

Materia Medica Differentials

FOR THE TWENTY-FIRST CENTURY

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Materia Medica Study

A template for study

- ▶ Accurate plant name(s)
- ▶ Humoral/energetic properties
- ▶ Definite clinical actions
- ▶ Tissues affected
- ▶ Uniqueness of the plant
- ▶ Uses
- ▶ Useful pairs and formulas
- ▶ Safety considerations
- ▶ Constituents/scientific trials if relevant.

Humoral/energetic properties

- ▶ Hot or cold, with degree (very hot, hot, warm, slightly warm, neutral, slightly cool, cool, cold, very cold) etc.
- ▶ Dry or moist, with degree as above
- ▶ Tonic/astringent vs Relaxant
- ▶ May add constitutional terminology from other systems

Clinical actions

Reliable and visible clinical effect to be expected

- ▶ Diffusive/Diaphoretic
- ▶ Diuretic
- ▶ Expectorant
- ▶ Antispasmodic
- ▶ Carminative
- ▶ Laxative
- ▶ Sedative
- ▶ Anodyne
- ▶ etc.

Tissues affected

- ▶ Connective tissue
- ▶ Skin
- ▶ Mucous membranes
- ▶ Nerves
- ▶ Secreting glands of GI/Liver
- ▶ Smooth muscle
- ▶ Skeletal muscle
- ▶ Capillary circulation
- ▶ Immune
- ▶ etc.

Hypericum perforatum	
St. Johnswort	
Parts used	Flower and leaf
Taste-Action	Sweet, somewhat bitter, somewhat acid
Temperature	Cool
Humidity	Dry
Vital action	Astringent
Tissues affected	Blood, liver, nerves
Clinical Actions	Topical: nerve, anodyne, anti-inflammatory, vulnerary Internal: alterative, hepatic, nerve

Arctium lappa	
Burdock	
Parts used	Root, seed
Taste-Action	Bitter, sweet
Temperature	Cool
Humidity	Dry (may promote sebaceous secretions)
Vital action	Vital stimulant, tonic-astringent, diffusive
Tissues affected	Mucous membranes, serous membranes, lymphatic tissue, gastrointestinal and hepatic secreting glands, microbiome
Clinical Actions	alterative, lymphatic, bitter tonic, mild hepatic stimulant, diaphoretic, diuretic

	<i>Mentha pip</i>	<i>Melissa off</i>	<i>Thymus v.</i>
Temperature	warm/cooling diaphoretic	warm/cooling diaphoretic	warm/cooling diaphoretic
Humidity	dry	dry	dry
Tone	relaxant, diffusive	relaxant, diffusive	relaxant, diffusive
Taste/action	pungent	pungent	pungent
Tissues	mucous membranes, circulation, digestion	mucous membranes, circulation, digestion	mucous membranes, circulation, digestion
Clinical actions	cooling diaphoretic, carminative, antispasmodic, emmenagogue, anti-inflammatory	cooling diaphoretic, carminative, antispasmodic, emmenagogue, anti-inflammatory	cooling diaphoretic, carminative, antispasmodic, emmenagogue, anti-inflammatory

	<i>Echinacea</i>
Temperature	cool
Humidity	slightly dry
Tone	slightly tonic
Taste/action	bitter, pungent,
Tissues	immune cells, lymphatics
Clinical actions	immune enhancing alterative, topical vulnerary

Uses and combinations

With Myrrh for topical disinfectant effects or for general immune stimulation.

With Sambucus and Eupatorium perfoliatum for viral infection or influenza.

With Ligusticum porteri for effects on the lung.

With Arctostaphylos uva ursi for infection of the bladder or urethra.

	<i>Echinacea</i>	<i>Myrrh</i>
Temperature	cool	warm
Humidity	slightly dry	dry
Tone	slightly tonic	tonic/astringent
Taste/action	bitter, pungent,	bitter
Tissues	immune cells, lymphatics	mucous membranes, capillaries, immune cells, lymphatics
Clinical actions	topical vulnerary immune enhancing alterative,	topical disinfectant immune alterative, blood mover

Materia medica differentials

- ▶ First study groups of herbs with similar uses and properties to see their similarity. This is useful for identification of **analogues** and for clinical flexibility and substitution
- ▶ Then **differentiate** between herbs in the group on the basis of unique property or **specific use**
- ▶ Not all herbs have specific uses or indications, and knowledge of analogues and equivalents allows for easy adaptation of therapeutics, and for flexible formulation, both of which are advanced professional herbal skills.

Nutritive differentials

Nutrients and the role of herbs

- | | |
|-------------------------|--|
| ▶ Protein | ▶ No contribution |
| ▶ Fats | ▶ No contribution |
| ▶ Metabolic carbs | ▶ No contribution |
| ▶ Non-metabolic carbs | ▶ Roots of some herbs |
| ▶ Vitamins | ▶ Some food-like herbs |
| ▶ Macrominerals | ▶ Significant contribution |
| ▶ Trace Elements | ▶ Contribution significant to critical |
| ▶ Flavonoid/antioxidant | ▶ Significant contribution |

Non-metabolic carbohydrates

- ▶ Indigestible fibers provide food for microbiome.
- ▶ Include starches, polysaccharides, inulin, pectin, mucilage
- ▶ Microbiome metabolizes these to short-chain fatty acids (SFCA)
- ▶ SFCA in humans provide about 10% of caloric needs.
- ▶ SFCA also have regulating role on immunity, insulin resistance, glycemic control, etc.

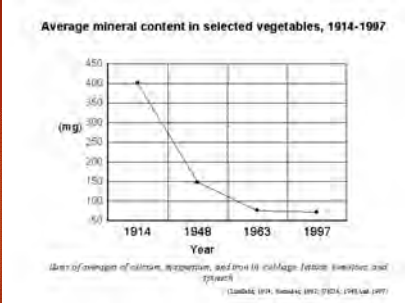
Differential: Herbs containing Inulin

- ▶ *Arctium lappa* (Burdock) 50% of root weight
- ▶ *Inula helenium* (Elecampane) 40% of weight
- ▶ *Taraxacum officinale* (Dandelion) 25% weight
- ▶ Of these, only *Arctium* is mild enough to consume as food without strong medicinal effects.
- ▶ Japanese *gobo* root is a cultivated variety
- ▶ *Arctium* root powder is mildly sweet (not bitter). It can be consumed as a teaspoon to a tablespoon sprinkled on or in food at meals.
- ▶ Specifically feeds a segment of friendly bacteria, *Lactobacillus* and *Bifidobacter*. Always include as a prebiotic when giving probiotics.

Minerals and Trace elements

Critical roles in structures and also as rate-limiting enzymes for thousands of processes in the body. See examples:

- ▶ Copper and silicon are necessary for cross-linkages of collagen and elastin in connective tissue
- ▶ Boron is essential to bone metabolism and insulin function
- ▶ Chromium essential to insulin function
- ▶ Lithium essential to emotional balance.
- ▶ Mn is essential in woman for fertility



Green Leafy Vegetables, 1963-1992

	1963	1997	Cx(%)
▶ Broccoli, raw			
▶ calcium (mg)	103	48	-53.40%
▶ iron (mg)	1.1	0.88	-20.00%
▶ magnesium (mg)	24	25	4.17%
▶ phosphorus (mg)	78	66	-15.38%
▶ potassium (mg)	382	325	-14.92%

	1963	1997	Cx%
▶ Collard greens			
▶ calcium (mg)	203	29	-85.71%
▶ iron (mg)	1	0.19	-81.00%
▶ magnesium (mg)	57	9	-84.21%
▶ phosphorus (mg)	63	10	-84.13%
▶ potassium (mg)	401	169	-57.86%

Significant and broad spectrum loss of minerals and trace elements

- ▶ All grains
- ▶ All beans
- ▶ All vegetables
- ▶ All fruits
- ▶ All meats

See in Directory: *Healing Power of Minerals and Trace Elements*

Calcium and magnesium mg/Oz

	Calc	Mag	Sum
▶ Kelp	1013	289	1302
▶ Nettle Leaf	966	286	1252
▶ Oatstraw	476	400	876
▶ Horsetail	630	145	775
▶ Peppermint	540	220	760
▶ Comfrey leaf	600	23	623
▶ Red Rasp.	403	106	509
▶ Althaea	272	172	444
▶ Burdock	244	179	423
▶ Alfalfa	299	76	375

Pedersen: *Nutritional Herbolgy*

Trace elements mg/Oz

	Iron	Chromium	Mang	Sel	Sil
	mg	mcg	mg	mcg	mg
▶ Red Rasp.	3.3	40	4.8	80	0.04
▶ Catnip	4.6	90	1.25	410	0.00
▶ Nettle Leaf	1.4	130	0.26	70	0.34
▶ Kelp	0.5	20	0.25	60	0.03
▶ Horsetail	4.1	10	0.23	40	1.29
▶ Red Clover	0.0	110	0.20	30	0.04
▶ Burdock	4.9	10	0.20	50	0.75
▶ Comfrey lf	0.4	60	0.19	40	0.30
▶ Althaea	3.8	50	0.15	110	0.10

Pedersen: *Nutritional Herbolgy*

Potassium (mg/oz)

- ▶ Catnip 783
- ▶ Peppermint 753
- ▶ Kelp 703
- ▶ Nettle Leaf 583
- ▶ Comfrey leaf 566
- ▶ Burdock 560
- ▶ Horsetail 520
- ▶ Red Rasp. 446
- ▶ Marshmallow 403
- ▶ Alfalfa 400

Pedersen: Nutritional Herbolgy

Minerals in herbal infusions

- ▶ Herb infusions were prepared from 2.0 g dry herb
- ▶ Samples immersed in 100 ml boiling water
- ▶ The infusion time was 7 min.
- ▶ Plant material filtered out.
- ▶ Filtered with ashless filter paper (Whatman) and dried
- ▶ Infusion evaporated and minerals measured.

Sulburska, J., & Kaczmarek, K. (2011). *Herbal infusions as a source of calcium, magnesium, iron, zinc and copper in human nutrition. International Journal of Food Sciences and Nutrition*, 63(2), 194-198.

Possible mineral content in concentrated decoctions

- ▶ Based on 2 oz of plant material in 1 L of water, soaked overnight and decocted for 30 minutes at 90 degrees C then allowed to cool.
- ▶ Plant material strained but not filtered.

Content (mg) and % OF RDA								
	Iron	% RDA	Copper	%RDA	Magn	%RDA	Cal	%RDA
Matricaria	2.80	23	0.36	40	42.00	11	87.00	9
Mentha psp.	3.20	27	0.33	37	90.00	23	213.00	21
Hypericum	1.40	12	0.36	40	38.70	10	110.00	11
Urtica	1.44	12	0.27	30	95.40	24	163.00	16

These can be considered minimums, based on information from 7 minute infusions

Silicon

- ▶ Chief role is in production and/or maintenance of the integrity of connective tissue.
- ▶ Dietary intake broadly reduced in modern diet from traditional.
- ▶ Processing of grains, reduced intake of vegetable foods.
- ▶ No RDA, typical modern consumption in the range of 20-50 mg/day
- ▶ Decoction of Urtica, as above contains minimum of 33 mg
- ▶ Decoction of 2 grams of Equisetum boiled for 30 minutes yield 15 mg silicon

Piekos R, Paslawska S, Grnczelis W. Studies on the optimum conditions of extraction of silicon species from plants with water. III. On the stability of silicon species in extracts from Equisetum arvense herb. *Planta Med.* 1976 Jun;29(4):351-6.

Piekos R, Paslawska S. Studies on the optimum conditions of extraction of silicon species from plants with water. V. Urtica dioica. *Planta Med.* 1976 Dec;30(4):331-6.

Herb	Form	Nutrition	Temp	Humidity	Tone	Flavor
Urtica	long decoction	broad spectrum silicon	cool	dry	astr	sl bit/sl sw
Rubus	long decoction	Mn concentrator	sl cool	very dry	astr	sl bit/sl sw
Avena	long decoction	gluten issues	neutral	sl dry	sl ton	sweet
Symphylum	decoction (toxic) topical	silicon	cool	moist	tonic	sl bit/sweet
Althaea	long decoction	broad spectrum	cool	very moist	relaxant	sweet
Equisetum	low dose, short	silicon	cool	dry	ton/astr	sl bit/sl sw
Fucus	low dose, intermittent	high iodine	neutral	very dry	ton/astr	very salty

Herb	Alterative	Demulcent	Diuretic	Nervine	Inflamm	Diabetes
Urtica	major	astringent	strong		strong	tincture or food
Rubus		astringent				
Avena				mild		
Symphylum		strong				
Althaea		strong				
Equisetum		drying	mild			
Fucus	traditional	very dry				

Applications and pairing

Urtica	with Althaea, Ulmus, and/or glycyrrhiza to counter dryness
	with Rubus and Althaea as decoction for nutrition in pregnancy
Rubus	with Althaea, Ulmus, and/or glycyrrhiza to counter dryness
	with Urtica and Althaea as decoction for nutrition in pregnancy
Avena	add to any tea formula to add mineral nutrition without altering taste or humoral effects
Symphylum	with Equisetum and/or Urtica for acute connective tissue healing short term decoction
Equisetum	add small amount to any decoction to increase mineral nutrition, specific for connective tissue
Fucus	add to nutritive powders or use as salt on food

Demulcent differentials

Demulcents as constitutional remedies

- ▶ Acute effects on mucous membranes throughout the system is by reflex action
- ▶ Most demulcents also raise immune surveillance secondary to presence of polysaccharides.
- ▶ Taken persistently, demulcents can moisten a constitution made dry by disease process or environmental influence

Sweet demulcents*

- ▶ Althaea sweet, cool, moist relaxant
- ▶ Ulmus spp. sweet, cool, moist neutral tone
- ▶ Glycyrrhiza spp. sweet, sl warm, moist tonic.

