooth muscle
- Reduced reuptake of dopamine and norepinephrine
- Inhibition of COX, leading to antithrombotic, analgesic, and anti-inflammatory effects

Usual Dose

- Highly variable dosing based on growing and harvesting conditions, plant parts and extraction techniques used, and dosage form chosen by manufacturer
- Active compounds are kavapyrones
- Anxiolysis: 105–210 mg kavapyrones daily for 3-4 wk

Toxicity

- Risk of hepatotoxicity; caution with concomitant use of other hepatotoxic herbs
- Potentiation of sedation with ethanol, barbiturates, benzodiazepines, opioids
- Risk of MAOI toxicity if taken with MAOIs

Assessment Points

System	Effect	Assessment by Hx	PE	Test
CNS	Sedation	Headache, dizziness, dyskinesia	Mental status	Vital signs
CV	Hypotension	Lightheadedness, orthostasis	Decreased BP and HR	Vital signs
GI	Hepatotoxicity	Nausea, vomiting, abdominal pain, fatigue	Jaundice, ascites, edema	LFTs
RENAL	Decreased RBF	Oliguria, nausea	Peripheral edema, hypotension, tachycardia	Fluid challenge, BUN/Cr, lytes, urinalysis
HEME	Abnormal platelet aggregation	Use of other anticoagulants or antiplatelets, easy bruising, prolonged bleeding	Petechiae, hypovolemia	Elevated PT/INR, PTT, abnormal platelet function

Key References: Raduege KM, Kleshinski JF, Ryckman JV, et al.: Anesthetic considerations of the herbal, kava, *J Clin Anesth* 16(4):305–311, 2004; Horlocker TT, Wedel DJ, Rowlingson JC, et al.: Regional anesthesia in the patient receiving antithrombotic or thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence-Based Guidelines (Third Edition), *Reg Anesth Pain Med* 35(1):64–101, 2010.

Perioperative Implications

Preoperative Concerns

- Rely on pt self-report.
- Sedation.
- Consider preop LFTs, BUN/Cr, and coagulation studies if concern for concomitant disease.

Monitoring

- Standard

Regional Anesthesia

- No significant added risk, but use caution if combined with other anticoagulant/antiplatelet agents.

Emergence/Extubation

- Prolonged due to excess sedation

Postoperative Period

- Continue to monitor for increased sedation.
- Potential for prolonged bleeding.

Licorice *(Glycyrrhiza glabra)*

R. Blaine Easley

Uses

- One of the top 10 herbal medications utilized in USA.
- Historically used to improve immune function and treat a variety of conditions including PUD, duodenal ulcers, cough and/or bronchitis, atherosclerosis, chronic fatigue syndrome, various cancers, AIDS, and Addison disease. Most recently a study has demonstrated its effectiveness in relieving postop sore throat.

Perioperative Risks

- Unknown. Theoretical problems in pts with impaired renal function, Htn, chronic liver disease, cardiac arrhythmias, and hypertonia.
- Potential for drug interactions. Pseudohyperaldosteronism has been produced experimentally in healthy subjects taking >100 g/wk.

Worry About

- Pseudohyperaldosteronism: Documented mineralocorticoid effects that result in fluid retention, hypernatremia, hypokalemia, and edema.
- Hypertension: Direct effects on vascular smooth muscle tone independent of mineralocorticoid properties.
- Vasospasm and/or headache: Recent case reports of cerebral artery spasm causing severe headache, visual disturbances, and potential ischemia.
- Hypokalemia and/or muscle weakness: Chronic usage related to hypokalemic myopathies, muscle cramps, and skeletal muscle spasms.
- Arrhythmias: Rare side effect but more worrisome in pts with Hx of arrhythmias requiring medication (e.g., digoxin).
- Paresthesias: Numbness in extremities may be a sign of licorice toxicity.

Overview/Pharmacology

- Licorice is the common name given to various substances derived from the plant root *Glycyrrhiza glabra*, also known as Spanish licorice. This plant is a perennial that grows 3–7 feet high and originated in Europe and Asia. Also called sweet root and licorice root.
- Glycyrrhizin and/or glycyrrhizic acid (the glucoside form) and glycyrrhetinic acid (the glycoside form) are the most important substances or metabolites found in licorice. The roots also contain coumarins, flavonoids, volatile oils, and plant sterols.
- Licorice and its components are metabolized and excreted by the liver and kidneys.
- Mineralocorticoid effects of licorice, via glycyrrhetinic acid, result from the inhibition of 11-β-hydroxysteroid dehydrogenase (an enzyme that normally inactivates cortisol by converting its C11 alcohol to a ketone). Excess glucocorticoids then bind to mineralocorticoid receptors and produce a mineralocorticoid response, as evidenced by increased sodium retention and Htn. Thus licorice ingestion creates a syndrome of hyperaldosteronism characterized by hypernatremia, Htn, hypokalemia, and suppression of the renin-angiotensin system.
- Glycyrrhetinic acid also inhibits 15-hydroxy-prostaglandin dehydrogenase and prostaglandin reductase. These two enzymes are important in the metabolism of prostaglandin E and F_2, perhaps explaining licorice's immunologic benefits, effects on reducing cough and/or bronchospasm, protection of gastric mucosa, and benefit by decreased platelet aggregation.
- Glabridin has antioxidant and potential wound/ulcer healing properties.

Drug Class/Usual Dose

- Made from peeled and unpeeled dried root compounded and sold as a powder, dry extract, and liquid extract. In some preparations, such as DGL, harmful