K Magee
C Loiacono

A review of common herbs and potential interactions

Authors' Affiliations:
K. Magee, C. Loiacono,
Division of Dental Hygiene, Dental Programs, University of New Mexico, Albuquerque, NM, USA

Correspondence to:
Katrina Magee
Division of Dental Hygiene
Dental Programs
MSCO9 5020
I University of New Mexico
Albuquerque
NM 87131-0001
USA
Tel.: +1 505-272-8156
E-mail: kmagee@salud.unm.edu

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Introduction

Complementary and alternative medicine (CAM) encompasses a diverse group of medical treatment such as acupuncture, aromatherapy, massage therapy, meditation, hydrotherapy and herbal therapy. In Europe, the Far East, Asia and Canada, CAM has long been used to promote health or to treat various medical conditions. The percentages of the persons per respective countries using CAM are as follows: Africa 80%, Australia 49%, Canada 70%, China 40%, Chile 71%, Colombia 40%, France 49% Holland 23%, Saudi Arabia 19%, United Kingdom 30% and the United States 42% (1–3). The increasing interest in CAM by the public has encouraged dental professionals to investigate the existing science of CAM. Due to the wide-range of therapies of CAM, the authors have chosen to focus on herbal therapy, also known as phytotherapy or phytomedicine. The aim of this article is to offer a review of herbal therapy, possible oral and systemic health complications and potential biomedical medication interactions.

Herbs have found its place in modern day biomedical medications. About one-fourth of all biomedical medications commonly prescribed today, contain at least an active ingredient derived from plants and the additional contents are chemically synthesized in the laboratory (4). Herbs are advertised as being able to improve overall health, cure illnesses and control diseases from diabetes to AIDS.

Terminology

Many herbs under the same name have different properties and reactions to other herbs or biomedical medications. The scientific name/botanical name in Latin provides positive identification for various species or substances that may share several common names. Common names are not recognized internationally because a herb can have numerous names depending on the geographic location, for example, Ginseng. There are several

subspecies of ginseng, for example, Chinese Ginseng (*Panax ginseng*) and American Ginseng (*Panax quinquefolius*); Chinese Ginseng is the most common preparation used throughout the world; however, numerous individuals do not realize there are several common names for Ginseng such as Asiatic ginseng, Japanese ginseng, Jintsam, Oriental ginseng or Western ginseng.

Biomedical medicine is the treatment or a medication of chemical substance that is prescribed with the intention to cure, treat or prevent disease. The term 'biomedical medicine' was selected instead of 'conventional medicine' because many cultures throughout the world practice 'folk medicine', which has been considered conventional medicine for hundreds of years (5, 6).

'Herbs' refers to non-woody seed-producing plants that are annual, biennial or perennial and die at the end of each growing season. Several parts of the plant such as the flower, stem, seed or root are used for medical or aromatherapy qualities. In general, health care professionals consider herbs to be a crude drug, which is used to prevent disease, treat infection or maintain a state of health (4). Herbs can be used as extracts, juices, tea, lozenges, inhalation, oils, salves, capsules and herbal baths.

The 'therapeutic index' refers to the proportion of the dose of the herb required to cause an adverse effect when compared with the dose that is needed to generate a therapeutic effect (5, 6). A high therapeutic index has a broader margin of safety compared with a herb with a lower therapeutic index, for example, green tea (*Camellia sinensis*) has a high index because large amounts of tea can be drunk without harm. The therapeutic index will depend on what herb is being used, the part of the herb used (5, 7, 8), way of administration and even the manufacturers method of processing and packaging before marketing the herb (7). If the patient consumes the therapeutic dose in one large amount or through fixed schedules, such as everyday for months, the possibility of developing toxicity enhances, regardless of how safe the herb has been declared by researchers (7).

There have been concerns regarding the variability in the levels of chemical constituents of herbs, which can generate possible health risk for the individual. 'Potency' depends on several factors such as the geographical location, soil, sunlight, rainfall, drying or the harvesting process. Currently there are minimal standards that apply to growing, harvesting, extraction, grinding, processing and packaging of herbs. Possible contamination can occur during any of these stages. Contaminates can include lead, mercury, herbicides, pesticides, radioactive substances, zinc, aluminium and arsenic (4, 9, 10). These issues have brought about concern for the regulation of herbs in many countries.