Both Althaea and Glycyrrhiza have mild bitter constituents than can be tasted by some "bitter supertasters" but the majority of people do not detect bitter in these plants.

Bitter demulcents

Predominant demulcent effects are corrective to mild bitter
Primary remedies for the hot dry patient (False fire, deficient yin)

- ▶ *Viola odorata, tricolor* cool (lf) cold (rt) mild bitter, whole plant with roots is more bitter
- ▶ *Asparagus spp* cold powerful endocrine and reproductive restorative (Shatavari; Tian Men Dong)
- ▶ *Polygonatum spp* cool mild bitter, endocrine and reproductive restorative (Maianthemum rac)

Patient should have heat signs to receive Asparagus or Viola rt, or these may cause cold injury.

Topical differentials

Three ways herbs work

Pharmacological

- ▶ Classical pathways; route of administration, absorption, transport, biotransformation in liver, binding to or entrance into cell, route of excretion.
- ▶ Activity on cell is limited to those constituents which are absorbed, and which reach the cell in sufficient quantities to have an effect

Reflex action

- ▶ The presence of the herb in the mouth, its taste, its aroma, etc. causes a shift in the ecological balance of the body.
- ▶ Mechanisms are unknown or speculative
- ▶ Effect can be almost immediate or more delayed. Can be readily detected through tasting experiments.
- ▶ Effect on skin cells and mucous membrane may occur through alterations of circulation or stimulation or suppression of secretions.

Topical

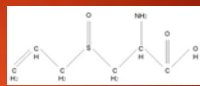
Topical

- ▶ The plant material or its extract comes in direct contact with the cell and its environment.
- ▶ The most powerful effect of herbs on tissues
- ▶ All of the plant constituents can come directly into contact with tissue in high concentration rather than a few constituents in the low amounts follow absorption and circulation.
- ▶ May also affect the system -- *skin is absorptive superhighway* with rich circulation
- ▶ Significance for large molecules, essential oils.

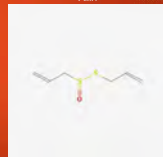
Cutaneous absorption of plant constituents

Molecular size

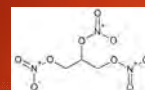
- ▶ Aromatic/volatile constituents are readily absorbed in the skin resulting in **systemic circulation** and pharmacological effects
- ▶ An average of 8% of a concentrated essential oil applied to the skin is absorbed.
- ▶ This may be greatly increased by the application of heat.
- ▶ Allicin and other sulfur compounds from garlic are rapidly absorbed across the skin and some metabolites are excreted in the breath.
- ▶ Molecules of less than 500 molecular weight can pass the corneal outer layer of the skin.



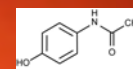
Alin



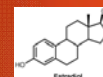
Allicin



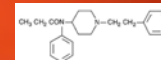
Nitroglycerine



Acetaminophen



Estradiol



Fentanyl

Most medicinal plant constituents will pass through the skin, enhanced by soaking the body part in warm water. Relevant to foot bath, sitz bath, hand bath, and compress.

Molecular weights of some Plant Constituents

- ▶ Azuline 128
- ▶ Achillene 136
- ▶ Pentose (Althaea) 150
- ▶ Methyl salicylate 152
- ▶ Thujone 152
- ▶ Pulegone 152
- ▶ Menthol 156
- ▶ Carvacrol 158
- ▶ Alantoin 158
- ▶ Saffrole 162
- ▶ Nicotine 162
- ▶ Harman (passiflora) 182
- ▶ Chamazuline 184
- ▶ Pectin 194
- ▶ Apigenin 270
- ▶ Baicalein 270
- ▶ Luteolin 286
- ▶ Capsaicin 305
- ▶ Tetrahydrocannabinol 314
- ▶ Berberine 336
- ▶ Canadine 338
- ▶ Lobeline 337
- ▶ Symphytine 381
- ▶ Varbanalin 338
- ▶ Hydrastine 389
- ▶ Scutellarin 462

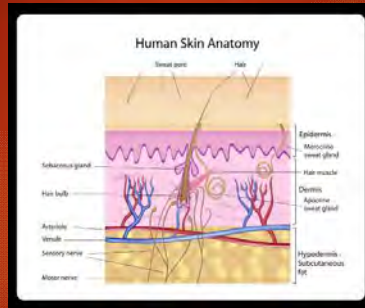
Almost any plant constituent, when applied locally, will penetrate to all levels of the local area as well as into the general circulation

Case: MRSA cellulitis

- ▶ Patient was elder in her 70s
- ▶ Chronic MRSA cellulitis on both legs extending from the knees to the ankles.
- ▶ Treatment: persistent applications of a strong decoction of *Echinacea angustifolia*, plus a tincture of *Hydrastis*.
- ▶ The condition was completely cleared.
- ▶ **The patient's skin was stained yellow, which she complained about.**
- ▶ **Consider that evidence that a berberine-rich environment was created throughout the tissues.**

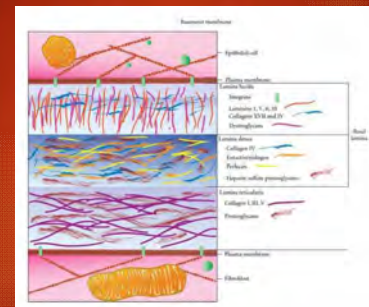


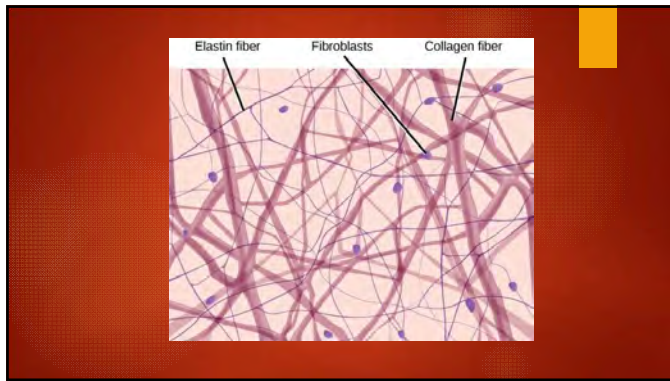
MRSA cellulitis, (not this patient)



More layers

- ▶ The Myth of the sterile skin
- ▶ Biome. The normal flora of the skin
- ▶ Virome. The normal viruses that live on and in the skin, and within the biome.
- ▶ "Fungome" a normal level of fungus is present in the skin.
- ▶ French dermatologists tell their acne patients to stop washing their faces.
- ▶ Some organisms, bacterial, viral, or fungal may cause minor or serious problems.





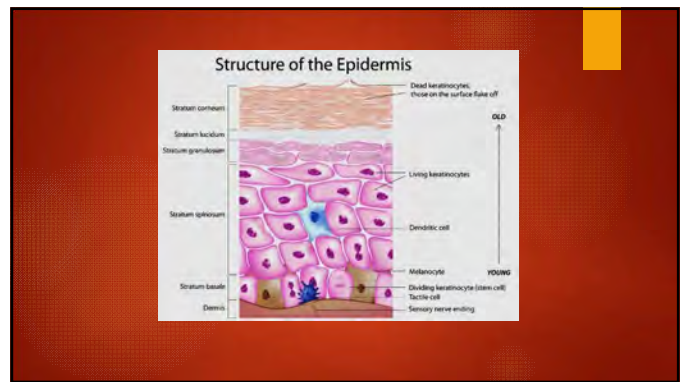
The dynamic dermis

A diagram of the dermis showing various components: epithelium, fibroblast, basement membrane, elastic fiber, reticular fibers, macrophage, mast cell, collagen fiber, fat cell, plasma cell, and ground substance.

- Circulation can increase or decrease from external or internal (or herbal) stimuli
- The immune-cell-rich dermis is semi-independent of the larger immune system, and can be regulated or stimulated by local factors, including herbal applications.
- Collagen and elastin forming fibrocytes circulate in the system in the same manner as white blood cells, and can migrate into an injured or inflamed dermis to produce healing and **scarring**.

The Skin as immunological organ

THE SKIN POSSESSES A SEMI-AUTONOMOUS IMMUNE SYSTEM
THIS CAN BE DYNAMICALLY ACTIVATED BY HERBAL MEDICINES.



Epidermal immunity

Langerhans cells. The major epidermal phagocyte. Dendritic antigen-presenting cells. About 1/2 the phagocytic capacity of tissue macrophages. Activate epidermal and dermal T-Cells

Two diagrams on the left show the structure of Langerhans cells in the epidermis. A micrograph on the right shows Langerhans cells stained in a skin section.

Salmon JK, Armstrong CA, Ansel JC. The skin as an immune organ. West J Med. 1994 Feb;160(2):146-52. Review.

The major skin cell types all possess immunological properties

- ▶ **Keratinocytes.** Immune competent epithelial cells. Make up 90% of epidermal cells. Phagocytes which secrete T-cell activating cytokines.
 - ▶ [http://www.jidonline.org/article/S0022-202X\(15\)47825-X/pdf](http://www.jidonline.org/article/S0022-202X(15)47825-X/pdf)
 - ▶ <https://www.ncbi.nlm.nih.gov/pubmed/11549105>
- ▶ **Melanocytes.** Pigmented cells. 3-5% of epidermal cells. Like keratinocytes, can secrete cytokines.

Lymphocytes in the skin

The skin is the largest reservoir of T-Lymphocytes in the body.

- ▶ **Resident CD8+ T cells.** Most of the CD8 (cytotoxic) cells in the skin reside in the epidermis
- ▶ **Epidermotropic T-Lymphocytes.** Skin-homing lymphocytes from the dermis or system.
- ▶ **Dermal T4-lymphocytes** (most abundant in dermis)
- ▶ **B-Lymphocytes** present in low numbers but home to the dermis from cutaneous lymphatic material in response to infection or inflammation

Egbuniwe IU, Karagiannis SN, Nestle FO, Lacy KE. Revisiting the role of B cells in skin immune surveillance. Trends Immunol. 2015 Feb;36(2):102-11.

Immune stimulant herbs are more potent locally than systemically

- ▶ The skin contains all the essential elements of the immune system
- ▶ The skin cells themselves are immune cells and form both a mechanical and a biological layer against invaders.
- ▶ Most of our "immune herbs" which we know affect systemic immunity, have an exponentially more potent effect on local immunity when applied topically because of the greater concentration at the site of infection that can be achieved with internal use.
- ▶ Echinacea wash from decoction of 1 ounce per liter decocted for 40 minutes.
- ▶ Echinacea wash from tincture 1 part Echinacea to 3-6 parts water.

Locations for topical applications

- ▶ Skin
- ▶ Outer ear
- ▶ Nasal and sinus
- ▶ Throat
- ▶ Bronchial
- ▶ Lung
- ▶ Mouth
- ▶ Upper GI
- ▶ Intestines
- ▶ Colon
- ▶ Rectum
- ▶ Vagina

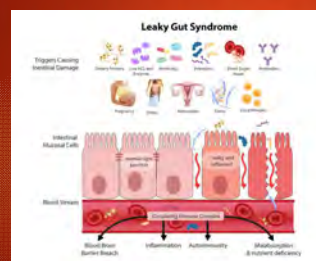
Actions of topical applications

- ▶ Disinfection
- ▶ Break up formed biofilms
- ▶ Efflux pump inhibition
- ▶ Circulatory stimulation
- ▶ Activation of local immunity
- ▶ Astringe or reduce circulation
- ▶ Draw out poisons or morbid matter
- ▶ Reduce inflammation
- ▶ Promote wound healing

Methods of topical application

- ▶ **Compress** – application of a tea or tincture held in place with a cloth.
- ▶ **Poultice** – Application of actual herbal material either directly to skin or through a cloth. May wrap a bandage to hold in place. May wrap in plastic to prevent dripping. May apply heat.
- ▶ **Medicated clay** – application of bentonite green clay made with either a tea or a diluted tincture. Dilute tincture 3-6 times.
- ▶ **Bath.** Warm water opens dermis and promotes absorption
- ▶ **Foot bath, hand bath.** Use warm.
- ▶ **Infused oil, salve, loion, cream**

The digestive tract is skin



Herbal medicines
May powerfully
Affect the superficial
barrier and also the
immune layer beneath it.

