Advanced Herbal Training

With Steven Horne, RH(AHG) and Thomas Easley, RH(AHG)

Plant Chemistry and Energetics

Preview Class Two

Organic Building Blocks

- Hydrogen (H) - 1 bond
- Oxygen (O) - 2 bonds
- Nitrogen (N) - 3 bonds
- Carbon (C) - 4 bonds

Carbon Bonding


Carbon Bonding with Carbon

Double Bonds
Carbon Ring

\[
\begin{array}{c}
\text{H}_2 \\
\text{H}_2 \\
\text{H}_2 \\
\text{H}_2 \\
\text{H}_2 \\
\end{array}
\]

Carbon Ring with Double Bonds

\[
\begin{array}{c}
\text{H} \\
\text{H} \\
\text{H} \\
\text{H} \\
\text{H} \\
\end{array}
\]

Simplified Representation

![Niacin Vitamin B3](image)

Twelve Herbal Categories

- Aromatic
- Pungent
- Bitter
  - Alkaloidal
  - Non-Alkaloidal
  - Fragrant
- Salty
- Astringent
- Sour
- Acrid
- Mucilant
- Sweet
- Oily

Aromatic (Fragrant) Herbs

![Aromatic Herbs](image)

About Fragrant Herbs

- The fragrance of plants is due to the presence of volatile or essential oils (EOs)
- These oils evaporate in the presence of light and heat
- They bond to receptors in the nose to create aromas
- These oils are soluble in fat, alcohol and glycerin, but not in water
- They are readily lost through evaporation (boiling or extended storage reduces potency)
Properties of Essential Oils
- Anthelemintic
- Antibiotic
- Antifungal
- Antiseptic
- Antispasmodic
- Carminative
- Decongestant
- Febrifuge
- Nervine
- Sedative
- Stimulating
- Sudorific

Examples of Aromatic Herbs
- Basil
- Catnip
- Chamomile
- Juniper
- Lavender
- Lemon Balm
- Lemon Peel
- Oregano
- Peppermint
- Rosemary
- Sage
- Spearmint

Uses of Aromatic Herbs
- Warm up cold conditions
- Stimulate sluggish functions
- Improve circulation
- Aid digestion and expel gas
- Induce perspiration
- Calm the nervous system
- Have antimicrobial actions
- Promote tissue healing

Pungent (Spicy) Herbs
- About Pungent Herbs
  - Contain essential oils, resins, alkaminds and glucosinolates which create a hot or spicy flavor
  - Have warming and drying characteristics
  - General act as:
    - Stimulants (especially digestive and circulatory)
    - Expectorant and decongestant
    - Diaphoretic
    - Disperse energy outward, relieve stagnation
    - Fight infection

Resins
- Oxidized volatile oils, solid at room temperature
- Sticky, gummy substances often secreted by plants to protect damaged areas from insects and fungi
- Complex mixtures of substances
- Not soluble in water, soluble in alcohol or fixed oils
- Burn with a smoky flame and are often used in incense
- Oleo-resins contain Eos
- Properties of resins:
  - Warming and stimulating
  - Expectorant
  - Diaphoretic
  - Diuretic
  - Antimicrobial
Herbs with Resins

- Asafetida
- Balm of Gilead
- Cayenne
- Frankincense (Boswellia)
- Ginger
- Gumweed
- Kava Kava
- Myrrh
- Pine gum
- Yerba Santa

Balsamic Herbs

- Resinous mixtures that contain cinnamic acid, benzoic acid, or both or the esters of these acids
- Examples include:
  - Benzoin
  - Balsam of Tolu
  - Storax (Liquidambar)

Herbs with Alkamindes

- Amine compounds combined with unsaturated fatty acids
- Produce sharp burning or tingling sensations
- Stimulate salvation
- Have numbing or anesthetic effect (sometimes used for toothache)
- Used as counterirritants
- Stimulate digestion and circulation
- Anti-inflammatory
- Can be carminative, antispasmodic and immune stimulant
- Degrade over time, but can be preserved with alcohol

