

Autoimmune Disorders

John K. Chen
Ph.D., Pharm.D., O.M.D., L.Ac.

Lotus Institute of Integrative Medicine
Tel: (626) 780-7182 Fax: (626) 609-2929
Website: www.eLotus.org Email: info@eLotus.org

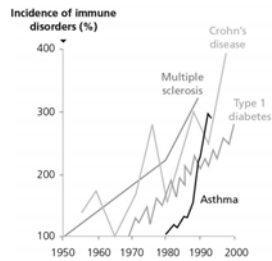


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Trend of Allergy-related Disorders



Trend of Autoimmune-related Disorders



Bach, J.F. 2002. *New England Journal of Medicine*
doi:10.1056/NEJMr020100.



Etiology

- Cause: UNKNOWN
 - Genetics
 - Sex (more female than male)
 - Others ???

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“When *zheng* (upright) *qi* is present,
pathogenic factors cannot attack.”

Su Wen (Basic Questions), 2nd century A.D.

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Overview

- Pathogens
 - Micro-organisms (bacteria, virus, fungus, parasites)
 - Environmental chemicals and toxins
 - Foods that trigger allergy and autoimmunity
- The immune system
- Autoimmune diseases
 - Connective tissues (skin, joints, glands, blood vessels)
 - Internal organs (thyroid, intestines, heart, lung, CNS)

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Microbes associated with autoimmunity

Pathogen antigen	Cross-reactive self-antigen	Autoimmune disease
Herpes simplex virus	Corneal antigen	Stromal keratitis
<i>Campylobacter jejuni</i>	Ganglioside in peripheral nerve	Guillain-Barré syndrome
Coxsackievirus	Glutamic acid decarboxylase	Type 1 diabetes
Theiler's murine encephalomyelitis virus	Proteolipid protein	Multiple sclerosis
<i>Yersinia enterocolitica</i>	Thyrotropin receptor	Thyroid autoimmunity
<i>Borrelia burgdorferi</i>	Leukocyte function associated antigen	Lyme arthritis
<i>Salmonella typhi</i> and <i>Yersinia enterocolitica</i>	HLA-B27	Reactive arthritis
HHV-6, EBV, Rubella, influenza virus, and HPV	Myelin basic protein	Multiple sclerosis
Streptococcal M protein	Myosin and other heart valve proteins	Rheumatic fever
<i>Trypanosoma cruzi</i>	Cardiac myosin	Chagas heart disease

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Vaccination

- Diphtheria, tetanus and polio vaccines have a dangerous link with a number of autoimmune disorders.
- Measles, mumps and rubella vaccines linked to rheumatoid arthritis.
- Influenza vaccine linked to type 1 diabetes in children.
- Mercury (thimerosal) is still present in flu vaccines, but has been removed from most other vaccines.
 - JAMA, 1994

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Environmental chemicals and toxins

- 287 industrial chemicals were found fetal cord blood collected by American Red Cross from ten newborn infants from around the US.
- Chemicals included pesticides, phthalates, dioxins, flame retardants, by-products of Teflon, and many others.

– Center of Disease Control (CDC), 2004.

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Air pollution

- Car exhaust
- Jet fuel exhaust
- Mining plants
- Coal burning plants
- Brush and forest fire
- Earthquake



Air pollution

- Ozone, carbon monoxide, nitrogen dioxide
- Toxic heavy metals (arsenic, cadmium, lead, mercury, copper, chromium, nickel, zinc)
- Solvents and petrochemicals (acetaldehyde, benzene, benzopyrene, chloroform, formaldehyde, naphthalene, toluene, trichloroethylene, xylene)



Jet Fuel and Air Travel

- Fatigue from travel and jet lag
- Dehydration from radiation and dry air
- Toxicity from kerosene-based jet fuel exposure
- Increased risk of infection from enclosed environment



Chemical cleaners

- Chemical cleaners used everyday in household makes indoor air five times more polluted than outdoor air.
- This is true even in New York and Los Angeles.
- Use only white vinegar and baking soda!
 - EPA



Water pollution

- 145 total contaminants
- 35 agricultural pesticides
- 31 urban lawn chemicals
- 100 industrial heavy metals and petrochemicals
- 30 water treatment byproducts
- Others
 - www.ewg.org



New Carpet

- Acetone
- Bis(2-ethylhexyl) phthalate
- Benzene
- Caprolactam
- Diethylene glycol
- P-dichlorobenzene
- Formaldehyde
- Hexane
- Styrene
- Toluene
- Vinylcyclohexene
- Xylenes



Old Carpet

- Dust and mold that is impossible to remove



Cosmetics

- Skin is the largest organ in human body.
- Avoid cosmetics with parabens, phthalates, sodium laureth, sodium laurel sulfate, petrolatum, cocamide DEA, diazolidinyl urea, toluene, and triethanolamine.
- Avoid synthetic colors and fragrances in cosmetics, perfumes and colognes.