Each of the herbs
traditionally
Used for external topical
application may
potentially
also benefit the gut barrier

Herbs vs allopathic medications

- ▶ Many of our topical materia medica have the capacity to **reduce inflammation** at the same time they **increase wound healing**.
- ▶ This combination is not possible with allopathic drugs, where anti-inflammatories decrease wound healing time.
- ▶ How this occurs is not known, but it is well documented.

	Cool	Anti-inflammatory	Vulnerary	Antiseptic	Local immunity
Calendula	x	x	x	x	x
Plantago	x	x	x	x	x
Hypericum	x	x	x	x	x
Echinacea	x	x	x	x	x
Althaea	x	x	x	x	x
Achillea	x	x	x	x	x

Infused oils: Olive oil also has wound healing and anti-inflammatory effects
 Echinacea wash from decoction of 1 ounce per liter for 40 minutes.
 Echinacea wash from tincture 1 part Echinacea to 3-6 parts water.

Brown recluse spider bites

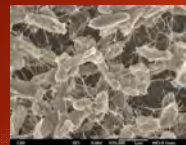
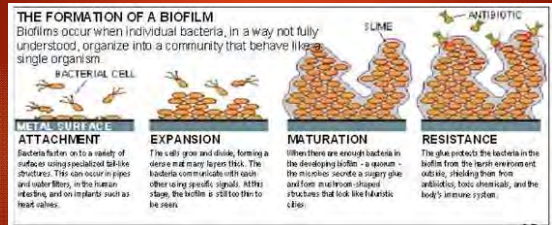


Brown recluse complications prevented or lesions healed with simple plantain poultice. Lesions can be healed, after cleaning, with bentonite clay made with half-half Echinacea tincture and water.

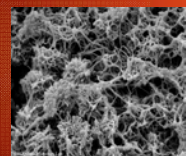


Example photos from internet

Biofilms



MRSA



Pseudomonas

Biofilms are part of normal microbiome defense of the body. Pathological biofilms are nearly universally present in:

- Oral plaque, periodontal disease
- MRSA infections on skin
- Other skin infections
- Chronic wounds and ulcers
- Chronic sinus infection
- Vaginal infection
- Bladder infection

Biofilm stages

- ▶ Free bacteria secrete "quorum-sensing" substances.
- ▶ When enough bacteria are gathered in one place, the concentrated quorum-sensing substance triggers gene activation to form a web of filaments, and may also activate pathogenic processes such as secretion of proteases to eat into tissues.
- ▶ This biofilm is highly resistant to the host immune response and to systemic antibiotics.

Plants and biofilms

Plants can do through multiple mechanisms what no drug can do

Many plants have developed mechanisms to kill bacteria or prevent or disrupt quorum-sensing in bacteria.

- ▶ Attack microbial cell wall
- ▶ Attack microbial metabolism
- ▶ Disrupt bacterial resistance functions (MDR pumps for instance)
- ▶ Disrupt quorum sensing
- ▶ Disrupt the functions triggered by quorum sensing
- ▶ **In humans**, they may also stimulate local host resistance or circulation



MRSA – chronic infection with biofilm

	Antiseptic	Immune	Anti-biofilm
<i>Larrea</i>	x	x	trad
<i>Thuja</i>	x	x	trad
<i>Anemopsis</i>	x		trad
<i>Myrica</i>	x	x	trad
<i>Baptisia</i>	x	x	trad
<i>Hypericum</i>	x	x	science
<i>Althaea</i>	x	x	science

	Antiseptic	Immune	Biofilm
<i>Aloe</i>	x		science
<i>Commiphora</i>	x	x	science
<i>Boswellia</i>	x	x	science
<i>Allium</i>	x	x	science
<i>Hydrastis</i>	x		science
<i>Achillea</i>	x	x	science

	Local stimulant	Antiseptic	Local immunity	Anti biofilm
<i>Thuja</i>	x	x	x	trad
<i>Anemopsis</i>	x	x		trad
<i>Myrica</i>	x	x	x	trad
<i>Baptisia</i>	x	x	x	trad
<i>Commiphora</i>	x	x	x	Science
<i>Achillea</i>	x	x	x	Science
<i>Capsicum</i>	x			
<i>Arnica</i>	x			

Samuel Thomson's Number Six

	Temp	Stim	Anti-inflam	vulnerary	antiseptic	immune	biofilm
<i>Commiphora</i>	warm	x	x		x	x	yes
<i>Capsicum</i>	hot	xxx					
<i>Echinacea</i>	cool		x	x	x	x	

- ▶ "Rheumatic drops" taken internally, topical antiseptic, throat spray
- ▶ Externally: "The most powerful antiseptic known, and is on that account highly serviceable in all putrid affections whatever"
- ▶ Used as surgical disinfectant with simultaneous internal immune stimulation by the later Physiomedicalists (post germ-theory)
- ▶ RS Clymer later recommended substitution of *Echinacea* for *Capsicum* in the formula. Can use all three in suitable proportions

		stimulant	antiinflam	antiseptic	immune	biofilm
<i>Commiphora</i>	warm	x	x	x	x	yes
<i>Hydrastis</i>	cool			x		x

		Stimulant	antiinflam	vulnerary	antiseptic	immune	biofilm
<i>Echinacea</i>	cool		x	x	x	x	
<i>Baptisia</i>	cold	x			x	x	trad
<i>Thuja</i>	warm	x	x		x	x	trad

		stimulant	antiinflam	antiseptic	immune	biofilm
<i>Commiphora</i>	warm	x	x	x	x	science
<i>Larrea</i>	cool		x	x		trad

Hydrastis and Myrrh

- ▶ Topical wash for infection
- ▶ Antibacterial, antiviral, antifungal
- ▶ Spray for sore throat
- ▶ Gum disease
- ▶ Topical for gastric mucosa
- ▶ Powerful systemic effects (mucous membrane tonic, general alterative and tonic, antimicrobial through separate mechanisms, in low dose is balanced warm, cold, moist and dry.

Sinusitis spray

- ▶ Get a 2 ounce sinus spray bottle
- ▶ Add 1 teaspoon of glycerin. Not more.
- ▶ Add 15 drops each of *Hydrastis* and *Myrrh**. Not more.
- ▶ Fill to 2 oz with water.
- ▶ Spray into sinuses up to 4 times per day.
- ▶ Frequently will clear chronic sinusitis within 4 days.
- ▶ *Original recipe called for 15-30 drops of *Anemopsis*

Effects on mucous membrane

When taken internally

- ▶ *Hydrastis* **Cold and astringent**, tonic to secretions. Never appropriate in acute conditions. Use in subacute and chronic conditions of the mucous membranes. Traditional dose of the tincture is 10-15 drops. Overdoses cause injury through astringency. The patient should be damp and have signs of heat
- ▶ *Anemopsis*, *Myrica* **Warm and astringent**. Drying and stimulating to membranes. The patient should be damp and have signs of cold

Nervine differentials

Humoral effects of nervines

<i>Matricaria</i>	<i>Viburnum prun</i>
<i>Avena</i>	<i>Dioscorea</i>
<i>Lactuca</i>	<i>Cimicifuga</i>
<i>Piscidia</i>	<i>Eschscholtzia</i>
<i>Filipendula</i>	<i>Gaultheria</i>
<i>Paonia</i>	<i>Humulus</i>
<i>Hypericum</i>	<i>Caulophyllum</i>
<i>Scutellaria</i>	<i>Valeriana</i>
<i>Passiflora</i>	<i>Piper meth</i>
<i>Viburnum op</i>	

- Almost all nervines are **cool or cold**.
- Exceptions: *Valeriana*, *Piper meth*, *Caulophyllum*
- All nervines are dry
- This puts the Western herbalist using these herbs on a collision course with the Vata Aggravated patient. Vata = cold and dry.
- Vata aggravation: nervousness, restlessness, anxiety, insomnia
- It is then normally necessary to routinely correct nervine formulas with demulcent correctives, or to supplement with an overall constitutional demulcent strategy

Demulcent vs Yin tonic

Acute moistening effect

- ▶ *Althaea*
- ▶ *Ulmus*
- ▶ *Glycyrrhiza*
- ▶ *Polygonatum*
- ▶ *Symphylum*
- ▶ *Tussilago*
- ▶ *Viola*
- ▶ *Zea*

Increase systemic moisture

- ▶ *Althaea*
- ▶ *Ulmus*
- ▶ *Polygonatum*
- ▶ *Asparagus*
- ▶ *Ophiopogon*
- ▶ *Panax quinquefolium*

Matricaria as universal nervine

- ▶ Temperate, not overly warm or cold
- ▶ Relaxant
- ▶ Nervine
- ▶ Antispasmodic
- ▶ Gastrointestinal nervine
- ▶ Sedative/hypnotic in larger doses
- ▶ GI and Systemic anti-inflammatory
- ▶ Combines well with Hypericum as a tea for general nervine effects
- ▶ Combines well with Scutellaria and/or Verbena when heat signs present with insomnia, as a tea. (never boil Scutellaria)

Scutellaria tea vs tincture

- ▶ The tincture of Scutellaria has general relaxant, anti-anxiety, and antispasmodic effects. Pairs well with Passiflora tincture to add sedation.
- ▶ Very little sedative or hypnotic effect **unless** patient is in state of sleep deprivation.
- ▶ The decoction of Scutellaria has **strong sedative/hypnotic** effects. **Never boil.** Combines well with Matricaria and other sedative/hypnotics.

Hypericum as a nervine

- ▶ Relieves both anxiety and depression
- ▶ Promotes liver clearance of stress hormones and other substances
- ▶ Gently reduces general system tension and irritation
- ▶ Topical forms for nerve injury.
- ▶ (also disinfectant, vulnerary, anti-biofilm, anti-inflammatory locally)

Anodyne herbs

THESE HERBS WILL DULL THE SENSATION OF PAIN,
RELAX THE PATIENT, AND RELAX MUSCLE TENSION

The Pain Complex

- ▶ Injury or inflammation
- ▶ Physical pain (chemical trigger)
- ▶ Tension or spasm causing pain
- ▶ Tension or spasm from guarding
- ▶ Systemic tension
- ▶ Psycho-spiritual response/emotional exhaustion
- ▶ Nervous exhaustion and hypersensitivity
- ▶ Chronic insomnia and fatigue
- ▶ Depression with long term pain

Piscidia – Jamaica dogwood

- ▶ Significant anodyne in British/American colonial medicine in North America
- ▶ Major anodyne in medical level herbalism in 1800s.
- ▶ Anodyne, with antispasmodic properties, and mild sedative properties on the CNS.
- ▶ Perhaps the single most useful anodyne you could have if you could have only one.

Eschscholtzia – California poppy

- ▶ Mild but persistent anodyne effects
- ▶ Mild anti-spasmodic effects
- ▶ Mild sedative effects

The combination of *Piscidia* and *Eschscholtzia* covers most of the bases of the pain complex.

Corydalis species (Corydalis).




Corydalis scouleri *Corydalis aurea*– golden smoke

- Chinese *Corydalis yanhusuo* readily available in herbal marketplace.
- Easy to make tincture.
- If used as herb of abuse, may have negative neurological effects.

Lactuca species

- ▶ Many species of wild lettuce
- ▶ Medicine formerly prepared from the white latex of the plant = *lactarium*. Mild opium-like effect, but not opioid pharmacologically.
- ▶ Tincture when the latex is running.
- ▶ Requires larger doses, 2 droppers to a teaspoonful.
- ▶ A useful addition to pain formula but not very strong as a simple.
- ▶ Distinct relaxant, sedative, and anodyne effect **as a tea**, 4-6 ounce dose; may add tincture of other herbs to a tea of *Lactuca*.

Bitter and relaxant anodynes

Formula	Temp	Sedative	Anodyne	Antispasmodic	Anxiolytic
Corydalis 2	warm	mild	x	x	
Eschscholtzia 3	cool	mild	x	x	x
Anemone 1	cool		x		x
Piscidia 2	cold	mild	x	x	
Lactuca 4	cold	mild	x	x	

May be used as a tincture formula; or tincture of the first five herbs put into 4-6 ounces of *Lactuca* tea.

Salicylate-containing herbs

- ▶ Most salicylate-containing herbs probably act through other constituents or through humoral effects.
- ▶ None have the broad multiple actions of the Anodyne group
- ▶ *Salix* (willow bark) itself has few salicylates, and it primarily acts as a bitter tonic. Traditional energetics "Cooling, drying, draining."
- ▶ *Populus* species were greatly preferred to *Salix* by MD-herbalists of the 19th century. Contain salicin and populin with similar metabolic end products.
- ▶ *Filipendula* (Meadowsweet) contains medicinal amounts of aromatic methyl salicylate. Take 6-12 ounces of strong tea.