Herbal therapy and the consumer

The most common reason individuals choose to utilize herbal therapy is prevention. Several other reasons include: ineffectiveness or dissatisfaction with biomedical medicine, to enhance the bodies of the immune system, need for personal control over health care decisions, more accessible and less expensive than biomedical medicine, compatible with the patient's values, and lastly herbs are 'natural' and therefore harmless (5, 11, 12). It has been stated throughout the literature that in everyday practice individuals depend on different health systems concurrently, many patients use biomedical medicine along with herbal therapy (13–15).

Herbs are interpreted as being 'safe' or 'harmless' with no adverse reactions because the individual does not consider herbs as a drug. Dental professionals can educate the patient that 'herbal' remedies are not always free of adverse reactions, for example, berries that grow in the wild; some are safe while others are hazardous. Focus should be on giving advice and support to patients who are keen on integrating herbal therapy into their everyday health care and making sure these patients are aware of the advantages, as well as the disadvantages and the possible adverse reactions of using herbs with biomedical medications.

Unfortunately, most patients do not inform their health care provider that they are using herbal therapy. This may be the result of the fact that the patient believes herbs are natural, therefore no adverse reactions can occur. The health history needs to include questions enquiring about the patient's use of herbal therapy or any type of CAM. It is also significant to specifically question during the course of treatment, 'Are you considering or using any herbs or dietary supplements?' and 'Why are you using herbs and/or dietary supplements?'.

During a phone survey, in the United States, it was determined that 42% of Americans have used herbal therapy. In another study during the same time frame, only 28% of all persons using herbal therapy reported these treatments to their physicians (1). These problems can lead to patients not informing their physicians/health care providers that they are using herbal therapy, physicians and other health care providers unaccustomed with possible side-effects and interference of herbal therapy when used in combination with biomedical medications, the lack of governmental regulation of herbal and dietary supplements, and the linkage of several diseases/

adverse reactions and possible deaths related to herbal and dietary supplements (1–5, 12).

Government regulations

Several studies have been conducted in Europe and Asia, where herbal therapy has a long been used. In 1978, the German Federal Health Agency established Commission E to study the safety and efficiency of herbs. This committee's responsibility was to write a series of monographs on the commonly used herbs throughout Germany (9, 10). In addition, the European Economic Community established guidelines that regulate the quality, dosage and production of herbs. These guidelines are based on the World Health Organization's publication Guidelines for the Assessment of Herbal Medicines.

In the United States, herbs are exempt from the regulations that govern biomedical and over-the-counter medications (16). The Dietary Supplement Health and Education Act of 1994 regulates herbal and dietary supplements (DSHEA), which has limited regulations by the US Food and Drug Administration (FDA). Once a herb has been marketed, the FDA then has the responsibility for presenting evidence that a herb or dietary supplement is 'unsafe' before the FDA can take action to restrict the product's use or removal from the marketplace. Biomedical and over-the-counter medications endure preclinical studies, premarketing control and post-marketing surveillance; however, herbs on the US market have not necessarily been assessed for safety and efficacy (16).

Throughout the literature are reports of adverse reactions of herbal therapy compared with biomedical medications. In the United States, the American Association of Poison Control Center received approximately 7000 reports of adverse reactions caused by herbal/dietary supplements (12). From 1993 to 1998, the FDA received 2600 reports of serious medical problems, including 184 deaths associated with the use of herbal supplements.

The United Kingdom's Medicines Control Agency (MCA) has reported similar side-effects. The MAC found that many herbal supplements contained potentially dangerous and illegal substances such as lead, mercury and arsenic compounds (17).

Oral manifestations

Several herbal supplements have been found to cause not only adverse systemic reactions but also adverse oral consequences; however, the dosage of the herb that causes the adverse reaction can vary greatly from individual to individual. These oral reactions include: tongue numbness, increased gingival bleeding, oral irritation and inflammation of the tongue and lips, aphthous ulcers, excessive salivation, xerostomia and oral cancer.

Echinacea has been reported to cause tongue numbness possibly because of the decreased impulse transmission along the sensory nerves, which occurs when taking this herb. Increased gingival bleeding is most likely the result of the antiplatelet activity of the herbs feverfew and ginkgo (8, 15).

