



Herbal Medications: The Good, The Bad, and The Ugly

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The Herbal Supplement Revolution

- Grown from a 2.6 billion dollar industry to a 20 billion dollar industry since 1997
- In 1998 total herbal remedy sales in the U.S. reached \$4 billion dollars
- Reached over 71% of U.S. Households nationwide
- “The World Health Organization(WHO) estimates that over 80% of the world’s population uses some form of herbal medicine”
- Survived over 200 million years of use some supplements dating back to the Paleozoic Period, the Han Dynasty, Hippocrates, and the Native Americans in the United States. ³
- Over the last decade more people have turned to herbal medicine and ‘natural’ treatment options than to traditional forms of medical treatment.

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Herbal Medicines

- **Dietary supplement business is a more than \$13 billion industry with multivitamins and minerals accounting for 1/2 of the sales**
- **80% of people in developing countries rely on traditional herbal medicines**
- **4 out of 10 (33.8% in 1990 to 42.1% in 1997) Americans used alternative medicine therapies of all types spending \$21 billion out of pocket**



Herbal Medicines

- **500,000 species of plants on this earth today and only about 5000 have been studied for their medicinal applications**
- **25% of today's prescription drugs contain compounds isolated from plants**
- **40% of American pharmacies carry herbal remedies.**



Herbal Medicines

- **Little to no FDA regulation:**
 - **alternative medicines are marketed without efficacy tests**
 - **companies do not have to prove their product is safe instead the FDA must prove it is unsafe**
 - **no set standards for manufacturing, no quality control**
 - **can not claim cures but can tell how supplements affects the body**
 - **label claims do not require supportive evidence**
 - **FDA approval is not needed for marketing claims**



Herbal Medicines

- **Drugs are standardized, means the active ingredient is known and each dose contains the same amount of the ingredient.**
- **Many herbal products the active ingredient is NOT known**
- **Plants are very complicated chemically**
- **Many times there is no known analysis for the constituents of herbs**
- **There is no legal definition of “standardization” for botanicals**



Herbal Medicines

- **FDA MEDWATCH to report adverse reactions from alternative medications: 1-800-332-1088**
- **Herbal medicine - a plant extract that is used in relatively unrefined form to achieve a therapeutic effect**
- **Herbs have been used since the beginning of time and written reports date back to the Egyptians**
- **Chinese herbal medicine dates back to 2500 BC**



Herbal Medicines

- **Infusion** - herbs are steeped in hot water, similar to tea
- **Decoction** - the plant is soaked then boiled in water, extracts more of the plants ingredients
- **Tincture** - an herb extract prepared by steeping the herb in a 25% mixture of alcohol and water
- **Syrup** - an herb extract prepared in honey or sugar



Herbal Psychotropics

Leading Herbal Supplements

- Ginkgo Root (Ginkgo biloba)
 - Use: Memory function enhancement, as well as help sexual dysfunction due to antidepressant use
 - Adverse effects: GIT upset, dizziness, vertigo, depression, bronchial asthma and headache



Leading Herbal Supplements

- Asian Ginseng: (*Panax ginseng*)
 - Chinese word meaning “the essence of man”
 - Use: promoted as a respiratory, digestive and CNS stimulant, a cure for fatigue, a treatment for ulcers; and a cholesterol lowering agent
 - increases mental and physical efficiency and helps body cope with stress
 - aids the endocrine system and used as an aphrodisiac
 - used to treat neurasthenias, weakness and aging

Leading Herbal Supplements

- Ginseng, cont.
 - active alkaloids are saponins which can cause the release of histamine, block calcium channels, raise sperm counts, stimulate erythropoiesis; increase ACTH, ADH and cortisol secretion, increase circulating levels of immunoglobulins and inhibit tumor cells, immunostimulatory agent
 - Adverse effects: excessive use (more than 3 gms./day) causes diarrhea, anxiety, insomnia, depression, amenorrhea and hypertension

Ginseng Root



Leading Herbal Supplements

- **Kava Kava Root**
 - **Use:** to treat anxiety, insomnia and to promote relaxation
 - **Adverse effects:** GIT disturbances, headache, dizziness, mouth numbness, scaly skin disorders resembling psoriasis.
 - **It may cause a temporary yellow discoloration of the skin and a lack of coordination in skeletal muscle. It may also affect vision.**

Kava Kava

- **Kava is a tall shrub that grows in the islands of the Pacific Ocean. This shrub produces large, green, heart-shaped leaves that grow thickly on the branches. Long, slender flowers grow where the branches meet the stems.**
- **The roots look like bundles of woody, hairy branches. The root is the part of the plant used medicinally.**
- **In Fiji, the plant is called "yaquona." In Hawaii, it is known as " 'awa." In Aboriginal tribes, it is referred to as "grog."**

