Setting up a Pharmacy for the Herbal Clinic

- Are you a “UPS Herbalist” (Ed Smith)
Are you a Wildcrafting Herbalist?

• Freshness and purity
• Cultivated vs. wild-harvested
• Roads, factories, chemicals, radiation
• Pilgrimage to the mountains
• Growing your own—resources
  – Gardens of the Blue Ridge (www.gardensoftheblueridge.com)
  – Richter’s (www.richters.com)
  – Horizon Herbs (www.horizonherbs.com)
Hand-Crafted Products

- **Bulk teas**
  - May be most potent form, but taste and convenience are issues
- **Hydroalcoholic extracts (tinctures, etc.)**
  - Stable, convenient, but taste and alcohol issues
- **Syrups**
  - Excellent for children, respiratory issues, for people who don’t like pills
- **Oils**
  - Mostly external applications, local treatment
- **Salves**
  - Mostly for wounds, abrasions, burns
- **Plasters**
  - Local treatment, perhaps underused
# Herb Product Sources

<table>
<thead>
<tr>
<th>Material</th>
<th>Presentation</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powdered herbs</td>
<td>Capsules, tablets</td>
<td>Not well absorbed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Susceptible to moisture, oxygen</td>
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<tr>
<td>Tinctures or liquid</td>
<td>1 or 2 ounce amber dropper</td>
<td>More concentrated and bioavailable than powders;</td>
</tr>
<tr>
<td>extracts</td>
<td>bottles</td>
<td>more stable; usually unstandardized</td>
</tr>
<tr>
<td>Powdered extracts</td>
<td>Capsules, tablets</td>
<td>Not consistent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Standards vary</td>
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<tr>
<td></td>
<td></td>
<td>Most popular for mass market</td>
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</tbody>
</table>
Quality Issues

- Standardization is essential
- Modern methods include controlling for growing conditions, genetic selection, cloning, cell cultures
- Chemical analysis with HPLC, GC-MS
- Screening several constituent groups for biological activity
- European standard is whole herb
Standardization

• Simply insuring that a product has the labeled ingredients, is consistent in its ingredients and effect from time to time
• Consistency in potency, some knowledge about stability of active compounds; packaging should help preserve activity
• Two types:
  – Industrial standardization: necessary for mass produced products shipped internationally
  – Traditional standardization: the interconnection between a traditional herbal practitioner and a patient
Industrial Standardization

- Needed for mass-produced products to insure consistency of identified active ingredients
- Standardization of herbal remedies is difficult and should take into account
  - Proper identification of plant material
  - Chemotype, growing conditions
  - Careful homogeneous drying
  - Particle size for extraction, solvents
  - Consistent extraction methods
  - Processing into capsules, Packaging, storage condition
Standardization implies more than botanical and chemical identification.

Standardization signifies the body of information and controls that are necessary to guarantee constancy of composition, and preferably activity—hence the standardized quality—of a phytopharmaceutical drug (European view).
Industrial Standardization

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Methods of Standardization

- GC/MS
- LC/MS (HPLC)
- Microscopic analysis
- Botanical analysis—taxonomic ID
- DNA analysis, for instance of an herb mixture to see if a particular herb is present, check for purity
- Screening for pesticides, herbicides, heavy metals, other contaminants
Botanical Substitutions

• Same genus, different species?
  – Valeriana, Arnica, Gentiana, Achillea, etc.
• Different genus, same action, energy
  – Chinese herbal medicine
• Same species grown in different places
  – Astragalus, Codonopsis
• Wild vs. cultivated
  – Arnica, Valeriana, Ligusticum (osha)
Purity

- Micro screening
- Screening for pesticides, herbicides
- Heavy metals
- Sulfides to preserve color
- Fumigation (methyl bromide)
- Irradiation
- Freezing
- Spiking (caffeine, salicylates)
Commercial Herb Products

- Some adulteration and substitution still takes place
- Spiking common in some herbs (willow bark)
- Fillers--maltodextrin
- Questions about standardized herbs
- Dried teas as an alternative
- Tinctures
Standardized Extracts

• Whole plant vs. purified compounds, “pumped up”
• Solvents
• Enlightened chemists—the whole plant is the standard
• Fingerprinting
• Bio-screening with in vitro assays
Whole Plant vs. “White Drug”

- German studies show that some constituents are significantly better absorbed from the gut when in the presence of other compounds, like anthocyanidins
- Synergistic effects of compounds in a plant
- Reduction of toxicity with the whole herb
- Better efficacy
- Reduced drug resistance developed in pathogens exposed to whole herb complex
Traditional Standardization

• Community herbalism
• Traditional knowledge, passed on generation to generation
• Knowledge about
  – Selecting the most potent plants, the right species or acceptable substitutes
  – When to harvest, correct parts of plants
  – Processing the herbs, preservation
  – Extraction
  – Interaction with patients in community
  – Traditional diagnosis
  – Matching the herb preparation to the patient
Chinese Herb Quality