Blue Cohosh, sage tea and feverfew have been shown to cause oral irritation, additionally frequent use of feverfew can result in the development of aphthous ulcers and swelling of the tongue and lips (8, 12). Goldenseal like feverfew will also cause oral ulcers and inflame the mucous membranes (8, 12, 15). Mint, especially peppermint when used in high concentrations orally, will irritate the tissues so much that a contact dermatitis develops (8). Yohimbe causes excessive salivation whereas betel nut, chaste tree, sage and St. John's Wort consumption results in the development of xerostomia (8, 12, 15).

Kava has been linked with oral and lingual dyskinesia most likely the result of its ability to effect motor functioning (12).

Long-term use of **betel nut**, a mixture of tobacco and areca nut, not only becomes a habit but can result in the development of gingivitis, periodontitis, dry mouth and oral cancer (8, 12, 15).

It is important that dental professional improve their knowledge base about the oral manifestations associated with herbal therapy. This knowledge can then be used when identifying the causes of these lesions and educating patients on the systemic and oral effects of herbal supplement usage (12, 17).

Potential biomedical medication interactions

Biomedical medications, whether prescribed or over-the-counter may be affected by the use of herbal therapy. The simultaneous use of biomedical medications and herbal therapy can interfere with the pharmokinetic or pharmacodynamic of any medication. Pharmokinetic interactions involve the increase or decrease in the amount of the medication available to produce a therapeutic effect (4). For example, utilizing a herb and biomedical medication concurrently can interfere with the absorption, distribution, metabolism and excretion of each. Pharmacodynamic interactions affect the action of the medication by enhancing or antagonizing the effect of the medication or herb on the human body (4).

A study conducted on 400 users of herbal therapy found that 8% of those who used herbal therapy have experienced some

Table 1. **Common Herbs and Potential Interactions**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
Aloe (*Aloe vera*, *Aloe perryi*, *Aloe ferox*, *Aloe spicata*)	**Laxative** **Wound Healing**	Many drugs when taken orally: Antiarrhythmics Antidiabetics Loop diuretics Systemic steroids Thiazides *Herbs: Jimsonweed and Licorice*	Taken internally can cause: Intestinal mucosa damage Nephrotoxicity Cardiovascular hyperactivity Decrease effectiveness of many drugs
Bee Pollen (*No scientific name*)	**Immune system** Altitude Sickness Diuretic GI ulcers Improve stamina Increase appetite	Antidiabetics Possible interactions with many prescription and over the counter drugs	Acute hepatitis Previous pollen allergies can result in anaphylaxis when taking supplement
Betel Nut (*Areca Catechu*)	**Psychostimulant** **Recreational drug**	Anticholinergic	Interferes with anticholinergic drugs Aggravate Asthma CNS stimulation Long-term use can result in development of cardiovascular disease, diabetes, asthma and *oral cancer* *Gingivitis, periodontitis, increased salivation*
Bilberry (*Vaccinium myrtillus*)	**Vision Disorders** Glaucoma Night blindness	Anticoagulants Antiplatelets Aspirin NSAIDs Oral antidiabetics and Insulin	Constipation Hypoglycemia
Black Cohosh (*Actaea racemosa, Cimicifunga racemosa*)	**Hormonal therapy** Muscle relaxant	Antihypertensives Hormone replacement therapy Oral contraceptives Sedatives/Hypnotics	Increase bleeding time Lower blood glucose levels Slow heart rate
Bloodroot (*Sanguinaria canadensis*)	**Analgesic** Antifungal Antiinflammatory Antimicrobial Antiplaque	Antihypertensives	CNS depression Hypotension
Blue Cohosh (*Caulophyllum thalictroides*)	**Uterine stimulate** Anticonvulsant Induce labor Menstrual problems	Antidiabetics Antianginals Antihypertensives Nicotine	Embryotoxic Leaves and seeds can cause stomach poisoning Nicotine toxicity *Powder form is irritating to the mucous membrane*
Capsicum Peppers (*Capsicum frutescens, Capsicum annum*)	**Arthritis** Chronic muscular pain Diabetic neuropathy Gastroprotective agent Herpes Zoster Raynaud's disease	Antiplatelets Aspirin Barbiturates Clonidine MAOIs Methyldopa	Hepatic or renal damage with long term use *Painful irritation of mucous membrane with topical use*
Cascara Sagrade (*Rhamnus purshiana*)	**Laxative** Cancer Gallstones Liver ailments	Antacids Antiarrhythmics Cardiac glycosides Corticosteroids Thiazides	Long term use can lead to electrolyte imbalance Contraindicated for use in individuals who have: Angina/heart disease Anxiety