Hair dye and nail polish

- Hair dye causes three times higher risk of lupus for those who use them.
- Nail polish (contains phthalates, formaldehyde or toluene) is toxic when applied, and is also toxic when removed (with solvents).



Polybrominated diphenyl ethers (PBDE)

- PBDE: flame retardant used in just about everything, such as carpet, bedding, chair, fabric, plastic, etc.
- PBDEs are not chemically bound to plastics, foam, fabrics, or other products, making them more likely to leach out of these products.
- Persistent, bioaccumulative, and dangerous neurotoxin to humans, animals, and the environment.
- Babies and toddlers have highest levels of PBDE because they crawl on carpet and chew on everything.
 - EPA



Perfluorooctanoic acid (PFOA)

- PFOA (C8) is a fire-resistant and oil-, stain-, grease-, and water-repellent chemical (i.e., Teflon).
- Used in non-stick cookware; waterproof, breathable membranes for clothing; flooring, carpet guards, grease-resistant french fry boxes, coffee cups, and many industry segments, including the aerospace, automotive, building/construction, chemical processing, electronics, semiconductors, and textile industries.
- Found in the blood of 96% of Americans; and it's half-life of 4.4 years.
- Increased risks of hypercholesterolemia, thyroid disease, and reduced fertility.
- Increased risks of testicular and kidney cancer
 - American Cancer Society (ACA)
 - Kudo N1, Kawashima Y. Toxicity and toxicokinetics of perfluorooctanoic acid in humans and animals. J Toxicol Sci. 2003 May;28(2):49-57.



Dioxin

- Dioxin is a by-product formed by burning chlorine-based chemical compounds with hydrocarbons. The major source of dioxin in the environment comes from waste-burning incinerators, factories which use chlorine bleaching in their process and with the production of paper or plastics. It is also present in exhaust fume from diesel trucks and buses.
- Dioxin accumulates in food (mainly meat and dairy products, fish and shellfish), which then accumulates fatty tissue of human.
- Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer.
- Dioxin crosses the placenta from mother to babies.
 - World Health Organization (WHO)



Formaldehyde (FA)

- Widely used in industrial and medical settings and as a sterilizing agent, disinfectant, and preservative.
- Found in the polluted atmosphere of cities, domestic air (e.g., paint, insulating materials, chipboard and plywood, fabrics, furniture, paper), and cigarette smoke, diesel and gas exhaust, antiperspirants, cosmetics, hair care, soap, etc.
- Potent carcinogen as it cross-links to DNA

Review of the Formaldehyde Assessment in the National Toxicology Program 12th Report of Carcinogens. Board on Environmental Studies and Toxicology, Division on Earth and Life Sciences; National Research Council. Washington (DC): National Academies Press



Formaldehyde by-products

- para-formaldehyde
- hexamethylene tetramine
- DMDM hydantoin
- polynoxyline
- dimethylolurea
- preventol D1
- preventol D2
- preventol D3
- quaternium 15
- bakzid
- bakzid P
- parmetol k50
- grotan BK
- imidazolidinyl urea
- diazolidinyl urea
- 2-bromo-2-nitropropane-1,3-diol
- KM 103
- biocide DS 5249 (Proxel T)
- tris hydroxymethyl nitromethane (Tris nitro)
- hydroxymethylglycinate (Suttocide A)



Bisphenol A (BPA)

- BPA is a structural component that protect the food from directly contacting packaging surfaces, such as water bottles and metal can coatings, and has been used since the 1960s.
- It is also used as a plasticizers used in many plastic products, including helmets, dental sealants, eyeglasses, etc.
- It's in the blood of 90% Americans
– www.fda.gov



BPA toxicities

- Hormone levels. It acts like a hormone in the body, disrupting normal hormone levels and development in fetuses, babies, and children.
- Brain and behavior problems. Neurotoxic. Carcinogenic.
- Other conditions: heart problems, obesity, diabetes, ADHD, and others.

- www.webmd.com



Phthalates and parabens

- Phthalates and parabens are plasticizers that make cosmetics creamier, plastics more flexible and less brittle, and toys more pliable.
- Easily leech out from products
- Present in almost all Americans
- May cause infertility, testicular dysgenesis, obesity, asthma, and allergies, as well as leiomyomas and breast cancer.

• Crinnion WJ. Toxic effects of the easily avoidable phthalates and parabens. Altern Med Rev. 2010 Sep;15(3):190-6.