Antispasmodic differentials

▶ <i>Viburnum opulus</i>	sl. cool	smooth/skeletal	non-sedating
▶ <i>Dioscorea</i>	sl cool	smooth	non-sedating
▶ <i>Paeonia</i>	sl cool	smooth/skeletal	sedative
▶ <i>Pedicularis</i>	sl cool	skeletal	sedative
▶ <i>Lobelia</i>	neutral	smooth/skeletal	non-sedating
▶ <i>Piscidia</i>	cool	skeletal	sedative
▶ <i>Actaea rac</i>	cool	smooth/skeletal	non-sedating
▶ <i>Caulophyllum</i>	warm	smooth/skeletal	non-sedating
▶ <i>Piper meth</i>	warm	skeletal	non-sedating
▶ <i>Valeriana</i>	warm	smooth/skeletal	sedative

Antispasmodic differentials

- Smooth/Skeletal**
 - ▶ Viburnum op.
 - ▶ Paeonia
 - ▶ Lobelia
 - ▶ Actaea
 - ▶ Caulophyllum
 - ▶ Valeriana
- Skeletal muscle specific**
 - ▶ Pedicularis
 - ▶ Piscidia
 - ▶ Piper meth
- Smooth muscle specific**
 - ▶ Dioscorea

Antispasmodic differentials

- Non-sedating**
 - ▶ Viburnum
 - ▶ Dioscorea
 - ▶ Lobelia
 - ▶ Actaea
 - ▶ Caulophyllum
 - ▶ Piper methysticum
- Sedating**
 - ▶ Paeonia
 - ▶ Pedicularis
 - ▶ Piscidia
 - ▶ Valeriana

Piper is relaxant, antispasmodic, useful for anxiety, but is not hypnotic. Groups of people taking kava relax and talk non-stop at a party.

Antispasmodics, anodynes, and sleep

Viburnum op
Viburnum prun
Dioscorea
Paeonia
Actaea
Caulophyllum
Piscidia
Eschscholtzia
Valeriana
Piper meth
Pedicularis

- The brain monitors the body for states of tension which can cause the failure to relax or to fall asleep
- Always include an antispasmodic in an anxiety or sleep formula, proportional to systemic tension in the individual.
- Antispasmodic sedatives
- Always include at least one broad anodyne whether or not pain is a chief complaint
- Though not hypnotic, Piper can assist by relieving anxiety and relaxing the muscles.

Viburnum differentials

- Viburnum opulus** Cramp Bark
 - ▶ Bitter, slightly cool, slightly dry
 - ▶ Antispasmodic
 - ▶ **Relaxant**
 - ▶ Best general antispasmodic affecting both smooth and skeletal muscles
 - ▶ Combines well with Dioscorea, Paonia, and/or Lobelia for menstrual cramps, gall-bladder colic, kidney colic, intestinal colic, etc.
- Viburnum prunifolium** Black Haw
 - ▶ Bitter, slightly cool, slightly dry
 - ▶ Antispasmodic
 - ▶ **Tonic/astringent**
 - ▶ Astringent to diarrhea
 - ▶ Best antispasmodic or tonic for atonic pelvic structures, prolapse, etc.
 - ▶ Combine as appropriate with Actaea, Caulophyllum, or Senecio aureus.

Some stronger sedatives

- ▶ Scutellaria As tea, do not boil. **Cool**
- ▶ Valeriana **Warm**, cerebral stimulant may aggravate insomnia
antispasmodic, hypnotic
- ▶ Humulus **Cold**, bitter, hypnotic may aggravate depression
- ▶ Piscidia Cool, bitter, anodyne small to moderate doses
antispasmodic

Sample acute pain formula

- ▶ Relaxant
 - ▶ Scullcap 3 parts
 - ▶ Jamaica dogwood 1
 - ▶ California poppy 1
 - ▶ Corydalis 1
 - ▶ Cramp bark 1
 - ▶ Wild yam 1
 - ▶ Peony root 1
- ▶ Anodyne
- ▶ Antispasmodic
- ▶ Other
 - ▶ Ginger, Rosemary, or Cayenne 1

Avoid sedatives by day, include at night

- ▶ Scullcap tea, Decoction. **Never boil**. Coffee hotplate for 20-40 minutes. Reliable sedative without hangover.
- ▶ Valerian. Warm in energy may be overstimulating to some. May cause hangover.
- ▶ Hops. Cold in energy, may cause or aggravate depression
- ▶ Combination of Valerian/Hops may be better than either one alone.

Cohosh differentials

- ▶ *Actaea (Cimicifuga) racemosa* Black Cohosh
- ▶ *Actaea alba/rubra/pachypoda* Red/white Cohosh
- ▶ *Caulophyllum thalictroides* Blue Cohosh

Actaea alba/rubra/pachypoda



- ▶ For clinical uses, *Actaea racemosa* and *rubra/alba/pachypoda* may be used interchangeably in all regards (Per J.U. Lloyd)
- ▶ The berries (doll's eyes) are toxic, leading to the rumor that the entire plant is toxic.
- ▶ No fatalities have ever been recorded from the berries of this species
- ▶ Unlike *Actaea racemosa*, this plant does not grow in abundant stands, and is generally unavailable in the commercial marketplace

	<i>Actaea</i>	<i>Caulophyllum</i>
Temperature	cool	warm
Humidity	dry	dry
Tone	relaxant	relaxant
Taste/action	bitter, sweet, pungent	bitter, slightly pungent, sweet
Tissues	nerves, smooth and skeletal muscle, uterus mucous membranes, lungs, bronchial tract	nerves, smooth and skeletal muscle, uterus, mucous membranes
Clinical actions	antispasmodic, nervine tonic, expectorant, antidepressant, cough relaxant	antispasmodic, uterine tonic, cough relaxant

Antispasmodic, menstrual pains, atonic uterus, obstetrics

Black and Blue Cohosh

- ▶ These are unrelated botanically and pharmacologically
- ▶ Both are bitter, pungent, sweet, dry, relaxant, and vital stimulant
- ▶ Black cohosh is somewhat **cool**
- ▶ Blue cohosh is somewhat **warm**
- ▶ Both are primarily nervines, affecting the other tissues through nervous tone.
- ▶ Both affect nerves, brain, smooth and skeletal muscles, mucous membranes, lungs and bronchial tract

- ▶ Black cohosh may also affect the **serous membranes**
- ▶ Blue cohosh affects the **cardiac muscle** (relevant to fetal toxicity)
- ▶ Both are **nervine tonic**, antispasmodic, uterine tonic, and somewhat emmenagogue
- ▶ Black cohosh is also **expectorant**
- ▶ Blue cohosh also relieves **irritation of the mucous membrane**
- ▶ Both are antispasmodic to the cough reflex.
- ▶ Black cohosh is **antidepressant** (the most often used antidepressant of the Eclectics)
- ▶ Black cohosh in higher doses affects the vaso-motor area of the hypothalamus and may reduce hot flashes in menopause (concentrated standardized extract)

Traditional uses of the pair

- ▶ Antispasmodic for the uterus
- ▶ Tonic for the atonic uterus: add Leonurus
- ▶ Antispasmodic for rheumatism
- ▶ Partus preparator (see cautions)
- ▶ Parturient (see cautions)

Cautions with obstetrical use

- ▶ Traditional native use of Blue cohosh to prepare for childbirth is a false claim attributed on the report of "Indian Doctor" Peter Smith of Cincinnati, a white Protestant preacher. The report was reproduced by famous botanist Constantine Rafinesque in 1828, and then persisted in medical literature and practice.
- ▶ The Physiomedicalists used Blue cohosh as part of the Mother's Cordial formula from 1826 onward to the present. *Mitchella repens* (Partridge berry), *Caulophyllum thalictroides* (Blue cohosh), *Viburnum opulus* (Cramp bark), and *Chamaelirium luteum* (False unicorn)
- ▶ Traditional use in obstetrics is as a relatively high dose of the tea, or a low dose of the tincture.

Two infant fatalities

- ▶ In 1998, the death of an infant from heart failure immediately after birth was reported in the scientific literature, follow by a second case in the following year.
- ▶ In the 1998 death, the midwife had prescribed large doses of blue cohosh powder, rather than the traditional forms of decoction or tincture. The powder contain the alcohol soluble constituents at 30-60 times the concentration in tincture.
- ▶ The constituents affected the fetal heart muscle, causing hypertrophy and heart failure.
- ▶ http://medherb.com/Materia_Medica/Caulophyllum_-_Cardiotoxic_effects_of_Blue_Cohosh_on_a_fetus.htm
- ▶ http://medherb.com/Materia_Medica/Caulophyllum_-_Historical_use_of_Caulophyllum_in_Childbirth.htm

Actaea/Caulophyllum in childbirth

- ▶ The combination can strengthen inefficient contractions
- ▶ Typically used for stalled labor in the exhausted mother
- ▶ Should never be used to induce contractions or initiate labor.
- ▶ Promotes contractions, but does not ripen the os or initiate full labor.
- ▶ The result is hours/days of inefficient contractions, followed inevitably by surgical birth.

Rheumatism

- ▶ For more than 100 years Physiomedicalist physicians used a simple combination of Actaea and Phytolacca (caution) to treat "muscular rheumatism."
- ▶ The traditional use of Actaea is for heavy aching muscles, from whatever the cause: rheumatic processes, stages of fever, over exercise, etc.
- ▶ Actaea used in both acute and chronic rheumatism; Caulophyllum commonly used in acute rheumatism.
- ▶ May use the pair with the addition of Zanthoxylum

Gynecology

- ▶ Both plants used for menstrual cramping
- ▶ Both indicated for atonic states of the muscle
- ▶ Both indicated for ovarian pain: add Leonurus
- ▶ Caulophyllum relieves irritated tissues of uterus or the urethra (males/females)
- ▶ Both plants are emmenagogue, but this is secondary to the above effects.

Neurology

- ▶ Convulsions: Traditional use of Caulophyllum over 100 years of Physiomedicalist practice, combined with Lobelia.
- ▶ Actaea used in combination with Scutellaria for convulsions
- ▶ Actaea used for the headache of meningitis.
- ▶ Caulophyllum combined with Lobelia for headache
- ▶ Actaea used with Zanthoxylum for tinnitus.

Respiratory

- ▶ Both cohoshes are relaxant to the cough reflex
- ▶ Actaea is expectorant
- ▶ Caulophyllum is soothing to the irritable membranes
- ▶ Used for the spasmodic cough of Pertussis, asthma, or catarrhal cough, in combination as a pair with Lobelia
- ▶ Combine with herbs such as Aralia, Prunus, and or Lobelia.
- ▶ Wm Cook: 8 ounces of Actaea, 12 oz syrup simplex, 1 oz lobelia, for dry spasmodic cough
- ▶ T.J. Lyle: Caulophyllum and Lobelia 2 drams each in 4 ounces of syrup of Zingiber. ½ tsp per four hours for catarrhal cough.

Actaea and hot flashes

- ▶ Demonstrated with concentrated standardized extracts (Remifemin). Composition is proprietary and unknown. Dose is 40 mg of the concentrate.
- ▶ Constituents interact with the vaso-motor areas of the hypothalamus.
- ▶ **Usually does not work** with tincture doses.
- ▶ Remifemin may have adverse effects on the liver, producing changes in liver enzymes within a few weeks of use.
- ▶ Other side effects, besides frontal headache, are muscle tension and muscle pain.
- ▶ May interact with statin drugs to produce abnormal liver enzymes.

Actaea safety

- ▶ Classic side effect with dose too large or too long is a frontal headache.
- ▶ Dizziness
- ▶ Taken persistently it may cause muscle and joint aches and pain, physical tension and headache.
- ▶ Standardized extracts may cause liver irritation as measured by elevated liver enzymes.
- ▶ Standardized extracts may interact with previously tolerated statin drugs to cause elevation of liver enzymes.