Table 1. **Continued**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
		Herbs: Adonis, Convallaria, Helleborous, Licorice root, Jjimsonweed and Strophanthus	Depression – leads to suicides Diabetes Hypertension Hypotension Kidney disease Prostate inflammation Schizophrenia – increases psychoses
Cat's Claw (*Uncaria tomentosa, Uncaria guianensis*)	**Immune Stimulant** Antiinflammatory Colitis Contraceptive Crohn's disease Irritable bowel syndrome	Antihypertensives Halcion Immunostimulants Insulin Mevacor Nizoral	Contraindicated for individuals who have: HIV/AIDS Hypotension GI upset
Chamomile (*Matricaria chamomilla, Matricaria recutitia, Chamaemelum nobile, Anthemis nobile*)	**Antiinflammatory** Anxiety Insomnia Canker sores Mild sedative Menopause Wound healing	Alcohol Anticoagulants Benzodiazepines Hormone replacement In-vitro fertilization Oral contraceptives Sedatives	Hypersensitivity when allergic to ragweed Exacerbates asthma Large doses GI upset Topical use burning of the face, eyes and mucous membrane
Chaste Tree (*Vitex agnus castus*)	**Menopausa** **Menstrual disorders** Impotency Infertility Pituitary problems	Antipsychotic medications Hormone replacement therapy In-vitro fertilization Oral contraceptives	Severe depression Skin rash and itching *Dry mouth*
Chondroitin Sulfate (*Chrondroonitin –4-sulfate*)	**Osteoarthritis** **Ophthalmic solution** Osteoporosis Iron deficiency anemia	Anticoagulants NSAIDs	Exacerbates asthma Headaches Increase bleeding Possible renal failure
Coenzyme Q10 (*Ubiquinte, Ubidecarenone, Mitoquinone*)	**Heart disease** Bell's palsy Infertility Periodontal disease	Anticoagulants Antidiabetics Beta-blockers Phenothiazines Tricyclic depressants	Large dosages GI upset
Cranberry (*Vaccinium macrocarpon, Vaccinium oxycoccus, Vaccinium erythrocarpum*)	**Urinary tract infections** Antioxidant Oral antiplaque	Antidiabetics Increased absorption of Vitamin B-12	Large dosages diarrhea
DHEA (*Dehydroepiandrosterone*	**Immune Stimulate** Artherosclerosis Cancer stimulation Hyperglycemia	Hormone replacement therapy	Acne Irregular heart rhythm
Dong Quai (*Angelica polymorpha sinenis*)	**Menopausal Symptoms/ disorders** Herpes infections Malaria	Anticoagulants Antiplatelets *Herbs: Chamomile, dandelion, Horse chestnut, Red clover and St John's Wort*	Affects platelets which increases bleeding Fever Photosensitivity
Echinacea (*Echinacea angustifolia, Echinacea pallida, Echinacea purpurea*)	**Immune Stimulant** **Immune Support** Antibacterial Antiviral Colds Fungal infections Influenza	Anabolic steroids Amiodarone Immunosuppressants Ketoconazole Methotrexate	Contraindicated for autoimmune diseases or progressive infectious diseases such as: HIV/AIDS, tuberculosis, or multiple sclerosis Interfere with sperm enzyme activity