- From China—50% still wildcrafted
- Of the other 50%, about 50% are grown with synthetic fertilizers, chemicals
- Organic just starting, but some are available in North America
- China’s land—an environmental disaster
- Products are “knocked-off”
- Irregular manufacturing practices
- Potency, extraction ratio not given
- Binders, fillers, added drugs, dyes not disclosed
- Heavy metals, pharmaceuticals
Menstruum Choice

- Resinous herbs—tinctures
- Glycosides, saponins, carbohydrates, proteins
- Melanin, allantoin (not water or alcohol-soluble)
- Cost, environmental issues, organic
- Preserving delicate constituents—beta glucans, etc.
Tinctures

- Best for acute conditions, resinous herbs?
- Maceration vs. percolation
- Organic alcohol
- Extraction ratio
- Concentration, dose issues
  - 1 ounce (30 mL) of a 1:5 echinacea tincture represents 6 grams of fresh (or dry) root
  - Daily dose of a single Chinese herb: 6-9 gms
- Effectiveness of extraction method
- Stability, shelf-life
- Pharmacology, toxicology of ethyl alcohol
- Absorption from gut
Dried Teas

- Better for tonics?
- Capsules and tablets—the taste factor
- Most concentrated for home or small business extraction
- Traditional use in China
- Stability good
- Commercial sources—buy in bulk
Dried Teas, Bulk Sources

• Mayway (Plum Flower Brand) 800 262 9929
• Brucia/Naturex (530-676-2774)
  www.naturex.com
• Mushroom extracts—JHS Products, Eugene; Mushroom Harvest;
  www.nammex.com
Dried Teas—Instructions

- Simmer herbs (1/3 pot ¾ filled with water) for 1-2 hours to a strong, dark tea
- Remove herbs, press if possible
- Simmer for 1-3 more hours in uncovered pot until only an inch is left in the bottom (liquid tea concentrate)
- Stir in carrier (gum arabic, nettle leaf powder, eleuthero root powder, maltose, lactose, or cellulose powder) until smoothie consistency
- Pour into fruit leather trays of a dehydrator and dry under 100 deg. F. (may take overnight)
- Powder the wafer, or break it up and eat the herb chips
# Tinctures, Dried Teas

<table>
<thead>
<tr>
<th>Feature</th>
<th>Tinctures</th>
<th>Dried Teas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concentration</strong></td>
<td>Weak to moderate</td>
<td>Moderate to highly concentrated</td>
</tr>
<tr>
<td><strong>Stability</strong></td>
<td>2-3 years (watch out for droppers)</td>
<td>2-3 years or longer (avoid heat, moisture)</td>
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<tr>
<td></td>
<td>Avoid light, heat</td>
<td></td>
</tr>
<tr>
<td><strong>Preservation of actives</strong></td>
<td>Fair to good</td>
<td>Fair to good—better for minerals, polysaccharides</td>
</tr>
<tr>
<td></td>
<td>Better for capturing lipophilic constituents</td>
<td></td>
</tr>
<tr>
<td><strong>Palatability</strong></td>
<td>Poor to fair</td>
<td>Capsules: not an issue</td>
</tr>
<tr>
<td></td>
<td>Instant tea: poor to fair</td>
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</tr>
<tr>
<td><strong>Convenience</strong></td>
<td>Good</td>
<td>Fair to good</td>
</tr>
<tr>
<td><strong>Compliance</strong></td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Ease of manufacture</strong></td>
<td>Good</td>
<td>Fair to good</td>
</tr>
</tbody>
</table>
Preparation Choice

- Taste—good, but not too good
- Tinctures for acute conditions (short-term use)
- Teas for digestion, respiratory issues, up to 2-4 weeks of use
- Powdered herbs in capsules for selected herbs—cayenne, goldenseal, ginger, ginseng
- Dried teas in capsules for chronic conditions requiring moderately concentrated herbs
Formulation

- Has to taste pretty good
- Dose form matched for patient preference and best for condition
- Cost is usually a factor
- Lead herb is one with “presence,” strong traditions, scientific investigation
- Less well-known herbs, such as local herbs can be supportive
- Whole herbs, local herbs, organic herbs
- Keep it simple, 2-5 herbs for a formula
- Change it with as patient’s condition changes, usually every other week or so if possible
Relative Costs

- **Tinctures** (at a therapeutic dose, 5 mL, qid)
  - Commercial source—about $5-10/day
  - Made by practitioner—could be $5/day up to $15 if formulation cost is included
- **Bulk herbs to make teas**—most cost effective dose form/amount of constituents (about $2-$5/day)
- **Dried teas in bulk to make instant tea**—about $4-$10/day without or with formulation cost
- **Patent formulas**—$2 to $10/day
The End

• See handout, “Clinical extracts, revision 8”
• Main herbal pharmacy I use
• One I set up at a holistic pharmacist in Davis