Mint differentials

Properties common to some mints

- ▶ *Mentha arvensis*
 - ▶ *Mentha piperita*
 - ▶ *Mentha spicata*
 - ▶ *Mentha pulegium*
 - ▶ *Hedeoma pulegoides*
 - ▶ *Melissa officinalis*
 - ▶ *Nepeta cataria*
 - ▶ *Thymus vulgaris*
 - ▶ *Monarda* spp.
- ▶ Relaxant
 - ▶ Aromatic/circulation
 - ▶ Carminative/digestive
 - ▶ Diffusive/Cooling diaphoretic
 - ▶ Emmenagogue
 - ▶ Mucous membrane circulation

Distinguishing properties and constituents

<i>Mentha arvensis</i>	relax liver chi	menthol 70%/menthone
<i>Mentha piperita</i>	digestion; relax liver chi; anti-herpes	menthol 40%/ menthone
<i>Mentha spicata</i>	mild, not emmenagogue, children	little menthol/but carvone
<i>Mentha pulegium</i>	emmenagogue, not abortive	pulegone 90%/menthones 12%
<i>Hedeoma pulegoides</i>	emmenagogue, not abortive	pulegone 30%/menthones 12%
<i>Melissa officinalis</i>	nervine/herpes	citral
<i>Nepeta cataria</i>	bitter nervine children	nepetalactones
<i>Thymus vulgaris</i>	lung relaxant / steam for biofilm/ anti-herpes	thymol or carvacrol
<i>Monarda</i> spp.	diaphoretic / steam for biofilm/ anti-herpes	thymol

Mints with antifungal effects

- ▶ Mints containing the essential oils thymol, carvacrol, or carvone possess remarkable and broad topical antifungal effects, at very low concentrations, against both candida and fungal dermatophytes.
- ▶ Thymol: Thymus and Monarda spp., Oregano
- ▶ Carvacrol: Thymus and Oregano spp.
- ▶ Carvone: Mentha spicata.

The pennyroyals

Mentha pulegium European pennyroyal 80% pulegone
Hedeoma Pulegoides America pennyroyal 30% pulegone

- ▶ These plants have a strong emmenagogue effect
- ▶ The Herban Legend that the essential oil is abortifacient has led to several fatalities. The **concentrated constituent pulegone is hepatotoxic**.
- ▶ In each case that was followed, ½ to 1 ounce of the essential oil of *Mentha pulegium* was used.
- ▶ Only one case has been recorded to produce abortion, and this was a fatality, followed by death.

Mints with anti-herpes effects

At least six mint family plants were shown by the mid-1980s to possess topical effects against the Herpes virus, including *Melissa*, *Hyssopus*, *Mentha*, *Prunella*, *Rosmarinus*, *Thymus*, and *Salvia*. Of these only *Melissa* gained a reputation

Plant	Number of constituents
▶ <i>Thymus</i>	14
▶ <i>Rosmarinus</i>	9
▶ <i>Salvia</i>	9
▶ <i>Mentha piperita</i>	7
▶ <i>Melissa</i>	4
▶ <i>Monarda</i>	2 (high thymol)

Bitter mints

- ▶ *Leonurus*
 - ▶ *Lycopus*
 - ▶ *Verbena*
 - ▶ *Nepeta*
 - ▶ *Maribuum*
- ▶ Cool energy
 - ▶ Dry humidity
 - ▶ Varying degrees of bitter and pungent
 - ▶ Diffusive diaphoretic taken hot
 - ▶ Diuretic taken cold
 - ▶ Emmenagogue
 - ▶ Bitter tonics

	Tone	Nervine sedative	Respiratory effects
<i>Leonurus</i>	relaxant	yes	relaxes deepens
<i>Lycopus</i>	relaxant	yes	sedative; astringent; bloody cough ; free expectoration, chronic cough
<i>Verbena</i>	relaxant	yes	expectorant asthma whooping cough
<i>Nepeta</i>	relaxant	mild	antitussive/asthma
<i>Marrubium</i>	tonic	no	stim expect, astringent to free expectoration

Cardiovascular/endocrine effects

- ▶ Leonurus and Lycopus relax heart palpitations, slow a racing pulse, and relax a tense pulse.
- ▶ Effects can be felt within a few moments
- ▶ This combination has been used in European herbalism for "mild hypothyroid."
- ▶ Repeated clinical trials in Germany showed no actual effects on any parameter of thyroid status.
- ▶ The traditional German term for "mild hypothyroid" is based entirely on symptomology and not on actual endocrine status.
- ▶ Subjects admitted to clinical trial without hormonal hyperthyroid
- ▶ Effects are almost certainly symptomatic
- ▶ BUT: occasional credible case reports of improvement of hypothyroid or Graves disease with persistent use of Lycopus.

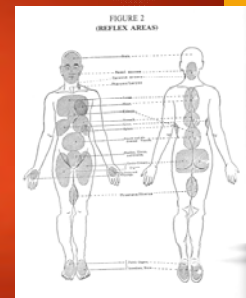
Liver Chi differentials

Liver chi

Different circulatory beds in the body can become more engorged or more depleted of blood depending on physiological demand

The reflexes that shift circulation between areas are called the "Liver Chi".

The condition of engorgement of the portal beds and liver, accompanied by systemic tension, is called Constrained Liver Chi.



Related syndromes

- ▶ If the head also becomes engorged by reflex, this is called **Liver Fire Rising**
- ▶ If the hands and/or feet become contracted and cold, this is called **False Cold**.
- ▶ The pelvic area may also become contracted or alternately contracted then engorged as part of this picture
- ▶ This syndrome is present in about one-third of contemporary student bodies of herb schools, and about the same in a public clinic
- ▶ The root of this in the lifestyle is nearly always food intolerance with systemic inflammation.
- ▶ Other causes: exogenous hormones, alcohol abuse.

Symptoms

- ▶ Presentation with heat at the middle and cold hands and feet
- ▶ Frustration
- ▶ Irritability and impatience
- ▶ Physical tension
- ▶ PMS
- ▶ Menstrual irregularities
- ▶ Headache
- ▶ Migraine
- ▶ Allergies, acne, or other heat signs in the head.

Herbal remedies

- ▶ The classical Chinese herb for this condition is *Bupleurum* (in formula only). This herb has complex action. It can relieve constrained chi, but it can also "raise the yang" and produce a headache. It is not appropriate for use as a simple, or by those who are not versed in TCM assessment.
- ▶ On traditional Western herb for this condition is *Tanacetum parthenium*, Feverfew, which is a folk remedy in England for migraine headache. Note that folks use the fresh plant as a preventive to reduce their migraine frequency. In clinical trial, it is statistically significant compared to placebo, but is not clinically significant, reducing migraine frequency by about 25%.
- ▶ It is possible that large doses of the tincture can abort a migraine if taken at the first sign.

<i>Mentha arvensis</i>	Strong effect	cooling diaphoretic	1
<i>Mentha piperita</i> If <i>M. arv.</i> Not available	moderate effect	cooling diaphoretic	2
<i>Rosmarinus</i>	very hot	hot	1
<i>Lavandula</i>	mild sedative	warm	4
<i>Foeniculum</i>	antispasmodic (not diffusive or emmenagogue)	warm	2
<i>Paeonia</i>	strong sedative antispasmodic (not diffusive)	cool	2
<i>Tanacetum parthenium</i>	traditional for migraine	cooling bitter diaphoretic	2

Expectorant differentials

Stimulating expectorants

Each is stimulating (irritating) and dry. Deliver in syrups or oxymels

<i>Grindelia</i>	general	warm	bitter		
<i>Inula</i>	subacute, chronic, never in dry	warm	bitter	diaphoretic	
<i>Osha/Oshala</i>	acute/chronic	warm	slt bitter	diaphoretic	emmenagogue
<i>Marrubium</i>	astringent	cool	very bitter	diaphoretic	emmenagogue

Oxymel

- ▶ **Mixed water and vinegar decoction:** Take 6 ounces of assorted herbs in a cough formula. Add to 2 ½ pints of water and ½ pint vinegar. Simmer to 1 quart. Strain. Add any aromatic herbs or tinctures at this point. Add 1 pint of honey and simmer briefly to the consistency of a syrup.
- ▶ **Water decoction:** Place one ounce of an herb in one quart of water. Reduce to a pint and a half. Strain. Add 4 ounces of vinegar and 4 ounces of honey.
- ▶ **Tincture:** 1 pint of apple cider vinegar and 2 1/4 lbs of honey. Combine in a pot and simmer to the consistency of syrup. Tinctures can be delivered in a ratio of 1 part tincture to 3 parts of oxymel.

Relaxant expectorants

Each is relaxant, dry, and diffusive/diaphoretic.

<i>Lobelia</i>	complex	cool	bitter	
<i>Asclepias</i>	add ginger; serous membranes	cool	bitter	
<i>Tussilago</i>	general	cool	slt bitter	
<i>Thymus</i>	also inhale steam	warm/cool	bitter	emmenagogue
<i>Pimpinella</i>	mild for children	warm	sweet	emmenagogue

Expectorants with complex action

Verbascum

- ▶ Relaxant to cough reflex and respiration, somewhat demulcent, but stimulating expectorant.
- ▶ Can irritate a very dry cough.
- ▶ Useful in moist but unproductive cough with irritation

Prunus

- ▶ Tonic astringent general effect, but relaxant expectorant.
- ▶ If prepared properly, sedative to the cough reflex.
- ▶ Cold water extraction for 12-18 hours, deliver as syrup.

Combinations with Verbascum

- | | | | |
|-------------|-----------------------------|-----------|--------------|
| ▶ Verbascum | Complex | Verbascum | Complex |
| ▶ Marrubium | Stimulant/astringent | Grindelia | Stimulant |
| ▶ Tussilago | Relaxant | | Moist asthma |
| ▶ Lobelia | Relaxant | | |
| | Acute or chronic bronchitis | | |
| ▶ Verbascum | Complex | | |
| ▶ Tussilago | Relaxant | | |
| ▶ Inula | Stimulant/tonic | | |
| | Chronic bronchitis | | |

- | | |
|----------------------|--------------------------------------|
| ▶ Verbascum thapsis | Tonic to membrane, relaxant to cough |
| ▶ Thymus vulgaris | Relaxant |
| ▶ Trifolium pretense | Relaxant alterative |
| ▶ Glycyrrhiza glabra | Demulcent |

Decoction, taken with elderberry syrup.

Allowed nursing mother to sleep through the night for the first time with chronic post viral cough

Hot herb differentials

Synergists and Corrigents

- ▶ A large portion of medicinal herbs are cold in their energy.
- ▶ An Ancient aphorism: "Cold herbs should not be taken persistently."
- ▶ This may be modified by adding warming "corrigents" (correctors) to a formula.
- ▶ For instance: add a small portion of Capsicum to any tincture formula as an adjuvant to warm it up and promote circulation. Can easily overwhelm the formula.
- ▶ Consider also Zanthoxylum (Prickly Ash) for the same purposes, not as hot but more stimulating.
- ▶ For less heating effect is a more fragile constitution, use Zingiber in the same manner.

		Anti-inflammatory	Antidiabetic	Aphrodisiac
Cinnamomum cassia	warm 2 dry 2	x	x	x
Cinnamomum zeylanicum, verum	warm 2 dry 2	x	?	x
Elettaria (Amomum)	Warm2, dry 2	x	x	
Boswellia	warm 2 dry 1	x	x	
Zingiber	warm 3 dry 1	x	x	
Curcuma	warm 3 dry 3	x	x	
Eugenia	warm 3 dry 3	x		x
Capsicum	warm 3 dry 3	x		

Corrigent/synergists in U.S. National Formulary (1906) and USP (1870)

- ▶ Cinnamon and clove pair, or the Cinnamon, clove, and nutmeg triplet, used in many formulas as a warming aromatic synergist/corrigent
- ▶ In approximately equal parts to correct an antispasmodic tincture of *Viburnum opulus*, *Disocorea*, and *Scutellaria*
- ▶ In equal parts as corrective to wine tincture of opium.
- ▶ Cinnamon 2, Eugenia 2, Myristica 1 in syrup as corrective to Rheum
- ▶ Cinnamon 4, Eugenia 1, Myristica 1 as component of blackberry juice cordial

- ▶ Cinnamomum 8, Eugenia 2, Myristica 1, Zingiber 1, Mace (Myristica) 1 as corrective in blackberry root elixir.
- ▶ Cinnamon 3, Eugenia 3, Myristica 2, and Foeniculum 6, 60 drops in 4 oz of glycyrrhiza tincture as synergist/corrigent
- ▶ Cinnamomum 8, Eugenia 3, Cardamomum 2 corrigent/synergist
- ▶ Aromatic powder, USP 1870: Cinnamomum 2, Zingiber 2, Myristica 1, Cardamomum 1.
- ▶ Cinnamomum 5, Zingiber 2, Eugenia 1, Cardamom 1, Alpinia 1, Aromatic tincture, NF 1906

Exhilarant

- ▶ In Unani medicine, an exhilarant is an herb which lifts up the spiritual heart and stimulates the vital centers in the heart and brain. The concept seems to have originated with Ibn Sina.
- ▶ Of the herbs in this section, both Cinnamon species, as well as Cardamom and Boswellia are classical exhilarants.
- ▶ They combine well for this purpose with *Ocimum* spp, *Coriandrum*, *Centella*, *Rose*, *Melissa* and/or the mints.
- ▶ An exhilarant portion can be added as a part to any formula for a patient "in low spirits."
- ▶ The use of corrigents and exhilarants may have passed to North American medical pharmacy by tradition, with the original meaning lost. Pharmacists in the NF and USP call these "flavoring agents."