Examples of Pungent Herbs

- Capsicum
- Cinnamon
- Cloves
- Eucalyptus
- Garlic
- Ginger
- Horseradish
- Mustard
- Onion
- Osha
- Prickly Ash
- Thyme

Alkamindes

- Black Pepper
- Cayenne
- Chamomile
- Echinacea (angustifolia)
- Prickly Ash
- Spilanthes
- Yarrow

Glucosinolates

- Mustard oil glycosides which create pungent tastes in mustard family
- Contain sulfur compounds
- Used as counterirritants, decongestants, antibiotics
- Aid liver detoxification
- Mustard family plants include: radishes, turnips, cabbage, broccoli, mustard, shepherd's purse
Applications for Pungent Herbs

- Poor circulation
- Respiratory congestion and infections
- Lymphatic stagnation
- Colds and flu
- Indigestion, bloating, gas
- Catalysts for other herbs
- Counter-irritants

Bitter Herbs

Types of Bitter Herbs

- Alkaloidal
- Non-Alkaloidal
  - Cooling
  - Warming
- Fragrant

Examples of Alkaloidal Bitters

- Barberry
- California poppy
- Celandine
- Chinese ephedra
- Chocolate
- Coffee
- Fringetree
- Goldenseal
- Lobelia
- Oregon grape
- Scotch broom
- Yellow root

Alkaloids

- Nitrogen compounds with a basic (alkaline) pH
- Common in the lily, pea, potato, buttercup and poppy families
- Form during periods of rapid plant growth which causes plants to utilize nitrogen less efficiently
- Generally white or colorless crystalline compounds with a bitter taste
- Have structures similar to vitamins and hormones
- Have strong physiological actions, mainly acting on the nervous system
- About 5,000 have been identified (about 15-30% of all flowering plants contain them)
- Names end in "-ine"

Properties of Alkaloidal Bitters

- Drying and cooling
- Antimicrobial and antifungal action
- Reduce fever and inflammation
- Improve digestion and elimination
- Stimulate liver and gallbladder
- Often affect nervous system function
- Have specific actions based on type of alkaloid
Non-Alkaloidal Bitters

- Cooling
  - Anthraquinone Glycosides
  - Iridoid Glycosides
  - Diterpenes
- Warming
  - Essential oils
  - Terpenes

Properties of Cooling Bitters

- Stimulate hydrochloric acid and bile production
- Enhance absorption of nutrients
- Reduce cholesterol and balance blood sugar
- Anti-inflammatory
- Many act as sedatives or anodynes

Anthraquinone Glycosides

- Yellow-brown dyes
- Natural laxative compounds
- Acted on by intestinal bacteria they increase peristalsis and inhibit water and electrolyte absorption in the intestines
- Do not directly irritate mucus membranes
- Contraindicated in spastic bowel conditions
- May cause griping or discomfort,
- Moderated by carminatives
- Inhibit friendly bacteria when taken over long periods of time

Herbs with Anthraquinones

- Aloes
- Buckthorn
- Cascara sagrada
- Senna
- Turkey rhubarb
- Yellow dock

Diterpenes

- Usually bitter tasting compounds that strengthen digestion
- Commonly found in mint family
- Often anti-inflammatory and antimicrobial
- Examples:
  - Coleus forskohlii
  - Ginkgo (Ginkgo biloba)
  - Sage (Salvia officinalis) contains anti-viral diterpenes
  - Stevia contains a diterpene glycoside (rare formation)

Iridoids

- Iridoid glycosides
- Most bitter of all compounds (bitter principle)
- Bitter at 1 part in 50,000
- Stimulate release of gastrin and bile
- Cooling
- Improve appetite
- May have antimicrobial, antispasmodic, antitumor, antiviral, immune modulating, purgative/laxative or hepatoprotective properties
Plants with Iridoids
- Catmint
- Eyebright
- Gentian
- Madder
- Noni
- Olive Leaf
- Yohimbe