Polyvinyl chloride (PVC)

- Used in plastic pipes, wires, cable coatings, packaging materials
- Acute (short-term) toxicity through inhalation: central nervous system effects (CNS), such as dizziness, drowsiness, and headaches in humans.
- Chronic (long-term) toxicity through inhalation and oral ingestion: liver damage and liver cancer, increased risks of lupus, scleroderma, and rheumatoid arthritis

- EPA



Trichloroethylene (TCE)

- Cleansing solvent used to wash planes, tanks, trucks, and machinery. Commonly used in dry cleaning. TCE is present in air and in tap water.
- CNS side effect, such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness.
- Liver, kidney, immunological, endocrine, and developmental toxicities,
- Cancer in kidney, liver, cervix, and lymphatic system.
 - EPA



Foods

- Heavy metals
- Pesticide
- Mycotoxins: aflatoxins and ochratoxins
- Processed foods
- GMO foods
- Food allergens
- Gluten
- Coffee
- Leaky gut syndrome



Lead

- Sources: leaded gasoline, water conveyed by lead-pipes, cans, lead-based paint, and improperly glazed ceramics and cookwares.
- Oral ingestion of foods contaminated with lead is the primary source of poisoning.
- Clinical manifestation of lead poisoning include abdominal pain, irritability, lethargy, anorexia, pale face, ataxia, slurred speech, and in severe cases, convulsions and coma. [i],[ii]

[i] Fauci A. et al. Harrison's Principles of Internal Medicine 14th Edition. McGraw-Hill.
[ii] Gilman A. et al. Goodman and Gilman's The Pharmacological Basis of Therapeutics 8th Edition. Pergamon Press.



Mercury

- Sources: thermometers, batteries, dental amalgams, preservative in vaccines, manufacturing of certain electronics, plastics, fungicides, and germicides. These products may subsequently contaminate the water and soil, and become present in the foods (such as tuna and swordfish which concentrate methyl mercury at high levels).
- Toxic effects of mercury poisoning include sensory impairment (vision, hearing, speech), disturbed coordination, and damage to the internal organs (brain, kidneys, and lungs). [i],[ii]

[i] Fauci A. et al. Harrison's Principles of Internal Medicine 14th Edition. McGraw-Hill.

[ii] Gilman A. et al. Goodman and Gilman's The Pharmacological Basis of Therapeutics 8th Edition. Pergamon Press.



Arsenic

- Sources: Arsenic pollute the environment via mining, smelting, and burning of coal, and arsenic contaminate the water and soil when it is used to manufacture herbicide and pesticide, or added to feed of poultry and livestock to promote growth. In turn, as humans are exposed to arsenic via breathing, drinking and eating.
- Clinical manifestations of toxic reactions include muscle weakness, hyperpigmentation of the skin, hyperkeratosis, exfoliative dermatitis, edema, sensory and motor polyneuritis, and inflammation of respiratory mucosa. [i],[ii]

[i] Fauci A. et al. Harrison's Principles of Internal Medicine 14th Edition. McGraw-Hill.

[ii] Gilman A. et al. Goodman and Gilman's The Pharmacological Basis of Therapeutics 8th Edition. Pergamon Press.



Cadmium

- Cadmium is a valuable metal, and is mined and used in industrial production of many products, such as electroplating and galvanization and its use in plastics, paint pigments (cadmium yellow), and nickel-cadmium batteries. If these products are not properly disposed, cadmium will contaminate water and soil in the environment. In turn, cadmium has been found at high concentration in various types of foods, including grains, cereals, leafy vegetables, shellfish, and liver and kidneys from animals.
- Clinical manifestations of cadmium poisoning include yellow discoloration of the teeth, emphysema, changes in liver functions, anemia, renal disorder, and osteomalacia. [i],[ii]

[i] Fauci A. et al. Harrison's Principles of Internal Medicine 14th Edition. McGraw-Hill.

[ii] Gilman A. et al. Goodman and Gilman's The Pharmacological Basis of Therapeutics 8th Edition. Pergamon Press.



Recommended Limits Based on Concentration

	Daily Intake ¹	WHO ²	USP ³	EUP ⁴	Swiss ⁵	TGA ⁶
Lead (Pb)	0.1-0.2 mg	10 ppm	10 ppm	5 ppm	5 ppm	5 ppm
Mercury (Hg)	n/a	0.3 ppm	3 ppm	0.1 ppm	0.1 ppm	3 ppm
Arsenic (As)	300 mcg	n/a	3 ppm	2 ppm	2 ppm	3 ppm
Cadmium (Cd)	50 mcg	0.3 ppm	3 ppm	0.2 ppm	0.2 ppm	3 ppm

- [1] The Average Daily Intake for an adult in the United States
 [2] World Health Organization
 [3] United States Pharmacopoeia. These are the heavy limits for many of the botanicals listed in the USP.
 [4] European Union Pharmacopoeia. These are heavy metal limits for botanical drugs.
 [5] Swissmedic of Switzerland. These are heavy metal limits for botanical drugs.
 [6] Australian Therapeutic Goods Agency.