Table 1. **Continued**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
			Use beyond 8 weeks without 3 week rest period can result in: Acute asthma attacks, Hepatoxicity and Suppress immune system *Tongue numbness*
Ephedra/Ma huang (*Ephedra sinica, ephedra nevadensis, ephedra trifurca*)	**Weight loss** Asthma Nasal congestion CNS stimulation	Antidiabetics Beta-blockers Corticosteriods Epinephrine General Anesthetics Halothane MAOIs Tricyclics Xanthines *Herbs: Bitter orange, Coffee, Ginseng, Green tea, Guarana, kola nut, Malvaceae, Siberian ginseng, St John's wort and Soapwort*	Arrhythmias Cardiac arrest Hypertension Myocardial infraction Stoke
Eucalyptus (*Eucalyptus globules*)	**Respiratory Congestion** Antiseptic for wounds CNS stimulant Irritable bowel syndrome	Amphetamines Antidiabetics Barbiturates *Herbs: Borage, Coltsfoot, Comfrey and Hound's tooth – toxicity*	Alter drugs metabolized by the liver Damage to GI tract Hypotension Kidney inflammation Not recommended for diabetics
Evening Primrose Oil (*Oenothera biennis, Primula elatior*)	**Arthritis** Alcoholism Cardiovascular disease Digestive disorder Multiple sclerosis Skin disorders Weight loss	Anticonvulsants General anesthetics	Immunosuppression with long term use Lower seizure threshold
Feverfew (*Chrysanthemum parthenium*)	**Arthritis** Fever Menstrual problems Migraine headaches Mouth rinse after extractions	Anticoagulants Antiplatelets Aspirin	Increased risk of bleeding *Oral/aphthous ulcers, lip and tongue irritation, and prolonged gingival bleeding*
Fish oil (*No scientific name*)	**Depression** Blood cholesterol Skin conditions	Anticoagulants Antidiabetics Antihypertensives Antipsychotic Oral contraceptives	Decrease blood coagulation Decrease pulmonary functioning in aspirin sensitive individuals. More than 3 grams per day may adversely affect the immune system Not recommended for bi-polar individuals Not recommended for HIV/AIDS patients or others who are immunocompromised Some brands contain a high level of mercury
Garlic (*Allium sativum*)	**Antilipidemic** **Antimicrobial** Antidiabetic Antihypertensive Antioxidant Immune stimulant	Anticoagulants Antidiabetics Aspirin General anesthetics Saquinavir *Herbs: Acidophilus*	Hypothyroidism Increase bleeding *Irritation of the oral cavity, burning of mouth and halitosis*

Table 1. **Continued**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
Ginger (*Zingiber officinale*)	**Nausea**, Antioxidant Morning sickness Motion sickness Migraine headaches	All oral medications may have increased absorption Large doses can interfere with: Anticholinergics Anticoagulants Antiplatelets Aspirin Digitalis Iron and fat-soluble vitamins Tetracycline	Alters prothrombin time Large doses carry potential for causing depression and cardiac arrhythmias
Gingko (*Ginkgo Biloba*)	**Dementia** Antioxidant Glaucoma Menopausal symptoms Multiple sclerosis Sexual dysfunction	Aspirin Anticoagulants Anticonvulsants General anesthesia MAOIs Thiazides	Affects prothrombin time - increase bleeding GI upsets Headaches *Increased bleeding during minor gingival injuries*
Ginseng (*Panax quinquefolius, Panax ginseng*)	**Stress** Improve concentration Lessen fatigue -physical endurance Sexual potency	Anticoagulants Anticonvulsants Antidiabetics Estrogen Immunosuppressants MAOIs Phenelzine sulfate Stimulants *Herbs: Ephedra*	Additive effect of drugs Alters bleeding time Alters blood glucose levels Hypertension Manic episodes Palpitations Tremors
Glucosamine Sulfate (*2-amino-2-deoxyglucose sulfate*)	**Osteoarthritis** Glaucoma Rheumatoid arthritis TMJ discomfort	Acetominophen Antidiabetics Cancer chemotherapy drugs	Decrease insulin levels in diabetics Exacerbates asthma Increase blood lipid levels Increase blood pressure Resistance to chemotherapy drugs
Goldenseal (*Hydrastis canadensis*)	**Inflamed Mucous Membranes**	Antiarrhythmics Anticoagulants Antihypertensives Azole Antifungals Barbiturates Benzodiazepines Beta-blockers CNS Depressants Lovastatin Vitamin B absorption	Bradycardia GI problems Increase coronary blood flow and heart stimulation and effects blood pressure levels Large doses can cause nausea, vomiting, a decrease in white blood cell count and cause neuropathy Not recommended for patients with HIV/AIDS *Oral ulcers*
Green Tea (*Camellia sinensis*)	**Antioxidant** **Anticancer** Antilipidemic Antiatherosclerotic	Antacids Atropine when taken orally Bronchodilators MAOIs Xanthines *Herbs: Ephedra*	Anemia in infants Increase risk of esophageal cancer Contains at least 40mg of caffeine Increase blood pressure Irregular heartbeat
Hawthorn (*Crataegus*)	**Cardiovascular disorders**	Antianginal Antiarrhymics Antihypertensives Beta-Blockers CNS Depressants Digoxin *Herbs: Adonis, Lily of the valley and Squill*	Fatigue GI upset Hypotension