Thomson's Composition Powder

Original Thomson formula Formula of Wm Cook (1869)

▶ Myrica	16 oz	16 oz
▶ Zingiber	8 oz	16 oz
▶ Cinnamon	2.5 oz.	---
▶ Eugenia	1 oz	---
▶ Capsicum	1 oz	4 drams
▶ Pinus		4 oz
▶ Zanthoxylum		4 drams

Used for diaphoresis and systemic stimulation
Used as portion of larger formula, adding heat and stimulation to the formula

To warm cold patient

The patient is cold all over, intolerant of cold.

- ▶ Zingiber, dry
- ▶ Cinnamomum cassia or verum
- ▶ Foeniculum

Equal parts, as powder or tincture.

Use in larger or smaller portions of formula depending on constitutional heating effects (higher doses) or corrigent effects to the other herbs (lower doses)

In Chinese medicine, the three herbs are considered to warm the three "burners," metabolic centers in the chest, abdomen, and pelvis

Anti-inflammatory compound

- ▶ 2 parts Curcuma
- ▶ 2 parts Zingiber
- ▶ 1 part Boswellia

As powder or tincture

Modify to correct dryness. Use honey and lemon.

Correct with Glycyrrhiza if short term use.

May substitute or add a part of *Elettaria*

Antidiabetic compound

- ▶ *Cinnamomum cassia*
- ▶ *Curcuma*
- ▶ *Boswellia*
- ▶ *Zingiber*
- ▶ *Elefaria*

3 grams of powder, 3 times per day.
Take in moist modifying cooling food, such as applesauce or yoghurt, or mix into nut butter. Take with honey and lemon.

May not be sustainable due to heat.

Aphrodisiac compound

- ▶ 2 parts *Cinnamomum cassia* or verum
- ▶ 1 part *Eugenia*
- ▶ Dose of powder: 1-2 grams
- ▶ Alone or in combination with herbs such as *Turnera aphrodisiaca*
- ▶ Take in moist modifying medium

Urinary differentials

	Temperature	Tone	Diuresis
<i>Solidago</i>	cool	astringent	strong
<i>Urtica leaf</i>	cool	astringent	strong
<i>Juniperus</i>	warm	tonic	strong
<i>Barosma</i>	warm	tonic	strong
<i>Zea</i>	cool	relaxant	moderate
<i>Apium</i>	warm slightly	relaxant	moderate
<i>Petroselinium</i>	warm slightly	relaxant	moderate
<i>Coffea/Thea</i>	neutral	tonic	moderate
<i>Taraxacum fol</i>	cool	tonic mild	moderate
<i>Eupatorium purp</i>	cool	relaxant	mild
<i>Galium</i>	cold	relaxant	mild
<i>Equisetum</i>	cool	tonic	mild
<i>Arctostaphylos</i>	cold	astringent	<i>not</i>
<i>Chimaphila</i>	cool	astringent	<i>not</i>

Diuretics
Arranged by strength, temperature, and tone
UTI or urolithiasis call for diuresis plus hydration

Urinary tract disinfectants

	Temperature	Tone	Diuresis	Disinfection	Antiinflammatory
<i>Arctostaphylos uva ursi</i>	cool	astringent	arbutin		
<i>Arctostaphylos columbianum</i>	cool	astringent	arbutin		
<i>Arbutus spp</i>	cool	astringent	high arbutin		
<i>Vaccinium</i>	cool/cold	astringent	high arbutin		
<i>Chimaphila</i>	cool	less astringent	less arbutin		
<i>Juniperus</i>	warm	tonic	e.o.		
<i>Barosma</i>	warm	tonic	e.o.		
<i>Achillea</i>	warm/cool	tonic	e.o.		
<i>Thymus/Mondarda</i>	warm	relaxant	e.o.		

Urinary tonic/astringents	Temperature	Tone	Diuresis	Disinfection	Antiinflammatory
<i>Arctostaphylos</i>	cold	astringent		arbutin	
<i>Solidago</i>	cool	astringent	strong		x
<i>Urtica leaf</i>	cool	astringent	strong		x
<i>Chimaphila</i>	cool	astringent		arbutin	
<i>Capsella</i>	cool	astringent			
<i>Vaccinium</i>	cool/cold	astringent		arbutin	
<i>Urtica root</i>	neutral	astringent			x
<i>Equiselum</i>	cool	tonic	mild		
<i>Coffea/Thea</i>	neutral	tonic	moderate		
<i>Juniperus</i>	warm	tonic	strong	e.o.	x
<i>Barosma</i>	warm	tonic	strong	e.o.	
<i>Achillea</i>	warm/cool	tonic		e.o.	x
<i>Taraxacum fol</i>	cool	tonic mild	moderate		x

Urinary relaxants	Temperature	Diuresis	Disinfection	Antiinflam matory	Demulcent
<i>Galium</i>	cold	mild		x	
<i>Zea</i>	cool	moderate		x	x
<i>Eupatorium purp</i>	cool	mild			
<i>Hydrangea</i>	cool			x	x
<i>Althaea</i>	cool			x	x
<i>Thymus/Mondarda</i>	warm		e.o.	x	
<i>Apium</i>	warm slightly	moderate		x	
<i>Petroselinium</i>	warm slightly	moderate		x	
<i>Anethum</i>	warm slightly			x	

UTI formula

<i>Echinacea</i>	cool		Immune stimulant
<i>Arctostaphylos</i>	cold	astringent	arbutin
<i>Chimaphila</i>	cool	less astringent	less arbutin
<i>Juniperus</i>	warm	tonic	e.o.
<i>Hydrangea</i>	cool	relaxant	demulcent
<i>Althaea</i>	cool	relaxant	demulcent

Bitter herb differentials

Humoral effects of the bitter taste

- ▶ Cooling to cold
- ▶ Drying
- ▶ Draining
- ▶ Tonic/astringent
- ▶ Sinking
- ▶ Chinese: for heat, stomach heat, other forms of heat
- ▶ Western: heat with dampness.

The Cold Injury of Bitter Herbs

- ▶ Culpeper: Life is warmth and cold is death, and that is why the Good Lord has placed so many warming herbs on the face of the Earth. And that is why cold herbs should not be persisted in.
- ▶ A caution from the times of Hippocratic and Galenic medicine
- ▶ A standard warning in Chinese medicine.
- ▶ Caution with persistent, and especially habitual use.

Case study.

- ▶ A woman in her late teens came with digestive and skin issues. The presentation was hot, and the patient reported lifelong signs of a warm constitution.
- ▶ An herbalist recommended a tincture of equal parts Taraxacum and Mahonia, 1-2 droppers 3-4 times a day. This was to be an initial short-term treatment.
- ▶ The patient did not return for follow-up, but refilled the tincture on her own.
- ▶ Within six weeks, the woman's digestion was cold and deficient, and she has prominent signs of constitutional cold.
- ▶ A restorative program for more than 2 months failed to correct her cold metabolism and digestion.

Sings of heat in the physiology

- ▶ Heat Signs and types of heat
- ▶ red face, red eyes
- ▶ red tongue
- ▶ yellow tongue coat
- ▶ yellow sputum
- ▶ feelings of heat (soles, palms, chest) (fewer clothes or bed covers)
- ▶ agitation, insomnia
- ▶ dry throat
- ▶ dark scanty urine
- ▶ hot burning urination
- ▶ yellow vaginal discharge
- ▶ dry stool

Cautions

- ▶ Cold and dry patient
- ▶ Patient with cold and/or dry digestion
- ▶ Dry patient with heat signs (False fire/Deficient Yin)
 - ▶ Mild bitters, never strong.
 - ▶ Demulcent bitters (see section in slide show)

Modification in formula

- ▶ Commonly a portion of warming herbs is added to a bitter formula
- ▶ In Physiomedical medicine, bitters would be delivered in syrups, which will counter the drying effects
- ▶ Ginger Syrup (warming, plus moistening)
- ▶ Prunus syrup (tonic/astringent plus moistening)
- ▶ Neutralizing cordial (balanced warm/cool plus moistening)

Bitter Alteratives

- ▶ Herbs which support or stimulate one or more avenues of physiological detoxification.
- ▶ Liver, Kidney, Bowel, Extracellular (immune), nutritive
- ▶ Most alteratives are bitter, cold, drying, and draining.
- ▶ Most alteratives should be given with consideration for the humoral requirements for bitters, specifically best suited to warm and damp conditions, contraindicated in cold and dry.

Differentiate warm vs cool alteratives

Bitter and cold

- ▶ Arctium
- ▶ Taraxacum
- ▶ Mahonia
- ▶ Eupatorium perfoliatum
- ▶ Hydrastis
- ▶ Rumex
- ▶ etc

Warm to hot

- ▶ Juniperus
- ▶ Anemopsis
- ▶ Thuja
- ▶ Allium
- ▶ Solanum dulcamara

- ▶ Traditional alterative formulas typically modified with Capsicum, Zingiber, Zanthoxylum and Syrup
- ▶ Juniper is excellent warming alterative and corrector for a cold formula. Pairs well in equal parts with Taraxacum

Bitter Tonic-Astringents

Stronger bitters with strong drying effects

- ▶ Gentiana
- ▶ Oregon Grape
- ▶ Hydrastis

Basis for digestive bitter formulas, combined with aromatic/carminative(s)

Gentiana

- ▶ Small doses as a simple may aid in the nausea of pregnancy (Ellingwood)
- ▶ Use alone in small doses of the tea or tincture as a pre-meal bitter tonic.
- ▶ Mix with Ginger in equal parts for a simple pair for weak digestion. Traditional variations (Gentiana:Zingiber 3:1 or 2:1)
- ▶ Combine with Citrus peel and Coriandrum for a stronger bitter tonic effect focused on the upper to increase appetite, digestive power, and assimilation.

- ▶ Combine with *Eupatorium perfoliatum* and a small amount of *Capsicum* for more effect on the secreting glands of the intestine and liver.
- ▶ Combine with *Eupatorium perfoliatum* and a stronger laxative, such as *Rheum*, *Aloe*, or *Cassia senna* for more directed effects to the lower bowel.
- ▶ Combine with *Hydrastis* and *Collinsonia* to tonify the portal venous system, as indicated by hemorrhoids or varicosities.

Hydrastis

- ▶ Chief digestive indication: atonic conditions of the stomach, intestines, and lower bowel.
- ▶ Per John Uri Lloyd (Eclectic pharmacologist) Hydrastis with the alkaloids removed is "the most powerful astringent in our materia medica."
- ▶ With *Gentiana* and *Cardamom* for atonic digestive system
- ▶ With *Filipendula* and *Matricaria* for stomach conditions
- ▶ As bitter alterative, base formula on Hydrastis:Arctium 1:4

Populus spp

- ▶ A primary bitter tonic/astringent of the Thomsonian/Physiomedical schools.
- ▶ Thomson: **Spiced Bitters** (modified). Indication: debility
 - ▶ Populus 14
 - ▶ Zingiber 4
 - ▶ Hydrastis 4
 - ▶ Cinnamomum 2
 - ▶ Eugenia 2
 - ▶ Zanthoxylum 1
 - ▶ Capsicum 1

18 parts bitter, 10 parts warming carminative; all parts are dry
Traditional to deliver as powder in equal parts of sugar, which corrects dryness

Milder bitters

- ▶ *Matricaria* is a primary mild bitter, with mixed carminative, anti-inflammatory, and mild sedative effects
- ▶ *Filipendula* is primary upper GI tract mild bitter.
- ▶ Many other herbs presented here are mild.
- ▶ Principle of vitalism: "Never use a strong herb when a mild herb will do."
- ▶ The combination of *Matricaria* and *Filipendula* is standard in Physiomedicalist tradition, with the addition of a third stronger bitter such as *Hydrastis*, *Artemisia*, or *Salvia*

Aromatic Bitters

Achillea, Artemisia, Salvia

- ▶ Aromatics modify the coldness of the bitter principles
- ▶ Each is diaphoretic taken hot, astringent/tonic and diuretic taken cold.
- ▶ Each is emmenagogue taken hot, hemostat taken cold.
- ▶ Cooling through bitterness or through diaphoresis
- ▶ *Artemisia* and *Achillea* are considered equivalents for substitution in Unani medicine.
- ▶ Combine *Artemisia* and *Salvia* 1:1 for most purposes.
- ▶ *Salvia* more astringent than the others
- ▶ *Pimpinella* (anise) used as corrective in Unani Tibb.

Bitter sedatives

Bitter sedatives

When insomnia, anxiety, and irritability are due to constitutional or environmental dryness, bitter sedatives may aggravate the condition as the effect of dryness outweighs the sedative effect. Best when heat signs are present.

- ▶ *Scutellaria*
- ▶ *Passiflora*
- ▶ *Verbena*
- ▶ *Humulus*
- ▶ For cold patient consider *Valeriana*, with bitter and warming constituents mixed.