Product name: 益寿堂(Shan Dong Tang)Caulis Lonicerae Japonicae ISO 17025
 Evergreen Item number: G1409
 Manufacturing date: 2014.04.01
 Lot/batch number: A32010002
 Expiration date: 2018.04.01

Determination	Specifications	Result	Method
Identity (TLC)	90%	Positive	
Description (macroscopic)	Gravolava	Positive	
Loss on drying	<= 12.0%	5.07%	JPK1117 page 26
Total ash	< 6.0%	1.3%	JPK1117 page 26
Ash insoluble ash	< 2.0%	0.07%	JPK1117 page 26
DLI (DGL) extract	> 2.0%	18.1%	JPK1117 page 26
HCl extract	> 6.0%	49.2%	JPK1117 page 26
Total heavy metals	< 10 ppm	< 10 ppm	USP1-2011
o. Arsenic (As)	< 2.2 ppm*	0.1166ppm	
o. Cadmium (Cd)	< 0.2 ppm*	0.1466ppm	Inductively coupled plasma mass spectrometry (ICP-MS)
o. Lead (Pb)	< 2.2 ppm*	4.9573ppm	
o. Mercury (Hg)	< 0.1 ppm*	N.D.	
Microbials			
o. Total Aerobic Microbial Count	10 ⁶ CFU/gram	<10 CFU/gram	PhEur 2A.12
o. Total Yeast and Mold	10 ⁴ CFU/gram	<10 CFU/gram	PhEur 2A.12
o. Enteric and green negative bacteria	10 ² CFU/gram	<1 CFU/gram	PhEur 2A.13
o. E. coli	Absent in 10 grams	Negative	PhEur 2A.13
o. Salmonella	Absent in 10 grams	Negative	PhEur 2A.13
Mycotoxins			
o. Aflatoxin (B1 + B2)(+G2)	20 µg/g	ND	ChN, General No.4090 Classified No. 36099
o. Ochratoxin (O1)	1 µg/g	ND	
Pesticides			
o. Organochlorines	ND*	ND	1.0001 µg/ga No.098180023
o. Organophosphates	ND*	ND	2.0001 µg/ga No.099180025
o. Pyrethroids	ND*	ND	

TLC plate: Nitrocellulose 40x40cm (Merck)
 A. For Shan Dong Tang/Caulis Lonicerae Japonicae
 B. Sample Solution

Approved by:
 APR 10 2014

Midwest Laboratories Inc.
 10311 "B" Street • Omaha, Nebraska 68148-3033 • (402) 334-7770 • FAX (402) 334-9121
 REPORT OF ANALYSIS

Account: 21377 EVERGREEN HERBS
 Report Number: 07-277-2164 Page: 2

Analysis	Level Found	Units	Detection Limit	Method	Analysis Date	Verified Date
Sample ID: SHAN ZHA LOT #FA0331201/EXP 04/27/2011						
Mercury (total)	n.d.	ppm	0.05	EPA 7471	m10-10-03	188-10-04
Lead (total)	0.13	ppm	0.10	ICP-MS	m10-10-03	188-10-04
Cadmium (total)	n.d.	ppm	0.05	ICP-MS	m10-10-03	188-10-04
Arsenic (total)	n.d.	ppm	0.20	ICP-MS	m10-10-03	188-10-04
Total Heavy Metals	n.d.	ppm	10.0	ICP-ICP-MS	m10-10-03	188-10-04
Sample ID: BAN LAN GEN LOT#420812601/EXP 04/18/2011						
Mercury (total)	n.d.	ppm	0.05	EPA 7471	m10-10-03	188-10-04
Lead (total)	n.d.	ppm	0.10	ICP-MS	m10-10-03	188-10-04
Cadmium (total)	n.d.	ppm	0.05	ICP-MS	m10-10-03	188-10-04
Arsenic (total)	n.d.	ppm	0.20	ICP-MS	m10-10-03	188-10-04
Total Heavy Metals	n.d.	ppm	10.0	ICP-ICP-MS	m10-10-03	188-10-04
Sample ID: MAI MEN DONG LOT#421108601/EXP 03/02/2011						
Mercury (total)	n.d.	ppm	0.05	EPA 7471	m10-10-03	188-10-04
Lead (total)	0.71	ppm	0.10	ICP-MS	m10-10-03	188-10-04
Cadmium (total)	0.23	ppm	0.05	ICP-MS	m10-10-03	188-10-04
Arsenic (total)	n.d.	ppm	0.20	ICP-MS	m10-10-03	188-10-04
Total Heavy Metals	n.d.	ppm	10.0	ICP-ICP-MS	m10-10-03	188-10-04
Sample ID: HUANG QI LOT #P0703002/EXP 03/05/2011						
Mercury (total)	n.d.	ppm	0.05	EPA 7471	m10-10-03	188-10-04
Lead (total)	n.d.	ppm	0.10	ICP-MS	m10-10-03	188-10-04
Cadmium (total)	n.d.	ppm	0.05	ICP-MS	m10-10-03	188-10-04
Arsenic (total)	0.64	ppm	0.20	ICP-MS	m10-10-03	188-10-04
Total Heavy Metals	n.d.	ppm	10.0	ICP-ICP-MS	m10-10-03	188-10-04