Other Cooling Bitters
- Artichoke
- Centaury
- Hops
- Motherwort
- Wild Lettuce

Applications for Cooling Bitters
- Poor digestion, especially of fats and protein
- High cholesterol
- Blood sugar problems
- Mild pain
- Nerves stress and tension
- Chronic inflammation
- Liver and gallbladder problems

Properties of Warming Bitters
- Similar to cooling bitters, but also act as carminatives
- More suitable for long term use for digestive problems
- Examples:
  - Angelica
  - Atractylodes
  - Dong Quai
  - Fenugreek
  - Turmeric

Applications for Warming Bitters
- Digestive weakness
- Gas, bloating and indigestion
- Chronic inflammation
- High cholesterol
- Blood sugar problems
- Respiratory congestion
- Liver and gallbladder problems

Fragrant Bitters
- Herbs that combine aromatic properties with bitter principles
- Commonly contain sesquiterpines
- Generally speaking these herbs are:
  - Antiparasitic
  - Antimicrobial
  - Digestive stimulants
Sesquiterpenes

- Common components of essential oils
- Attract or repel insects
- Thought to be growth regulators in plants
- Plants with sesquiterpenes include:
  - Roman Chamomile
  - German Chamomile
  - Cotton plant
  - Myrrh resin

Sesquiterpene Lactones

- Frequently found in the Sunflower family (Asteraceae)
- Some can cause contact dermatitis
- More than 3000 known sesquiterpene lactones
- Plants include:
  - Arnica montana
  - Sweet Annie
  - Blessed Thistle
  - Elecampane
  - Feverfew
  - Valerian
  - Yarrow

Applications for Fragrant Bitters

- Intestinal parasites and intestinal infections
- Other Infections
- Poor digestion and appetite (digestive stimulants)

Salty Herbs

- Contain mineral salts of potassium, sodium, magnesium and calcium
- Tend to have an alkalizing effect on tissues
- Act as nourishing, non-irritating diuretics
- Strengthen structural system
- Move stagnant fluids
- Soften hardened masses, moisten tissues
- Often used as alteratives

Examples of Salty Herbs

- Dandelion leaf
- Alfalfa
- Horsetail
- Red clover
- Chickweed
- Nettles
- Spinach
- Lamb's quarters
- Oatstraw
- Celery
- Kelp
- Dulse

About Salty Herbs

- Tend to have an alkalizing effect on tissues
- Act as nourishing, non-irritating diuretics
- Strengthen structural system
- Move stagnant fluids
- Soften hardened masses, moisten tissues
- Often used as alteratives
Astringent Herbs

Uva Ursi or Manzinita  Photo: Steven Horne

Tannins

- Compounds containing tannic acid
- Tannins cause tissues to contract
- Formerly used in “tanning” hides
- Precipitate proteins
- Can neutralize alkaloids
- Cause a dry, “cotton-mouth” sensation

Oligomeric procyanidins (OPCs)

- Condensed tannins
- Powerful antioxidant capabilities
- Found in pine bark, grapeseed and green tea
- Sold under trade names: Pycnogenol® or Grapine®

Examples of Astringent Herbs

- Alum root
- Bayberry
- Poplar buds
- Potentilla (cinquefoil)
- Uva ursi
- White oak bark
- Wild geranium
- Willow bark
- Witch hazel
- Yarrow

Properties of Astringents

- Arrest excessive secretion (drying)
- Reduce inflammation and swelling
- Syptic (stop bleeding)
- Slow intestinal peristalsis to relieve diarrhea, tone up leaky gut
- Antivenomous (bee stings, snake bites, etc.)