Kava Kava

- Kava kava (*Piper methysticum*) has been used as a ceremonial drink in the Pacific Islands for hundreds of years. Some people report its effects are similar to alcohol.
- The roots are chewed or ground into a pulp and added to cold water. The resulting thick brew, which has been compared to the social equivalent of wine in France, is offered to guests and dignitaries visiting the Pacific Islands.
- In addition to its ceremonial uses, kava is best known for its relaxing qualities. Kava is said to elevate mood, well being, and contentment, and produce a feeling of relaxation. Several studies have found that kava may be useful in the treatment of anxiety, insomnia, and related nervous disorders.
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Kava Kava

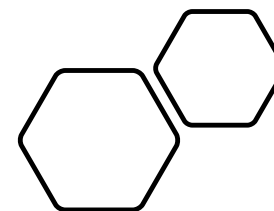
- **However, there is serious concern that kava may cause liver damage. More than 30 cases of liver damage have been reported in Europe.**
- **However, researchers have not been able to confirm that kava is toxic to the liver.**
- **It is not clear whether kava itself causes liver damage, or whether taking kava in combination with other drugs or herbs is responsible.**
- **It is also not clear whether kava is dangerous at previously recommended doses, or only at higher doses.**
- **Some countries have taken kava off the market. It remains available in the United States.**
- **But the Food and Drug Administration (FDA) issued a consumer advisory in March 2002 regarding the "rare" but potential risk of liver failure associated with kava-containing products.**

Kava Kava

- A number of clinical studies, though not all, have found kava to be effective in treating symptoms associated with anxiety.
- In a review of 7 scientific studies, researchers concluded that a standardized kava extract was significantly more effective than placebo in treating anxiety.
- Another study found that kava substantially improved symptoms after only 1 week of treatment.
- Other studies show that kava may be as effective as some prescription antianxiety medications. According to one study, kava and diazepam (Valium) cause similar changes in brain wave activity, suggesting they may work in the same ways to calm the mind.
- Research on using kava for anxiety has decreased because of reports of liver toxicity.
- A 2004 study found that 300 mg of kava may improve mood and cognitive performance. That is significant because some prescription drugs used to treat anxiety, such as benzodiazepines (like Valium and alprazolam or Xanax), tend to decrease cognitive function.

Kava Kava

- **Because of the uncertainty around kava, you should take it only with your doctor's supervision. If you have taken kava and are having symptoms of:**
- **Liver damage, such as yellow skin (jaundice)**
- **Fatigue**
- **Abdominal pain**
- **Loss of appetite**
- **Nausea and vomiting; and**
- **Joint pain**
- **Seek immediate medical attention.**
- **DO NOT take kava if you have depression, liver disease, such as hepatitis, or Parkinson's disease. Pregnant or breastfeeding women should not take kava.**
- **DO NOT take kava if you are going to have surgery (and tell your surgeon if you have taken it in the past). Kava can prolong the effect of anesthesia.**
- **DO NOT drink alcohol while taking kava.**





Dietary/Herbal Sleep Preparations

Mostly: L-Tryptophan, Valerian, & Kava-kava

L-Tryptophan: precursor of Serotonin, a substrate for Melatonin
– in milk (doesn't need to be warmed) & turkey – FDA has limited availability after > 1,500 cases of Eosinophilia Myalgia Syndrome with at least 37 deaths in 1989

Leading Herbal Supplements

- Nutmeg:
 - Use: considered to be a mood elevator, aphrodisiac, and a narcotic with hallucinogenic effects
 - the most psychoactive component is Myristicin, which is metabolized into the hallucinogen 3-methoxy-4,5-methylenedioxyamphetamine (MMDA) a substance closely related to methylenedioxymethamphetamine (MDMA, “ecstasy”)
 - used to treat malaria, asthma, dysmenorrhea, fever, flu, pneumonia, as an appetite stimulant, a carminative, aphrodisiac and a stimulant

Leading Herbal Supplements

- Nutmeg:
 - Ingestion of 5-30 grams produces GI upset, within 3 hours the hallucinogenic effects appear
 - Adverse effects: chronic abuse is limited because of the GI disturbances, may be an abortifacient
 - Treatment - reduce environmental stimuli and give supportive and symptomatic care



Leading Herbal Supplements

- **St. John's Wort (*Hypericum perforatum*)**
 - **Use:** to treat depression, anxiety, swelling of connective tissue, menopausal neurosis and to aid in wound healing
 - **Adverse effects:** GIT problems, fatigue and photosensitization can occur in high doses especially in fair skinned people

St. John's Wort and Depression

- The results of studies on the effectiveness of St. John's wort for depression are mixed.
- In a 12-week, 2011 clinical trial with 73 participants, neither St. John's wort nor a standard antidepressant medication called citalopram, a selective serotonin reuptake inhibitor (SSRI), decreased symptoms of minor depression better than a placebo. The study was funded by NCCIH and NIMH.
- In a 26-week clinical trial with 124 participants, St. John's wort, a standard antidepressant (sertraline, an SSRI), and a placebo were similarly effective in treating major depression of moderate severity. NCCIH and NIMH funded this 2012 analysis of data collected in 2002.