Table 1. **Continued**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
Horse Chestnut (*Aesculus hippocastanum, Aesculus California, Aesculus glabra*)	**Antiinflammatory** Edema Fever Varicose veins	Anticoagulants Antidiabetics Aspirin	Bruising Increase bleeding Muscle spasms Nephrotoxicity
Karaya Gum (*Sterculia urens*)	**Laxative** Adhesive for colostomy appliance and partials/dentures Sore throats	*Decreases absorption of all drugs and all herbs*	Gastrointestinal obstruction
Kava (*Piper methysticum*)	**Sedative** **Sleep inducers** Analgesic Anxiolytic Muscle relaxant	Antiparkinsonians Antipsychotics Barbiturates Benzodiazepines CNS System Depressants General anesthetics	Do not drive or operate heavy or dangerous equipment Do not take this supplement for more than 3 months Drowsiness Increase CNS depression Long- term use can cause disturbance of coordination between vision and movement *Oral and lingual dyskinesia*
Licorice (*Glycyrrhiza glabra*)	**Arthritis** Addison's disease Adrenal insufficiencies Stress	Antiarrhythmics Antihypertensives Aspirin Azole antifungals Corticosteroids (oral and topical) Digoxin Diuretics	Cardiovasular hyperactivity Increase blood glucose levels
Melatonin (*N-acetyl-5-methoxytryptamine*)	**Insomnia** Alzheimer's Fibromyalgia Chronic fatigue syndrome	Anticoagulants Benzodiazepines Beta blockers CNS stimulants – caffeine Cerebral stimulants DHEA Magnesium	Decrease blood glucose utilization Decrease progesterone and estradiol Increase systolic blood pressure Interfere with immunosuppresive therapy Increase seizure activity in individuals with neurological disorders
Milk Thistle (*Silybum marianum*)	**Cirrhosis of liver** Chronic Candidiasis Hepatitis C Hepatotoxicity	Acetaminophen General anesthetics	GI upset Menstrual changes
Mint (*Mentha piperita, Mentha spicata*)	**GI Problems** Arthritis Common colds Cold sores Halitosis Motion sickness	Antacids Gastric blocking drugs	Concentrations of peppermint oil should be used in low doses only *Mucous membrane irritation and contact dermatitis occurs when high doses of peppermint oil contact skin surfaces*
Stinging Nettle (*Urtica dioica*)	**Arthritis** Diuretic Prostate cancer Respiratory conditions Urinary tract disorders	Anticoagulants Antidiabetics Antihypertensives CNS depressants Lithium	Hypotension Increase chronic heart failure Possible kidney dysfunction Safety during pregnancy is unknown Skin irritation