Sour Herbs
About Sour Herbs

- Contain fruit acids like ascorbic acid (vitamin C), citric acid, malic acid
- Also contain flavonoids
- Tend to be antioxidant and anti-inflammatory
- Cooling, slightly tonifying energy
- May be moistening or drying
- Strengthen capillary integrity
- Reduce excessive secretion
- Gently stimulate bile production, tonify liver

Flavonoids

- Yellow or white plant pigments, almost universal in plant kingdom
- Protect plants from UV radiation, inhibit enzymes and act as antioxidants
- Are broken down by intestinal bacteria into absorbable compounds
- Aid heart and circulation, strengthen blood vessels (reduce fragility)
- Act synergistically with Vitamin C
- Antioxidant, antiviral, anti-inflammatory, hepatoprotective
- Inhibit enzymes that produce pro-inflammatory prostaglandins

Plants Rich in Flavonoids

- Buckwheat (rutin)
- Citrus peel (hesperidin and others)
- Gingko
- Horsetail
- Milk Thistle (silybin)
- Rose hips

Anthocyanins

- Plant pigments (blue, red, black), natural dyes
- Superoxide radical scavengers
- Prevent lipid peroxidation
- Stabilize collagen and protect tissues from breakdown during chronic inflammation

Plants with Anthocyanins

- Billberry
- Black currant
- Blueberry
- Cranberry
- Elderberry
- Grape skin & leaves
- Huckleberry

Salicylates and Salicins

- Simple phenols
- Salicyclic acid usually occurs as a glycoside, ester or salt
- Plants with salicylates and salicins typically have anti-inflammatory, blood thinning and pain relieving qualities
Herbs with Salyciates
- Black cohosh
- Cramp bark
- Meadowsweet
- Poplar bark
- Quaking aspen
- Willow bark
- Wintergreen

Examples of Sour Herbs
- Bilberry
- Blueberry
- Collinsonia
- Cranberry
- Eyebright
- Hawthorn
- Lemon
- Mangosteen
- Noni
- Raspberry
- Rose hips
- Schizandra

Acrid Herbs
- Lobelia inflata

About Acrid Herbs
- Contain compounds like resins and alkaloids
- Antispasmodic (relax cramping and muscle spasms)
- Relieve “wind” disorders (involving alternating symptoms)

Examples of Acrid Herbs
- Black Cohosh
- Blue vervain
- Echinacea angustifolia
- Kava Kava
- Lobelia
- Skunk cabbage
- Wild Yam

Mucilant (Bland) Herbs
- Mallow
Polysaccharides
- Complex sugar molecules
- Attract water, cooling and soothing to tissues
- Precipitate in alcohol, so don't make good tinctures
- Applied topically to soothe inflamed tissues and promote healing
- Act as mild, bulk-forming laxatives
- Help arrest diarrhea
- Check fermentation and bacterial growth
- Lower cholesterol
- Help regulate blood sugar levels

Mucilage
- Long-chain polysaccharides that combine with water to form slimy masses
- Water-soluble fiber
- Soothes irritated tissues
- Bulk laxative

Herbs with Mucilage
- Aloe vera
- Cactus
- Cattail
- Coltsfoot
- Comfrey
- Flaxseed
- Hollyhock
- Marshmallow
- Okra
- Psyllium
- Purslane
- Slippery Elm

Gums
- Gummy polysaccharide exudates produced by plants when bark is damaged
- Tend to be sticky
- Also found in seeds
- Examples:
  - Acacia
  - Bladderwrack
  - Gum Arabic
  - Irish Moss (carrageen)
  - Red algae (agar agar)

Pectin
- Complex acid-based carbohydrates
- Found in cell walls of many fruits, especially apples and citrus
- Helps jams and jellies to set
- Similar properties to gums
- Absorb toxins, lower cholesterol

Fructans
- Polymers of fructose stored in some plants instead of starch
- Feed friendly intestinal bacteria
- Stabilize blood sugar
- Immune stimulating properties
- Examples:
  - Fructo-oligo-saccharides
  - Inulin
**Inulin**
- Found in many composite family plants
- Feeds intestinal bacteria
- Helps balance blood sugar
- Soothes intestinal irritation
- Examples:
  - Artichoke
  - Burdock
  - Chicory
  - Echinacea
  - Elecampane
  - Jerusalem artichoke