Pesticide

- Organochlorine
- Organophosphorus
- Pyrethroids
- Toxicities: dyspnea, respiratory depression, pulmonary edema, cyanosis, loss of sphincter control, bradycardia or tachycardia, cardiac ischaemia, cardiac dysrhythmias, seizures, convulsions, and coma



Organochlorines

- Organochlorines are insecticides that contain chlorinated ethane derivatives. There are at least 33 different organochlorine insecticides, including endrin, dieldrin, aldrin, quintozone and dichlorodiphenyltrichloroethane [DDT].



Organophosphorous

- Organophosphorous are insecticides that contain a phosphorus compound. There are over 100 different types of organophosphorous pesticides, including malathion and parathion. As pesticides, organophosphorous may be used by itself, or in conjunction with organochlorines. Organophosphorous pesticides kills insects that adversely affect foods, crops and buildings.




Pyrethrums

- As botanical insecticides, pyrethrums are derived from flowers of a plant called *Chrysanthemum cinerariaefolium*. Examples of pyrethrum pesticide include: bifenthrin, cyfluthrin, cyhalothrin, cypermethrin (and isomers), deltamethrin, fenpropathrin, fenvalerat and esfenvalerat (sum of isomers), fluvalinat, flucythrinat, permethrin, phenothrin, resmethrin, and tetramethrin.

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Determination	Specifications	Result	Method
Identity (TLC)	+	Positive	
Densitometry (HPLC/viscopic)	Crystals	Positive	
Loss on drying	< 12.0%	5.01%	EPX111/ Page 26
Total ash	< 4.0%	1.5%	EPX111/ Page 26
Acid-insoluble ash	< 3.0%	0.07%	EPX111/ Page 26
DL-EthO extract	> 2.0%	18.7%	EPX111/ Page 26
TLC extract	> 4.0%	49.2%	EPX111/ Page 26
Total heavy metals	< 20 ppm	< 20 ppm	USP10-211
o Arsenic (As)	< 2 ppm	0.1150ppm	
o Cadmium (Cd)	< 5.0 ppm	0.1600ppm	Inductively coupled plasma mass spectrometry (ICP-MS)
o Lead (Pb)	< 5 ppm	0.9320ppm	
o Mercury (Hg)	< 0.1 ppm	N.D.	
Microbials			
o Total Aerobic Microbial Count	10 ⁶ CFU/gram	<10 ⁶ CFU/gram	PhEur 2.6.12
o Total Yeast and Mold	10 ⁵ CFU/gram	<10 ⁵ CFU/gram	PhEur 2.6.12
o Enteric and gram negative bacteria	10 ⁴ CFU/gram	<1 CFU/gram	PhEur 2.6.13
o E. coli	Absent in 10 grams	Negative	PhEur 2.6.13
o Salmonella	Absent in 10 grams	Negative	PhEur 2.6.13
Mycotoxins			
o Aflatoxins (B1+B2+G1+G2)	20 ppb	ND	CNS, General No.600 Classified No. N6097
o Aflatoxins (B1)	1 ppb	ND	
Pesticides			
o Organochlorines	ND	ND	1.D001 (i) no. No.09100273
o Organophosphates	ND	ND	2.D001 (i) no. No.09100293
o Pyrethroids	ND	ND	

TLC plate - silica gel 60F254 (Merck)
 A. Run Ding Tang/Chia Louisa Japanes
 B. Sample Solution

Approved by: 
 APR 19 2011

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Pesticides and Insecticides

- Greater quantities of pesticides and insecticides, such as weed killer atrazine, is applied to suburban area than agricultural land.
- Induces autoimmune disorders
 - Environmental Protection Agency (EPA)

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Aflatoxins

- Aflatoxins are toxic metabolites produced by certain strains of fungi, namely *Aspergillus flavus* and *A. parasiticus*.
- Foods and feeds most likely to be affected by aflatoxins include corn and corn products, peanuts and peanut products, cottonseed, grains, tree nuts (Brazil nuts, pecans, pistachio nuts, walnuts, almonds), milk, cheese, figs, and spices. [i],[ii]

- [i] Goldbatt, L.A. 1969. Aflatoxin. Academic Press, New York. pp1-40.
- [ii] Wyllye, T.D. and Morchause, L.G. 1978. Mycotoxin Fungi, Mycotoxins, Mycotoxicoses-An Encyclopedic Handbook. Vols. 1, 2, and 3. Marcel Dekker, Inc. New York.