Table 1. **Continued**

Common Name And (*Scientific Name*)	Potential Common Uses	Potential Biomedical and Herbal Drug Interactions	Potential Side Effects or Adverse Reactions
St. John's Wort (*Hypericum perforatum*)	**Depression** Antiinflammatory Antimicrobial	ACE inhibitors, loop diuretics, thiazide diuretics Alcohol Antidepressants, tricyclics Antiretrovirals (indinavir) Benzodiazepines Immunosuppressants MAOIs NSAIDs Oral contraceptives Serotonin Reuptake Inhibitors (SSRIs) Sulfonamides Tetracyclines Traxodone	Decrease bioavailability of drugs including birth control Decrease blood plasma concentrations in heart transplant patients Fatigue GI upset Inhibit the absorption of iron due to Tannic acid Photosensitivity Serotonin syndrome *Dry mouth*
Sage (*Salvia officinalis*)	**Wound healing** GI disorders Menstrual disorders Sore throats	Anticonvulsants Hypoglycemic Sedatives	Can cause seizures *Inflammation of lips and lining of mouth from ingestions of sage tea* *Dry mouth*
Saw palmetto (*Serenoa repens, Sabul serrulata*)	**Benign Prostatic Hyperthrophy**	Anticoagulants Antiplatelets Hormonal therapy Oral contraceptives NSAIDs Iron supplements	Back pain GI upset Headaches Inhibits iron absorption due to Tannic acid content
Siberian Ginseng (*Acanthopanax senticosus, Eleutherococcus, senticosus, Hedera senticosa*)	**Physical endurance** Antiinflammatory Insomnia	Antidiabetics Digoxin Kanamycin Xanthines *Herbs: Ephedra*	Hypertension Increase bleeding Increase estrogen levels
Valerian (*Valeriana officinalis*)	**Nerve Disorders** **Sleep inducer**	Barbiturates Benzodiazepines General anesthetics MAOIs Opioids Phenytoin Sedatives Warfarin	Additive effects – excessive sedation, possible coma, CNS depression Anticholinergic poisoning when taken in large doses Habit forming
Xaio chai hu tant (*Monascum purpureus, Monascum anka*)	**Hypercholestermia** **GI upset**	Prednisone	Contraindicated for individuals with hepatic diseases Decrease blood concentration of drug
Yohimbe Bark (*Pausinystalia yohimbe*)	**Sexual dysfunction** Angina Aphrodisiac Exhaustion GI problems	Antidiabetics Alpha 2 Adrenergic blocking Antihypertensives Beta blocking MAOIs Naloxone Phenothiazines Prednisone Sympathomimetics Tricyclic antidepressants *Herbs: California poppy, Ginkgo, Mace and St. John's Wort*,	Cardiac failure and death Hypertension and hypotension Manic reactions in psychiatric patients Nephrotoxicity Paralysis Severe toxicities *Increased salivation*

type of adverse reaction; however, none of these were serious or resulted in death (18). Reports of adverse reactions to herbal therapy are less common when compared with biomedical medications (18, 19); however, many researchers speculate that there is lack of data regarding serious adverse reactions. They postulate that this maybe the result of the weaker pharmacological activity, poor method for identifying and reprinting adverse effects to the public, dosages and route of administration (17–21). Additionally, many herbs have been altered, misidentified, and contaminated resulting in severe side-effects for the users and in some cases poisoning that has resulted in death (20, 21).

Herbal therapy, just like biomedical medicine, can have health risks as well as benefits. Health risks occur because herbs are capable of producing the same effects as biomedical medications. Drug receptors have a difficult time distinguishing between a natural molecule from the plant kingdom and/or a molecule that is a synthesized chemical from the laboratory (10). Any medication whether herbal or biomedical can cure or become poisonous. In fact, almost all chemical substances are toxic when excessive dosages are ingested. Lazarou and Pomeranz report that 137 000 hospitalized Americans die annually and 2.7 million become seriously ill as a result of adverse reactions from 'properly prescribed and administered' prescription drugs (22). Therefore, many individuals believe the risk of using herbal therapy is just as safe as using biomedical medications.

Throughout the literature, potential interactions between biomedical medications and herbs have been documented. A patient's bleeding time can be altered when warfarin is concurrently used with herbs such as danshen, dong quai, feverfew, ginger, ginkgo, or garlic (23). Ginseng decreases the anticoagulant effect of warfarin and increases digoxin levels (24). Kava may increase the potency of medications or other herbs that act on the central nervous system such as alcohol, barbiturates and psychopharmacological agents (25). Ginkgo, garlic, danshen and dong quai have an anticoagulant effect thereby increasing the risk of bleeding during anaesthesia and surgery (26).

Table 1 identifies commonly used herbs, the potential uses and the most common uses are in bold, side-effects with biomedical medications and oral and systemic health complications (1, 4, 8, 12, 15, 25, 26).

Conclusion

The increasing utilization of herbal therapy world-wide has augmented the concern that such treatment may possibly expose the patient to unknown dangers. Therefore, it is significant that dental professionals become knowledgeable about the common herbs that patients may be using. Interaction of these herbs with biomedical medications and the impact that herbal therapy can have on a person's systemic and oral health is mandatory. Moreover, the health history questionnaire should include questions about the use of herbal therapy and other forms of CAM and dental professionals should openly ask each patient about the use of herbal therapy and other forms of CAM. These efforts will augment knowledge and awareness to the patient and dental professional on the potential uses and effects of herbal therapy to improve the quality of care.

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