**Sweet Herbs**
- American ginseng
- Astragalus
- Bee Pollen
- Codonopsis
- Korean ginseng
- Licorice
- Stevia

**Saponins**
- Compounds which form colloidal solutions in water (foam or lather when shaken)
- Fat soluble at one end, water soluble the other
- Soap or detergent like activity

**Phenylpropanoid Glycosides**
- Some are anti-tumor or immune modulating
- Some are adaptogenic
- Plant sources include:
  - Basil
  - Echinacea
  - Eleuthero
  - Mistletoe
  - Rehmannia
  - Rhodiola

**Examples of Sweet Herbs**
- Nutritive and tonic (builds up weakened conditions, counteracts wasting)
- Strengthens glands, builds energy reserves
- Nourish stomach and digestive tract
- Often strengthen immune system

**Properties of Sweet Herbs**
- American Ginseng Root
- Photo by Steven Horne
- Eleuthero from Wikipedia
- Wild Asian Ginseng Root
- Photo by Steven Horne
- Ginsenoside, a saponin from ginseng
- From Wikipedia
Oils

- Oils are triglycerides (three fatty acids bound to a glycerol molecule)
- Fatty acids may be saturated, mono-unsaturated or polyunsaturated
- Essential fatty acids are polyunsaturated fatty acids (Omega 3s and Omega 6s)

Examples of Oily Herbs

- Avocado
- Black Currant Seed
- Borage Seed
- Coconut
- Evening Primrose Seed
- Flax Seed
- Hemp Seed

Properties of Oily Herbs

- Nourishing, lubricating
- Immune stimulating
- Reduce cravings for carbohydrates
- Anti-inflammatory
- Mild laxative action
- Support nerves and glands

Sample Herb Profiles

St. John’s Wort (Hypericum perforatum)

- Modern pigeon-hole
  - Depression
- Some traditional uses
  - Anxiety, insomnia
  - Nerve damage
  - Regulating digestion
  - Wound healer
  - Urinary remedy
  - Cough and asthma
  - Mental illness
St. John’s Wort Signatures

- Leaves have tiny holes that allow light to pass through (perforatum)
- Fresh plant can cause phototoxicity in animals
- Blooms right before summer solstice (St. John’s day)
- Bright yellow flowers produce a “blood red” oil or tincture
- St. John’s wort “lets in the light”

Photo from Wikipedia

Nerve Remedy

- St. John’s wort has been used to repair damaged nerves
  - Paralysis
  - Needle-like pains
  - Shooting pains
  - Neuralgia, sciatica
  - Anxiety and hysteria
  - Regulates solar plexus
- Used herbal, homeopathic and oil form

Emotional Remedy

- Fear of the dark
- Wintertime depression
- Frail, elderly people who are in pain and discouraged
- Chronic fatigue, exhaustion
- Weak gut instincts, unable to trust one’s own instincts (hiatal hernia)
- Relieves stress and fear affecting urinary system
- Eases feeling “burdened” unable to “shoulder” responsibilities (frozen shoulder)

Protective Remedy

- St. John’s wort helps protect people against negative influences
- Flower essence is a remedy for nightmares and feeling vulnerable
- Was a traditional remedy (along with wood betony) for mental illness and hallucinations
- Was planted to ward off evil influences

Other St. John’s Wort Uses

- Balances stomach acid
- Improves poor appetite
- Bedwetting remedy
- Helpful for burning urination, bladder ulceration and pus in the urine
- Helpful for whooping cough, asthma and bronchitis
- Jaundice and liver weakness
- Rheumatism
- Tetanus
- Painful menstruation
- Swollen lymph glands
- Swollen breasts
- Afterbirth pain

Black Cohosh
(Cimicifuga racemosa)