- ▶ Correct with *Glycyrrhiza* in tincture
- ▶ Correct with *Althaea* in decoction
- ▶ Deliver in demulcent tea
- ▶ Use demulcent rather than sedative/hypnotic strategy
- ▶ See Bitter demulcents

Bitter laxative/tonics

IMPORTANT DIGESTIVE TONICS IN SUB-LAXATIVE DOSES

Berberis

- ▶ *Berberis vulgaris*.
- ▶ Bitter cholagogues in general are **laxative through effects of bile**
- ▶ Rheum off.
- ▶ *Cassia angustifolia*
- ▶ *Rhamnus purshiana/frangula* (Cascara sagrada/buckthorn)

Rheum off.

- ▶ Combines stimulant laxative effects with bitter tonic/astringent effects.
- ▶ Laxative properties are due to anthraquinone glycosides, but unlike other anthraquinone laxatives, its astringency tonifies the bowels after purgation, and the bitter effects tonify and normalize secretions of the stomach, intestines, and liver.
- ▶ In both Chinese and Unani medicine, as well as the Western tradition, it is noted for its uses in both constipation and diarrhea. Use smaller doses for diarrhea.
- ▶ Large doses are contraindicated in weak or feeble individuals, and heat signs should be present for administration of full doses, unless corrected with warming herbs.
- ▶ Full cathartic doses can induce a rebound constipation due to its astringency. This may also occur also with chronic use, so it is best suited for acute applications.

- ▶ For full catharsis, combine with Discorea and Zingiber (Priest)
- ▶ For functional dyspepsia, combine with Hydrastis (Priest, Ross)
- ▶ For constipation with heat, Combine with Taraxacum (Ross)
- ▶ Combine with Taraxacum to reinforce cooling effects and stimulation of digestive and hepatic secretions (NAIMH)
- ▶ Combine with Cinnamon to correct coldness, allows the herb to be given in a broader range of patients without distinct heat signs.
- ▶ Combine with *Rhamnus purshiana* for laxative purposes. (Ross) Both are laxative due to anthraquinone glycosides, but Rheum contributes astringency and *Rhamnus* and has broader bitter tonic effects.

Neutralizing Cordial

- ▶ Rheum 4 oz
- ▶ Mentha pip 8 oz
- ▶ Hydrastis 1 oz
- ▶ Cinnamomum 1 oz
- ▶ Potassium bicarbonate 1.5 oz.

Macerate in 1 qt of 40% alcohol. Add potassium after filtering. Add 4 lbs of sugar for basic simple syrup. Substitute Glycerine.

For variety of digestive complaints, with heat.

Use as delivery medium for stronger bitters.

Cassia

- ▶ Stronger than the other laxatives in this section
- ▶ Senna is better for one-time or short term use in acute constipation than for regular use in chronic conditions.
- ▶ After purgation, Senna leaves the bowels in a relaxed state. Compare to Rheum which has the opposite effect. For this reason it may be combined with bitter intestinal tonics, such as Gentiana or Eupatorium perfoliatum (Cook) or with Rheum and Mentha (Ellingwood).
- ▶ To correct the cold nature of this herb, various authors have combined with Coriandrum (Cook), Zingiber (Cook, Shook, Ellingwood), Capsicum (Ellingwood), or Piper nigrum (Ellingwood).
- ▶ In Unani medicine it is combined with Pimpinella and honey to modify the harsh cold and dry effects.
- ▶ The dryness of Cassia may also be corrected with Glycyrrhiza in an equal portion, then Foeniculum ½ part, in sugar, 6 parts. (Ellingwood).

Rhamnus purshiana, frangula

- ▶ Of benefit in digestive disorders generally, and influences stomach, liver, and gall-ducts, as well as the bowel.
- ▶ Tonifies the venous circulation in the intestines and is of use in hemorrhoids.
- ▶ In sub-laxative doses, combine with other bitters and/or carminatives as appropriate, Coriandrum or Elettaria.
- ▶ A simple pair with Zingiber is classical in Physiomedicalism
- ▶ Whelan: combine with plenty of Foeniculum
- ▶ Zingiber for jaundice Clymer

Simple formulas

- ▶ Rhamnus purshiana 20 parts
- ▶ Glycyrrhiza 6 parts
- ▶ Eugenia 1 part Physiomedical, T.J. Lyle

- ▶ Rhamnus purshiana 2 ounces
- ▶ Glycyrrhiza ½ ounce
- ▶ Pimpinella essential oil 1 dram
- ▶ Simple Syrup Sufficient to make 6 ounces
Eclectic, Harvey Felter

Alterative differentials

“Bad blood” signs and symptoms

Superficial

- ▶ Acne, boils, low grade fever, foul discharges, skin ulcers, swollen glands

Deep

- ▶ Chronic infection, abscesses, septicemia, gangrene

Deep and chronic

- ▶ eczema, psoriasis, emaciation, depression, chronic fatigue, arthritis, serious mental disturbances

Terminal

- ▶ Malignant tumors

**From Eclectic and Physiomedical literature of the 1800s

A Model of alterative therapy



Alterative herbs

Herbs which normalize the metabolism by supporting nutrition or improving the body's natural mechanisms of detoxification and which act "slowly, steadily, and moderately in improving the circulating fluids (Wm. Cook)"

Alteratives acting through nutrition

- ▶ *Trifolium pratense* – cool
- ▶ *Fucus vesiculosus* - dry
- ▶ *Medicago sativa* – neutral
- ▶ *Urtica spp.* – dry

Alteratives acting through immunity

- ▶ *Baptisia tinctoria* – cold
- ▶ *Echinacea spp* – cool dry
- ▶ *Allium sativum* – hot and very dry
- ▶ *Sambucus nigra* – cool and dry
- ▶ *Eupatorium perfoliatum* – cool and dry

Lymphatic alteratives

- ▶ *Arctium lappa*
- ▶ *Iris versicolor* – cold and dry
- ▶ *Solanum dulcamara* – hot and dry
- ▶ *Echinacea angustifolia*
- ▶ *Anemopsis californica* – warm and dry
- ▶ *Trifolium pratense* – cool
- ▶ *Galium aparine* – cool and dry

Alteratives affecting the liver

- ▶ *Rumex crispus* – cool and dry
- ▶ *Mahonia aquifolium* – cold and dry
- ▶ *Taraxacum officinalis* – cool and dry
- ▶ *Ceanothus americana* – cool and dry
- ▶ *Calendula officinalis* – neutral dry
- ▶ *Arctium lappa* – cool dry
- ▶ *Stillingia sylvatica* – acrid, dry

Alteratives affecting the bowel

- ▶ *Rheum palmatum* – cold and dry
- ▶ *Rhamnus purshiana* – cold and dry
- ▶ *Rhamnus frangula* – cold and dry
- ▶ *Stillingia sylvatica* – acrid and dry
- ▶ (cholagogues)
- ▶ (laxatives)

Alteratives affecting the skin

- ▶ *Rumex crispus* – cool and dry
- ▶ *Mahonia aquifolium* – cold and dry
- ▶ *Arctium lappa* – cool and dry
- ▶ *Trifolium pratense* – cool
- ▶ *Solanum dulcamara* – warm and dry
- ▶ *Stillingia sylvatica* – acrid and dry.

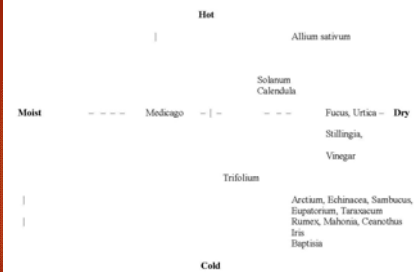
Alteratives affecting fluid excretion

- ▶ *Arctium lappa* – cool and dry
- ▶ *Galium aparine* – cool and dry
- ▶ *Sambucus nigra* – cool and dry
- ▶ *Taraxacum officinalis* – cool and dry
- ▶ *Urtica dioica* – neutral and dry
- ▶ *Juniperus* – warm and dry

Alteratives affecting tumors

- ▶ *Arctium lappa* – cool and dry
- ▶ *Trifolium pratense* – cool

The Herbal Energetics of some Alterative Herbs



Formulation

- ▶ Alterative formulas should include herbs that act on each mechanism of detoxification.
- ▶ Nutrition, Liver, Kidney, Lymph, Immune, Bowel
- ▶ "Whoever has the alterative categories in their formula wins."
- ▶ "Polycrest" alteratives which act through many methods may help to simplify a formula.

See PDF handout of Alterative Differentials

Alterative simples

Urtica

- ▶ Remarkable alterative for hot damp conditions of the joints.
- ▶ General alterative.
- ▶ Draining diuretic
- ▶ Anti-inflammatory.
- ▶ Exceptional nutritive.
- ▶ Dry but not hot or cold.
- ▶ Ok for general dietary use.
- ▶ Can counter dryness with Glycyrrhiza or Althea

Allium sativum

- ▶ Remarkable beneficial effects on digestion, blood composition (mild thinning) and immunity.
- ▶ Benefits cell-mediated immunity.
- ▶ About 1 clove a day in the diet is sufficient and suitable for dietary use.
- ▶ Cooked, powdered, or aged are suitable, provided they have garlic odor and flavor

Juniperus

- ▶ Berries
- ▶ from Fr. Kneipp: Take five berries on the first day, then six berries on the second, and so on until you reach 30 berries in a day. Then reduce by one a day until you reach 5 again.
- ▶ Kneipp "invariably" produced strong improvement in general health.
- ▶ This can be done as a course with small daily doses of the tincture.
- ▶ Bitter
- ▶ Aromatic
- ▶ Digestive tonic/stimulant
- ▶ Draining diuretic

Echinacea

- ▶ Not seen in older formulas
- ▶ Began to be mentioned as an alterative in the 1890s
- ▶ Used as such by Physiomedicalists, Eclectics, and N.D.s into the late twentieth century.
- ▶ Used as either tincture or tea.
- ▶ Tea form is very potent alterative through immune effects.
- ▶ Was not described as "immune stimulant" or a remedy for colds or flu until the 1980s

Eupatorium perfoliatum

- ▶ Traditional American colonial simple alterative
- ▶ Tea at room temperature or cold is predominantly alterative bitter tonic
- ▶ Tea taken warm is more pronounced relaxant diaphoretic
- ▶ Tincture has less diaphoresis than the hot tea, but still induces sweating through relaxant effects
- ▶ Emetic in larger doses.
- ▶ No one will thank you for how it tastes.
- ▶ Appalachian herbalist Tammie Bass would put at least a small amount of boneset in most of his formulas

Broad spectrum alteratives

	Temp	Liver	immune	lymphatic	kidney	bowel	skin	nutritive
Arctium	cool	mild	x	x	x	x	x	x
Eupatorium	cold	strong	x	x	x	x	x	
Larrea	cold	moderate	x	x	x	x	x	
Calendula	cool	mild	x	x	x		x	x
Plantago	cold	mild	x	x	x	x	x	x
Juniperus	warm	mild	x	x	x	x		

Paul's boil formula

Paul's boil formula	Temp		Liver	immune	lymphatic	kidney	bowel	skin	nutritive
Arctium	cool	8	mild	x	x	x	x	x	x
Urtica	neutral	5		x		x		x	x
Echinacea	cool	4		x	x			x	

Calendula, Plantain and leaky gut

Alterative properties

	Temp		Liver	immune	lymphatic	kidney	bowel	skin	nutritive
<i>Calendula</i>	cool	7	mild	x	x	x		x	x
<i>Plantago</i>	cold	7	mild	x	x	x	x	x	x

Topical properties on gut lining

	Cool	Antiinflam	Vulnerary	Antiseptic	Immune
<i>Calendula</i>	x	x	x	x	x
<i>Plantago</i>	x	x	x	x	x

Gypsy boil formula

Gypsy boil formula	Temp		Liver	immune	lymphatic	kidney	bowel	skin	nutritive
<i>Arctium</i>	cool	8	mild	x	x	x	x	x	x
<i>Urtica</i>	neutral	5		x		x		x	x
<i>Allium</i>	hot	1		x					x

See additive effect of adding boneset to any formula

	Temp		Liver	immune	lymphatic	kidney	bowel	skin	nutritive
<i>Echinacea</i>	cool	4		x	x			x	
<i>Mahonia</i>	cold	5	strong	x			x	x	
<i>Juniperus</i>		5	mild	x	x	x			
See effect of adding <i>Eupatorium</i>									
<i>Eupatorium</i>	cool	7	strong	x	x	x	x	x	

Trifolium compound (Parke Davis ca 1888)

- ▶ *Trifolium* 8 parts
- ▶ *Arctium* 4
- ▶ *Stillingia* 4
- ▶ *Mahonia aq.* 4
- ▶ *Phytolacca* 4
- ▶ *Zanthoxylum* 1
- ▶ *Potassium iodide* 2
- ▶ ***Cascara amarga (Simarouba spp.)* 4**
- ▶ In simple syrup