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Aflatoxins

- *Bai Zi Ren* (Semen Platycladi)
- *Chen Pi* (Pericarpium Citri Reticulatae)
- *Da Fu Pi* (Pericarpium Arecae)
- *Da Zao* (Fructus Jujubae)
- *Gou Qi Zi* (Fructus Lycii)
- *Gou Teng* (Ramulus Uncariae cum Uncis)
- *He Ye* (Folium Nelumbinis)
- *He Ye* (Folium Nelumbinis)
- *Huang Qi* (Radix Astragali)
- *Ku Xing Ren* (Semen Armeniacae Amarum)
- *Lian Zi* (Semen Nelumbinis)
- *Nu Zhen Zi* (Fructus Ligustri Lucidi)
- *Shan Zha* (Fructus Crataegi)
- *Shan Zhu Yu* (Fructus Corni)
- *Shen Qu* (Massa Fermentata)
- *Suan Zao Ren* (Semen Ziziphi Spinosae)
- *Tao Ren* (Semen Persicae)
- *Yan Hu Suo* (Rhizoma Corydalis)
- *Zhi He Shou Wu* (Radix Polygoni Multiflori Praeparata)

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Aflatoxins B₁, B₂, G₁, G₂

- One of the most potent hepatotoxin and carcinogen.
 - National Institute of Health (NIH)

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Safety Limits of Aflatoxins

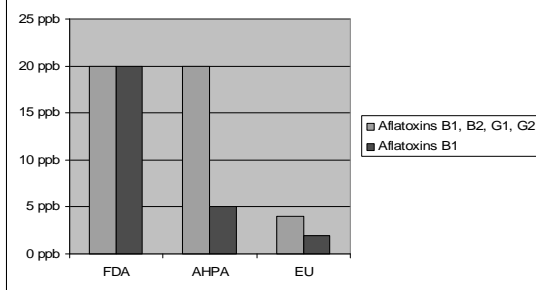
	US FDA ⁹	AHPA ¹⁰	EUP ¹¹
Aflatoxins B1		5 ppb	2 ppb
Aflatoxins B1, B2, G1, G2	20 ppb	20 ppb	4 ppb

* ppb – parts per billion

- [i] US Food and Drug Administration. Safety limits of aflatoxins for human food and animal feeds.
 [ii] American Herbal Products Association. Recommended safety limits for aflatoxins in dietary supplements.
 [iii] European Union Pharmacopoeia. Safety limits of aflatoxins for botanical drugs.

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Aflatoxins B₁, B₂, G₁, G₂



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CERTIFICATE OF ANALYSIS

G1890	延胡索(Yan Hu Soo) Rhizoma Corydalis		MANUFACTURING DATE : 05.13.2013
PRODUCT :			EXPIRY DATE : 05.12.2017
BATCH No. :	420806202		
DETERMINATION	SPECIFICATIONS	RESULT	TEST METHOD
Description	Yellow	Conform	F420806
Loss On Drying	<10.00%	3.08%	GT-10
Total Ash	<7.00%	2.17%	GT-19
Acid - Insoluble Ash	<5.00%	0.23%	GT-20
Dilute EtOH Extract	>25.00%	30.05%	GT-21
H ₂ O Extract	>27.00%	40.43%	GT-22
Total Heavy Metal	<20.00ppm	Pass	GT-31
Heavy Metal Limit Test	Lead (Pb)	<5.00ppm	1.310ppm
	Arsenic (As)	<2.00ppm	N.D.
	Cadmium (Cd)	<0.30ppm	0.232ppm
	Mercury (Hg)	<0.10ppm	N.D.
Microbial Limit Test	Total Aerobic Microbial Count	<10 ⁴ CFU/g	Pass
	Total Yeast and Mold	<10 ³ CFU/g	Pass
	Enterobacteria & other gram neg. bact.	<10 ³ CFU/g	Pass
	E. coli	Negative	GT-35
	Salmonella	Negative	GT-35
Aflatoxin Limit Test	Total Aflatoxin (B1+B2+G1+G2)	<20ppb	0.20ppb
	Total Aflatoxin (B1)	<5ppb	0.20ppb
T.L.C. Identification		Positive	F420806

Safety Limits of Ochratoxins

	US FDA ¹	AHPA ²	Europe ³
Ochratoxin A	n/a	n/a	3-10 ppb

* ppb – parts per billion

[i] US Food and Drug Administration. Safety limits of aflatoxins for human food and animal feeds.

[ii] American Herbal Products Association. Recommended safety limits for aflatoxins in dietary supplements.

[iii] European Union Pharmacopoeia. Safety limits of aflatoxins for botanical drugs.