- Modern pigeon-hole
  - Female (estrogenic) remedy
- Some traditional uses
  - Depression
  - Cramps and spasms
  - Asthma and whooping cough
  - Angina
  - Rheumatism
  - Bites and stings
  - Fever
Black Cohosh Signatures

- Black, gnarled, tangled root with tangled foliage
- Bright white flowers arise from this tangle and grow very erect
- Black cohosh moves from darkness to light, it “untangles” and opens to allow flow in the body and in life

Setting Women Free

- Helps women who are brooding, withdrawn and melancholic
- Helps women who have experienced abusive, possessive, manipulative relationships
- Helps children and adults stand up to bullying, intimidation and abuse
- Helps people free themselves from people and situations where they feel trapped

Dispelling the Black Cloud

- Depression that hangs like a black cloud with a brooding, introspective aspect
- Depression associated with PMS, menopause or the aftermath of childbirth

Antispasmodic

- Whiplash remedy
- Asthma and whooping cough
- Angina
- Menstrual cramps
- Cramping and spasm in gall bladder
- Back pain and muscle tension
- Black cohosh “unwinds” and “untangles”

Antispasmodic Synergy

- Black cohosh combines with:
  - Lobelia
  - Small amount of capsicum
- To create a basic antispasmodic tincture for:
  - Massage for muscle pain
  - Menstrual cramps
  - Pain during childbirth
  - Other spasms and cramps
  - High blood pressure
- Not for use during pregnancy
- Also helpful for bites and stings

Pain Remedy

- Contains salicylates (natural aspirin) to reduce inflammation while relaxing tension
- Useful for tension headaches
- Painful menstruation
- Childbirth pain
- Rheumatic and arthritic pains
- Also helps fevers
Advanced Herbal Training

AHG Educational Guidelines

- AHG Recommends 1600 Hours of Study and/or Experience for Professional Herbal Membership as follows:
  - Materia Medica/Therapeutic Herbalism (400 hrs)
  - Botany and Plant Identification (60 hrs)
  - Pharmacy, Pharmacognosy and Dispensing (80 hrs)
  - Clinical Skills (400 hrs)
  - Basic Human Sciences (200 hrs)
    - Anatomy and Physiology
    - Pathology
    - Biochemistry
    - Medical Terminology
    - Nutrition
  - Career Preparation/Practice Development/Ethics (20 hrs)
  - History & Philosophy/Introduction to Research (40 hrs)

Advanced Program

- Each module will consist of five 2-hour webinars and will cost $157
- There will be a $30 discount for early registration (deadline for early registration for Module One has passed)
- Members of Tree of Light’s Share the Sunshine Program will get a $30 discount, too (deadline for sign-up for member program is February 5)
- Students will be able to download webinar recordings and handouts from a password protected class page
-准确 completion of homework materials will enable student to get a certificate of completion for each module
- The Advanced Herbal Training modules are part of a Professional Herbalist Training Program

2011 Advanced Herbal Training*

- Module 1 – Herbs for the Immune System
  - January 25, February 1, 8, 22, March 1
- Module 2 – Herbs for the Respiratory System
  - March 19, 29, April 5, 19, 26
- Module 3 – Herbs for the Cardiovascular System
  - May 17, 24, June 7, 14, 28
- Module 4 – Herbs for the Nervous System
  - July 12, 26, August 2, 16, 23
- Module 5 – Herbs for the Digestive System
  - September 13, 20, October 4, 11, 18
- Module 6 – Herbs for the Intestinal System
  - November 1, 8, 15, 29, December 6

Registration and Information

- Register online:
  - www.treelite.com
  - www.modernherbaleducation.com
- Register by phone:
  - 800-416-2887
- AHG Info
  - Educational Guidelines: www.americanherbalistsguild.com/herbal_education
  - Professional Membership Requirements: www.americanherbalistsguild.com/membership/professional

*Class Dates May Be Subject to Change
Question and Answer Time