



Herbal Drugs of Abuse

Psychology 472
Pharmacology of Psychoactive
Drugs

Listen to the audio lecture while viewing these slides

1

Some We have Talked About

- Peyote Mescaline
- Nutmeg Myristin
- Mace Elemicin
- Anticholinergic Drugs
 - Scopolamine
 - Atropa Belladonna (deadly nightshade)
 - Datura Stramonium (Jamestown weed, stinkweed, Jimsonweed, Thorn Apple)
 - Mandrogonia Officinarum (Mandrake)
- Tobacco

All Have Effects

- Some plant drugs are more potent than others
- Some plant drugs can cause death
- Effects of the drug depend on its biological roots.

Herbal Medicines

- Efficacy of herbal medications difficult to evaluate.
 - Incomplete knowledge of active ingredients
 - No standardization
 - Different purities
 - Variations in plant conditions and parts

TABLE 19.2 Herbal remedies commonly used to treat psychiatric symptoms*

Herb	Common usage	Quality of evidence category ^a	Adverse effects	Cautions/contraindications	Drug interactions
Black cohosh	Menopausal symptoms, PMS	I	GI upset (rare), headaches,	Pregnancy, lactation	Hormonal treatments (theoretical)
		II			
German chamomile	Insomnia, Anxiety	III	Allergy (rare)	Allergy to sunflower family of plants	None reported
		III			
Evening primrose	Schizophrenia, ADHD, Dementia	IV	None reported	Mania, epilepsy	Phenothiazines, NSAIDs, corticosteroids, β blockers, anticoagulants
		IV			
Ginkgo	"Cerebrovascular insufficiency" syndrome, Dementia	I	Headache, GI upset	Pregnancy, lactation, potential bleeding (eg., PUD)	Anticoagulants
		I			
Hops	Insomnia	III	Allergy, menstrual irregularity	Depression, pregnancy, lactation	Sedative-hypnotics, alcohol (both theoretical)
		III			
Kava	Insomnia, Anxiety, Seizures	III	Scaling of skin on extremities	Pregnancy, lactation	Benzodiazepines, alcohol
		IV			
Lemon balm	Insomnia, Anxiety	IV	None reported	Thyroid disease, pregnancy, lactation	CNS depressants, thyroid medications
		IV			
Passion flower	Insomnia, Anxiety	III	Hypersensitivity, vasculitis, sedation	Pregnancy, lactation	Insufficient data
		III			
Skullcap	Insomnia, Anxiety	IV	Sedation, confusion, seizures	Pregnancy, lactation	Insufficient data
		IV			
St. John's wort	Depression	I	Photosensitivity, GI upset, sedation, anticholinergic	CV disease, pregnancy, lactation, glycohemocytoma	Drugs that interact with MAOIs
		I			
Valerian	Insomnia, Anxiety	III	Sedation	Pregnancy, lactation	CNS depressants
		III			

*From Wang et al., 1998.

Problem with Herbal Medicines

Dietary Supplement Health Education Act (1994)

- Any product can be labeled a "supplement" as long as **it claims** to effect a cure for a disease.
- Thus, a product **does not** "alleviate depression," rather, it "promotes emotional balance."
- Often it is semantics and the wording must be **legally** precise

St. John's Wort *Hypericum Perforatum*

- Named after St. John the Baptist
- *Active ingredients*
 - *Hypericin*
 - *Pseudohypericin* and/or *hyperforin*
- Ancients believed it warded off evil spirits.
- Licensed for treatment of anxiety, depression, and insomnia (Germany)
- In U.S. No support for effectiveness in treating anxiety disorders
- Question: Biologically, how can it treat both anxiety and depression

Liver Issues

- Contains bioflavonoids
- Inhibits liver drug metabolizing enzymes
 - May result in adverse interactions with other drugs.
 - Reduces codeine effectiveness.
 - Increases blood levels of caffeine, antipsychotics, and tricyclic antidepressants.
- Increases other drug-metabolizing enzymes.
 - Causes reductions of some cardiac and anti-inflammatory drugs.

Some Side Effects

- Photosensitivity
- Hypomania
- Sedation
- Lethargy
- Gastrointestinal upset
- Drug interactions

Serotonin Syndrome

- Agitation or restlessness
- Confusion
- Rapid or irregular heart rate
- Dilated pupils
- Loss of muscle coordination or twitching muscles
- Heavy sweating
- Diarrhea
- Headache
- Shivering / Goose bumps
- Signs and symptoms include:
 - High fever
 - Seizures / Unconsciousness

Issues

- When combined with other drugs it can be dangerous.
- Can be fatal

Ginkgo *Ginkgo biloba*

- One of the oldest deciduous tree species on earth.
- Used in Europe to treat dementia and other cognitive disorders.
- Promoted in U.S. to provide “mental sharpness,” antioxidant protection, and maintain healthy circulatory perfusion.

Active Ingredients

- Not completely known.
- Effects
 - Flavonoid antioxidant effects
 - Scavenge free radicals
 - Reduces effects of cell damage assoc with Alzheimer's disease.
 - Inhibits liver enzymes
 - Create drug interactions.
 - Inhibits platelet binding and blood clotting.
 - Similar to aspirin

Side Effects

- Mild headache
- Mild gastrointestinal upset
- Blocks platelet function.
 - Increases bleeding
 - Can be bad when taken with other drugs
 - Creates interactions with aspirin and other anticoagulants
 - Can be fatal if interactions cause a stroke

Kava

Piper methysticin

- Root used by people in South Pacific for millennia for social and ceremonial purposes.
- Effects similar to Ethanol
 - Low doses = relaxation, improved social interaction; promotes sleep.
 - Higher doses produce sleep and stupor.

Kava

- Extracts widely used in Western countries to therapeutically treat:
 - Anxiety
 - Tension
 - Restlessness
 - Insomnia

Pharmacodynamics/ Pharmacodynamics

- Oral ingestion
- Mechanisms of ingredients poorly understood.
- Appears to bind to GABA receptors at BZ binding site.
- Blocks sodium channels with anesthetic effect.
 - Has muscle relaxant and anticonvulsant properties

Side Effects

- Mostly mild
 - Drowsiness
 - Nausea
 - Muscle weakness
 - Blurred vision
 - Yellow skin (with chronic use)
 - Sedative/intoxicant effects
 - Hepatotoxicity – May causes liver failure

Ma-huang

Ephedra silica

- Discussed Earlier
- Ephedrine
 - Potent psychostimulant
 - Releases catecholamine neurotransmitters.
 - Resembles amphetamines
 - Has shorter duration
 - Causes increases in cardiovascular activity.
 - Banned in U.S. since 2004.



Salvia Divinorum

- Perennial herb found in Mexico
- Used for a long time
- Leaves contain Salvinorin A
 - Is extremely potent.
 - Used as a divinatory psychedelic
 - Primarily smoked
 - Effects are often unpleasant



Kinnikinnick

Uva Ursi Bearberry

- Has numerous spellings
 - *kinnikinnic, kinnikinnik, killegenico, kanickanick, kanikanik, killickinnick*
- Means mixture
 - Used like tobacco in the past by Native Americans
 - Often in mixtures of numerous plants
- Currently used for ground cover in gardens



Conclusions

- Lots of plants used for use / abuse
- Look at websites for many other plants