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CERTIFICATE OF ANALYSIS			
G1952	茯苓 (Zhu Gan Cao)	MANUFACTURING DATE : 05.03.2012	
PRODUCT :	Radix of Rhizoma Glycyrrhizae Preparata cum Melle	EXPIRY DATE : 01.03.2016	
BATCH No. :	42003-2102		
DETERMINATION	SPECIFICATIONS	RESULT	TEST METHOD
Description	Brown	Conform	F42053-2
Loss On Drying	<8.00%	3.12%	GT-10
Total Ash	<9.00%	4.55%	GT-19
Acid Insoluble Ash	<3.00%	0.33%	GT-20
Dilute EtOH Extract	>40.00%	42.04%	GT-21
H ₂ O Extract	>42.00%	49.61%	GT-22
Total Heavy Metal	<20.00ppm	Pass	GT-31-3
Heavy Metal Limit Test Lead (Pb)	<5.00ppm	N.D.	GT-31-2
Arsenic (As)	<2.00ppm	N.D.	GT-31-2
Cadmium (Cd)	<0.70ppm	N.D.	GT-31-2
Mercury (Hg)	<0.10ppm	N.D.	GT-31-2
Microbial Limit Test	Total Aerobic Microbial Count	<10 ⁵ CFU/g	Pass
	Total Yeast and Mold	<10 ³ CFU/g	Pass
	Enterobacteria & other gram neg. bact.	<10 ² CFU/g	Pass
	E. coli	Negative	GT-35
	Salmonella	Negative	GT-35
Pesticides Limit Test	Total DDT's	<0.7ppm	Pass
	Total BHC's	<0.7ppm	Pass
	Total PCNB's	<0.1ppm	Pass
Aflatoxin Limit Test	Total Aflatoxin (B1+B2+G1+G2)	<20ppb	N.D.
	Total Aflatoxin (B1)	<5ppb	N.D.
Ochratoxin Limit Test	Ochratoxin A	<10ppb	4.53ppb
T.L.C. Identification		Positive	F42053-2

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Processed foods

- Processed foods with nitrates, nitrites, benzoates, BHA, BHT, MSG, parabens and sulfites. They are contain excessive salt and are overly acidic.
- Food dye, FD&C yellow no. 5 is linked with allergy and asthma.
- Fast food, TV dinner, microwave food, canned food, and foods with artificial color and flavors, MSG, aspartame, high fructose corn syrup.

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GMO foods

- Corn
 - 96% of all corn are GMO
 - High fructose corn syrup
 - Cooking oil made from corn
- Soy
 - 94% of all soy are GMO
 - Baby formula made from soy
- Sugar and aspartame
 - Aspartame turns into formadehyde at 86F
- Canola oil
 - GMO oil

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Eight Major Groups of Allergens

1. Milk
2. Eggs
3. Fish
4. Peanuts
5. Crustacean shellfish
6. Tree nuts
7. Soybeans
8. Wheat

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Major Groups of Allergens (Shellfish)

- Crustacean shellfish: shellfish with a hard shell and no backbone, such as crab, crayfish, lobster, prawns and shrimp
- None in Chinese materia medica
- Possible cross allergy
 - *Mu Li* (Concha Ostreae)
 - *Ge Qiao* (Concha Meretricis seu Cyclinae)
 - *Hai Piao Xiao* (Endoconcha Sepiae)
 - *Zhen Zhu* (Margarita)
 - *Zhen Zhu Mu* (Concha Margaritiferae)
 - *Shi Jue Ming* (Concha Haliotidis)
 - *Wa Leng Zi* (Concha Arcae)

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Major Groups of Allergens (Tree Nuts)

- Tree nuts (high risk):
 - *Bai Guo* (Semen Ginkgo)
 - *He Tao Ren [Hu Tao Ren]* (Semen Juglandis)
 - *Song Zi Ren* (Semen Pini)
 - *Li Zhi He* (Semen Litchi)
- Tree nuts (possible cross-allergy):
 - *Tao Ren* (Semen Persicae)
 - *Yu Li Ren* (Semen Pruni)
 - *Bai Zi Ren* (Semen Platycladi)
 - *Ku Xing Ren* (Semen Armeniacae Amarum)
 - *Shen Qu* (Massa Fermentata),
 - *Jian Shen Qu* (Massa Fermentata Praeparata)
 - *Ban Xia Qu* (Rhizoma Pinelliae Massa Fermentata)

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Major Groups of Allergens (Wheat)

- Wheat
 - *Xiao Mai* (Fructus Triticum)
 - *Fu Xiao Mai* (Fructus Triticum Levis)
- Herbs that contain wheat
 - *Shen Qu* (Massa Fermentata)
 - *Jian Shen Qu* (Massa Fermentata Praeparata)
 - *Ban Xia Qu* (Rhizoma Pinelliae Massa Fermentata)
- Herb that could be made from wheat
 - *Yi Tang* (Maltosum): generally made from rice or glutinous rice (other sources could be from barley, wheat, millet or corn).