Trifolium compound Merrell Co ca 1898

- ▶ *Trifolium*
- ▶ *Arctium*
- ▶ *Stillingia*
- ▶ *Mahonia*
- ▶ *Phytolacca*
- ▶ *Zanthoxylum*
- ▶ *Potassium iodide*
- ▶ ***Cascara amarga***
- ▶ ***Podophyllum***

Trifolium compound Eli Lilly 1898-1942

- ▶ *Trifolium* 4
- ▶ *Arctium* 2
- ▶ *Stillingia* 2
- ▶ *Mahonia* 2
- ▶ *Phytolacca* 2
- ▶ *Zanthoxylum* 2
- ▶ *Potassium iodide* 1

Hoxsey formula ? To 1956

- ▶ Trifolium
- ▶ Arctium
- ▶ Stillingia
- ▶ Berberis v. (subbed for Mahonia aq) (omitted Phytolacca)
- ▶ Zanthoxylum
- ▶ Potassium iodide
- ▶ Rhamnus purshiana
- ▶ Rhamnus frangula
- ▶ Glycyrrhiza

A modern variant of Hoxsey (Eclectic)

- ▶ Trifolium
- ▶ Arctium
- ▶ Stillingia
- ▶ Berberis aq. (subbed for Berberis v.)
- ▶ **Phytolacca**
- ▶ Zanthoxylum
- ▶ Potassium iodide
- ▶ Rhamnus frangula
- ▶ Rhamnus purshiana
- ▶ **Baptisia**
- ▶ Glycyrrhiza

Core herbs in Trifolium Compound

	Temp		Liver	immune	lymphatic	kidney	bowel	skin	nutritive	cancer
Trifolium	cool	5		x	x			x	x	x
Arctium	cool	8	mild	x	x	x	x	x	x	x
Stillingia	cold	6	moderate	x	x			x	x	
Mahonia	cold	5	strong	x				x	x	
Phytolacca	cool	5		x	x	x	x	x		

Historical modifiers in various formulas

Zanthoxylum	warms up this cold formula
Glycyrrhiza	moistens this dry formula
Podophyllum	strong laxative
Rhamnus purshiana	laxative
Rhamnus frangula	laxative
Baptisia	add immune stimulation

Berberine containing herb differentials

	Humoral	Berberine	Efflux pump inhibitor	Mucous membrane tonic	Family
Hydrastis rt	cold/dry	2-3%	-	+++	Ranunculaceae
Hydrastis leaf	cold/dry	0.4 to 0.6%	50%		Ranunculaceae
Mahonia rt	cold/dry	2-2.5%	-		Berberidaceae
Mahonia lf	Cold/dry	0.0-0.6	100%		Berberidaceae
Berberis	cold/dry	1.6 to 4.3%	-		Berberidaceae
Berberis leaf	cold/dry	<0.0-0.8%	100%*		Berberidaceae
Coptis	cold/dry	4-9%	+		Ranunculaceae
Xanthorhiza	cold/dry	1.2-1.3%			Ranunculaceae

Xanthorhiza – Yellow Root

- ▶ Analogous clinically to the other berberine-containing plants
- ▶ Closely related to *Coptis* species
- ▶ Less researched than the other common medicinal berberine plants.
- ▶ Used identically in medical and folk traditions to the others



Isoquinoline alkaloids in some berberine-containing plants.

Most of these alkaloids have anti-microbial or other pharmacological effects in scientific trials

The **combination** may have broader-spectrum or synergistic effects on microorganisms.

Alkaloid	Hydrastis	Mahonia	Berberis	Coptis	Xanthoxia
Berberine	x	x	x	x	x
Berberamine		x	x		
Berberastine	x			x	x
Berberubine			x	x	
Canadine	x				
Chondacurine			x		
Columbamine		x	x	x	
Coptisine			x	x	
Epiberberine				x	
Hydrastine	x	x	x		
Hydrastinine	x				
Jatrorhizine	x	x	x	x	x
Magnofoline		x	x	x	x
Oboanegine		x			x
Oxyacanthine		x	x		x
Palmitine		x	x	x	x
Tetrahydroberberastine	x				

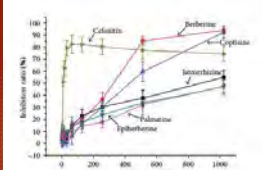


Figure 3. Inhibiting ratio of different concentrations of berberine and five berberine alkaloids on MRSA.

Berberine and its related alkaloids common in berberine-containing plants each inhibit bacteria individually

Luo J, Yan D, Yang M, Dong X, Xiao X. Multicomponent therapeutics of berberine alkaloids. *Evid Based Complement Alternat Med.* 2013;2013:545898.

Berberine compound formula

Potential synergistic alkaloids from *Hydrastis*, *Mahonia*, *Berberis*, and *Coptis* combination

New alkaloids with each addition are marked **bold italic**.

The possible synergistic auxiliary compounds in each plant may also be present.

Hydrastis	H + M	H + M + B	H + M + B + C
Berberine	Berberine	Berberine	Berberine
Berberamine	Berberamine	Berberamine	Berberamine
Canadine	Berberastine	Berberastine	Berberastine
Hydrastine	Canadine	Berberubine	Berberubine
Hydrastinine	Hydrastine	Canadine	Canadine
OH-4-berberastine	Hydrastinine	Chondacurine	Chondacurine
	Jatrorhizine	Columbamine	Columbamine
	Oxyacanthine	Hydrastine	Coptisine
	Palmitine	Hydrastinine	Epiberberine
	OH-4-berberastine	Jatrorhizine	Hydrastine
		Oxicanthine	Hydrastine
		Oxyacanthine	Jatrorhizine
		Palmitine	Oxyacanthine
		OH-4-berberastine	Palmitine
			OH-4-berberastine

Berberine effects on levels of physiology

- ▶ **Topical including stomach.** Very potent antimicrobial and effect due to concentration at site of infection and direct diffusion into the tissues
- ▶ **Gastrointestinal and microbiome.** Antimicrobial effects are greatly reduced effects due to dilution in GI fluids with normal forms. Berberine affects intestinal dynamics of motility and secretions without affecting the flora.
- ▶ **High concentrated doses** of isolated berberine compounds, can create dysbiosis and related diarrhea, with loss of diversity in biome.
- ▶ For practical purposes, berberine is not absorbed into the plasma and has no systemic effects. Plasma levels with large dose reach 1/1000 of the concentration which is antimicrobial.

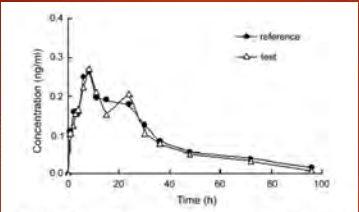


Fig. 4. Mean berberine plasma concentration-time profiles in 20 healthy volunteers after a single oral dose of 400 mg test and reference tablets (n = 20).

- A dose of 400 mg of a purified dose of berberine (equivalent to more than 3 ounces of Hydrastis tincture) raised serum levels of berberine to only 0.3 ng/mL.
- Correspondingly low concentrations of metabolites found in various tissues in mice.

Hua W, Ding L, Chen Y, Gong B, He J, & Xu G. (2007). Determination of berberine in human plasma by liquid chromatography–electrospray ionization–mass spectrometry. *Journal of Pharmaceutical and Biomedical Analysis*, 44(4), 931–937.

Tonic/adaptogen differentials

An imprecise term

- ▶ The original Russian definition of an adaptogen is a *stimulating* herb (their term) which increases host resistance to **acute or short-term stress**.
- ▶ They were defined as mild and food-like, without rebound crash, but this was in comparison to the amphetamines which fueled both the Russian and German sides during World War II.
- ▶ The original definition said nothing about long term use or about restoring a person from burnout syndrome or facilitating persistent overreaching. It only addressed acute performance.
- ▶ Nearly all scientific research into the concept stopped by the 1990's except for small trials sponsored by companies with proprietary adaptogen products.

The Adaptogen myth

- ▶ A plant medicine that gives energy *at no cost to the system*.
- ▶ That stimulates, but has *no crash or rebound depression*.
- ▶ That has *few or no side effects*.
- ▶ That increases tolerance of stress or *prevents its ill effects*.
- ▶ That can be taken long term with *no ill effects*.
- ▶ That can be given to almost anyone *without consideration of constitutional pattern*.
- ▶ That "supports adrenal function" or "nourishes the adrenals."
- ▶ That is "restorative" to endocrine function.

- ▶ Tonic/adaptogens taken *outside the context of a restorative lifestyle* will invariably cause harm if taken long enough by facilitating over-reaching and burnout, this can occur within 7-10 days.
- ▶ Most of the supposed adaptogens have no demonstrated effect on immunity in humans.
- ▶ None of the supposed adrenal restoratives has been shown to beneficially affect adrenal status in humans. Neither major *Panax* species has been shown to affect adrenal hormones in humans.
- ▶ Several of the stimulating adaptogens (Eleutherococcus and Schisandra) have been shown to have harmful effect on adrenal status in humans, promoting burnout.

Tonic/adaptogen relative strength

Daily doses in traditional Chinese medicine

Panax ginseng	1-9 g*	Cardyceps	5-10 g
Schisandra	2-6 g	Atractylodes	5-15 g
Panax quinquefolius	2-9 g	Astragalus	10-15 g
Glycyrrhiza	2-12 g	▶ Eleutherococcus**	9-27 g
Withania	3-6 g	Codonopsis	9-30 g
Rhodiola	3-9 g		

* Dried herb in decoction, daily dose. Chi and yang tonics.

**Proprietary products are much more potent, like Schisandra or Rhodiola.

Eleuthero in the Russian Pharmacopoeia

- ▶ The plant is extracted in low alcohol, 30% to 70% water
- ▶ Vacuum technology is used to concentrate it to 1:1 (5 times the strength of a typical tincture)
- ▶ The dose of this concentrate is 2 mL to 15 mL in a day
- ▶ Standard 1:5 tinctures in 60% alcohol have no medical activity at typical doses.
- ▶ The HerbPharm company makes a product according to these specifications but further concentrated to 2:1 (10 times normal tincture strength)
- ▶ Proprietary concentrated forms in pills can have variable and unpredictable effects.

Three stimulating adaptogens

<i>Schisandra</i>	warm	dry
<i>Eleutherococcus</i>	warm	sl dry
<i>Rhodiola</i>	sl warm	very dry

All three plants have distinct stimulating effects.

Each plant has failed to show benefits on immunity in several human trials

In a clinical trials of Russian sailors, *Schisandra* produced anxiety and a decreased sense of well-being in some subjects within 2 weeks

A trial of *Eleutherococcus* in runners showed that it facilitated athletic burnout at the end of 30 days.

Rhodiola readily produces insomnia and anxiety in some patients.

A useful stimulant formula

This formula is appropriate for short-term use in the context of improvements in the lifestyle

- ▶ *Eleutherococcus* (per Russian Pharmacopeia specifications)
- ▶ *Schisandra*
- ▶ *Turnera* spp.
- ▶ *Glycyrrhiza* spp.

Dose: 10-15 drops 3-4 times per day

Classic Chinese *chi* tonics

<i>Panax g</i>	sl warm	sl moist	1-9 g
<i>Panax q</i>	neutral	moist	2-9 g
<i>Glycyrrhiza</i>	neutral	moist	2-12 g
<i>Astragalus</i>	sl warm	dry	10-15 g
<i>Codonopsis</i>	sl warm	sl moist	9-30 g

- The patient should have distinct signs of chi deficiency (not simply fatigue)
- Contraindicated in acute conditions
- Contraindicated in acute or chronic pain
- Contraindicated in congestive conditions with "stuck" energy

Four restorative herbs

<i>Withania</i>	warm	dry (but may aggravate dampness)
<i>Asparagus/Shatavari</i>	cool/cold	moist
<i>Polygonum multiflorum</i> (ho shou wu)	somewhat warm	somewhat moist
<i>Polygonatum multiflorum</i> (<i>Maianthemum racemosum</i>)	cool	moist

Each is potentially restorative to the sexual and reproductive functions

Withania and *Asparagus* pair very well from a humoral perspective. They each also pair well with *Glycyrrhiza* for tonic effects.

Three tonics to immunity

<i>Astragalus</i>	sl warm	dry
<i>Lentinus</i>	sl warm	sl moist
<i>Ganoderma</i>	sl warm	sl moist

The have other herbs discussed here have no consistent demonstrated effects on immunity in humans.

- A decoction of *Astragalus*/*Ganoderma* can be useful during remission phases of autoimmunity
- Consider proprietary extracts of *Ganoderma* if includes the water extract of the fruiting body. Alcohol extracts may be added to water extract, but alone do not possess the immunomodulatory effects of *Ganoderma*.
- *Lentinus* (Shiitake mushroom) can be incorporated in the diet.

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