St. John's Wort and Depression

- A 2008 review of 29 international studies suggested that St. John's wort may be better than a placebo and as effective as different standard prescription antidepressants for major depression of mild to moderate severity. St. John's wort also appeared to have fewer side effects than standard antidepressants.
- The studies conducted in German-speaking countries—where St. John's wort has a long history of use by medical professionals—reported more positive results than those done in other countries, including the United States.
- St. John's wort was no more effective than placebo in treating major depression of moderate severity, an NCCIH- and NIMH-funded study of 340 participants reported in 2002.

What the Science Says About the Safety and Side Effects of St. John's Wort for Depression

3/7/23

- **Combining St. John's wort with certain antidepressants can lead to a potentially life-threatening increase of serotonin**, a brain chemical targeted by antidepressants. Symptoms occur within minutes to hours, and may include agitation, diarrhea, fast heartbeat, high blood pressure, hallucinations, increased body temperature, and more.
- There are case reports of St. John's wort having dangerous side effects, such as worsening of psychotic symptoms in people with bipolar disorder or schizophrenia.

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What the Science Says About the Safety and Side Effects of St. John's Wort for Depression

- **Taking St. John's wort can weaken many prescription medicines, such as:**
 - Antidepressants
 - Birth control pills
 - Cyclosporine, used to prevent the body from rejecting transplanted organs
 - Digoxin, a heart medication
 - Oxycodone, a pain medicine
 - Some HIV drugs, including indinavir
 - Some cancer medications, including irinotecan
 - Warfarin, an anticoagulant (blood thinner).

What the Science Says About the Safety and Side Effects of St. John's Wort for Depression

3/7/23

- Other side effects of St. John's wort are usually minor and uncommon.
- They may include;
- upset stomach, dry mouth, headache, fatigue, dizziness, confusion, sexual dysfunction, or sensitivity to sunlight.
- Also, St. John's wort is a stimulant and may worsen feelings of anxiety in some people.

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Leading Herbal Supplements

- **Valerian root**
 - **Use:** to treat anxiety, insomnia and as a sedative
 - **Adverse effects:** Headache, excitability, uneasiness and cardiac disturbances



Valerian Root

- Valerian (derivative of *Valeriana officinalis* plant): mechanism may be via inhibiting GABA reuptake or inhibiting postsynaptic potentials through activation of adenosine receptors in cortical neurons – in one study, little difference vs. Benadryl* - inhibitor of CYP3A4 – withdrawal when extensive use, similar to that seen with BZD's – risk of hepatotoxicity & delirium

* Sleep, 2005, 28: 1465-1471

Leading Herbal Supplements

- Herb / Drug Interactions:
- ginkgo biloba / aspirin, NSAID's, warfarin, heparin
- ginseng / MAO inhibitors, avoid with antidepressants
- horseradish / levothyroxine, avoid with kelp, may suppress thyroid

Leading Herbal Supplements

- Herb / Drug Interactions:
- ephedra / caffeine or other stimulants
- feverfew / anticoagulants / do not take if pregnant
- garlic / warfarin, aspirin / may inhibit clotting
- Kava kava / benzodiazepines

An abstract graphic on the left side of the slide, featuring a dense cluster of small, semi-transparent circles in shades of green, yellow, and red. These circles are interconnected by thin, light-colored lines, creating a complex, web-like structure that resembles a molecular or biological network. The overall shape is roughly rectangular, with the density of dots and lines being highest in the center and tapering off towards the edges.

Herbal Medicines and Pregnancy

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Commonly Used Herbal Medicines (HMs) by Pregnant Women

- **Morning sickness, nausea, vomiting:**
- **Ginger (*Zingiber officinale* Roscoe), Peppermint (*Mentha piperita* L.), Herbal teas, Raspberry (*Rubus idaeus* L.), Bishop's weed (*Aegopodium podagraria* L.), Garlic (*Allium sativum* L.), Anise (*Pimpinella anisum* L.)**
- **Cold and flu**
- **Madder (*Rubia tinctorum* L.), Anise (*Pimpinella anisum* L.), Golden buttons (*Matricaria aurea* (Loefl.) Sch. Bip.), Wild thyme (*Origanum syriacum* L.), Liquorice (*Glycyrrhiza glabra* L.), Borage (*Borago officinalis* L.), Chamomille (*Matricaria chamomilla* L.), Ginger (*Zingiber officinale* Roscoe), Echinacea (*Echinacea purpurea* L.), Eucalyptus (*Eucalyptus* spp.), Rosehip (*Rosa* spp.)**

Commonly Used Herbal Medicines (HMs) by Pregnant Women

- Pain (gastralgia and other types of pain)
- Verbena triphylla (*Aloysia citriodora* Palau), Anise (*Pimpinella anisum* L.), Cumin (*Cuminum cyminum* L.), Fennel (*Foeniculum vulgare* Mill.), Golden buttons [*Matricaria aurea* (Loefl.) Sch. Bip.], Peppermint (*Mentha piperita* L.), Wild thyme (*Origanum syriacum* L.), Sage (*Salvia officinalis* L.), Cinnamon (*Cinnamomum verum* J. Presl), Black cumin (*Nigella ciliaris* DC.), Chamomille (*Matricaria chamomilla* L.)
- Anxiety, stress
- Anise (*Pimpinella anisum* L.), Peppermint (*Mentha piperita* L.), Chamomille (*Matricaria chamomilla* L.), Thyme (*Thymus vulgaris* L.), Rosemary (*Rosmarinus officinalis* L.), Valerian (*Valeriana officinalis* L.)

Commonly Used Herbal Medicines (HMs) by Pregnant Women

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- **Gastrointestinal disorders, constipation, flatulence**
 - **Fennel (*Foeniculum vulgare* Mill.), Anise (*Pimpinella anisum* L.), Borage (*Borago officinalis* L.), Chamomille (*Matricaria chamomilla* L.), Ginger (*Zingiber officinale* Roscoe), Peppermint (*Mentha piperita* L.), Senna (*Cassia senna*), Green tea (*Camellia sinensis*), Cinnamon (*Cinnamomum verum* J. Presl)**
 - **Edema**
 - **Turmeric (*Curcuma longa* L.), Fennel (*Foeniculum vulgare* Mill.)**

Commonly Used Herbal Medicines (HMs) by Pregnant Women

- **Urinary tract infection:**
- **Cranberry (*Vaccinium macrocarpon* L.), Bearberry [*Arctostaphylos uva-ursi* (L.) Spreng.], Parsley [*Petroselinum crispum* (Mill.) Fuss], Fenugreek**
- **(*Trigonella foenum-graecum* L.), Rosemary (*Rosmarinus officinalis* L.), Peppermint (*Mentha piperita* L.), Sage (*Salvia officinalis* L.)**
- **Labor preparation, facilitation and induction:**
- **Rooibos [*Aspalathus linearis* (Burm.f.) R. Dahlgren] tea, coconut (*Coco nucifera* L.) oil, Date palm (*Phoenix dactylifera* L.), Golden buttons [*Matricaria aurea* (Loefl.) Sch. Bip.], Watercress (*Nasturtium officinale* W.T. Aiton), Cinnamon (*Cinnamomum verum* J. Presl), Fenugreek (*Trigonella foenum-graecum*), Rosemary (*Rosmarinus officinalis* L.), Raspberry (*Rubus idaeus* L.), Cannabis sativa L., Evening primrose (*Oenothera biennis* L.)**

Commonly Used Herbal Medicines (HMs) by Pregnant Women

- **Milk production and secretion:**
- **Madder (*Rubia tinctorum* L.), Caraway (*Carum carvi* L.), Fenugreek (*Trigonella foenum-graecum* L.), Cinnamon (*Cinnamomum verum* J. Presl), Cumin (*Cuminum cyminum* L.), Fennel (*Foeniculum vulgare* Mill.)**
- **Fetal health promotion:**
- **Ginkgo (*Ginkgo biloba*), Ganoderma (*Ganoderma lucidum*), Sage (*Salvia fruticosa*), Olibanum (*Boswellia serrata* Triana & Planch.)**
- **Anemia:**
- **Spinach (*Spinacia oleracea* L.), Fenugreek (*Foeniculum vulgare* Mill.), Cinnamon (*Cinnamomum verum* J. Presl), Rosehip (*Rosa* spp.)**

Summary

- Also, of concern is that the embryotoxic effects of herbal medicines(HMs) have been poorly studied.
- Clinical pharmacologists, scientists, and physicians need to be more informed regarding preclinical and clinical study findings of adverse effects related to HMs on the developing fetus.
- In recent times, it has been recognized through the establishment of the 21st Century Cures Act that there is a need to undertake research to answer questions that are specific in pregnant and lactating women.

Thank You For Your Time

Any Questions?