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Major Groups of Allergens (Soybeans)

- Soybean herbs
 - *Dan Dou Chi* (Semen Sojae Praeparatum)
- Herbs that may be processed with soybean
 - *Zhi He Shou Wu* (Radix Polygoni Multiflori Praeparata) - if processed with black soybean
 - *E Jiao* (Colla Corii Asini) - if soya-bean oil is used to thicken glue

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Gluten

- Non-GMO wheat
- 1 in 100,000 with allergy
- GMO wheat
- 1 in 133 with allergy
 - Contains gluten peptide (glia- α 9)
 - Glyphosate

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Gluten

- Food: Wheat, rye and barley.
- Herbs:
 - *Xiao Mai* (Fructus Triticum) - wheat
 - *Fu Xiao Mai* (Fructus Triticum Levis) - floating wheat
 - *Yi Tang* (Maltosum) – sugar from rice, barley, wheat, millet or corn
 - *Shen Qu* (Massa Fermentata) - contains wheat
 - *Jian Shen Qu* (Massa Fermentata Praeparata) - contains wheat
 - *Ban Xia Qu* (Rhizoma Pinelliae Massa Fermentata) - contains wheat

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Coffee

- There are over 1,000 chemical compounds in roasted [burned] coffee. Of 28 tested, 19 are carcinogenic.
- “One cup of coffee gives you more carcinogen than you get in foods in a year!”
 - Dr. Bruce Aimes, toxicologist, UC Berkeley

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Carcinogens

- Cigarette smoking > 30% of all cancer
- Hormones > 30% of all cancer
 - Dr. Bruce Ames, toxicologist, UC Berkeley
 - Ames, B.N. and Gold, L.S. (1998) The causes and prevention of cancer: the role of environment. *Biotherapy* 11:205-20.



Leaky Gut Syndrome

- Due in part to chemicals, artificial preservatives, dyes, GMO-foods and NSAIDS.
- Flood gate opens for allergen and antigen to enter the body

Treating Leaky Gut Syndrome in a TCM Practice, Jake Paul Fratkin, OMD, L.Ac.



靈樞

“The skilled practitioner treats
before an illness occurs,
not once it has occurred.”

Ling Shu (Divine Pivot), 2nd century A.D.



Solution

- Stop the influx of all pathogens
 - Prevent infection
 - Avoid environmental chemicals and toxins
 - Consume organic and whole foods
- Eliminate the accumulation of pathogens
 - Increase blood circulation
 - Facilitate liver metabolism
 - Enhance kidney elimination
- Treat diseases and restore wellness



The Immune System

- Antigen
- Antibodies
- Complement
- Hypersensitivity
- Tolerance



Antigen

- Definition: any substance that causes the immune system to produce antibodies against it.
 - bacteria,
 - virus,
 - fungus,
 - parasite,
 - allergens,
 - chemicals,
 - toxins,
 - many (any) others



The Immune System

- Innate immunity
 - Skin, mucous
 - Macrophages, natural kills (NK) cells
- Acquired immunity
 - Cell mediated Immunity (T cells, B cells)
 - Humoral immunity (antibodies)

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Cell Mediated Immunity

- T cells (thymocytes) originate from stem cells in the bone marrow and mature in thymus.
- T cells help with regulation and communication of the immune system
- Four types of T cells:
 - T helper cells
 - T killer/cytotoxic cells
 - T suppressor/regulatory cells
 - T memory cells

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T helper cells

- T helper cells orchestrate the entire immune response
 - T_h1 : activates T killer/cytotoxic cells to kill pathogens
 - T_h2 : activates B cells to produce antibodies to bind to pathogen
 - T_h17 : produces IL-17 and IL-22, and causes excessive inflammation and tissue injury in autoimmune disease

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T killer/cytotoxic cells

- They produce cytotoxin to cause cell lysis and apoptosis
- They kill pathogens (bacteria, virus, fungus, others)
- They kill damaged or dysfunctional cells



T suppressor/regulatory cells

- They suppress the continued or excessive immune system activities.
- They shut down T cell mediated immunity at the end of the immune reaction.
- They maintain homeostasis and tolerance to self-antigens.



T memory cells

- They remember the pathogen long after the pathogen is eliminated.
- In recurrent event, they quickly reproduce and initiate the immune response.



Humoral Immunity

- B cells originate from stem cells and mature in the bone marrow
- B cells do not fight the pathogen directly, but produce antibodies that bind to the antigen.



Antibodies

- Definition: they are immunoglobulins produced by B cells that bind to antigen and cause lysis, neutralization, agglutination and precipitation of the antigen.
- Types of antibodies
 - IgE: causes Type 1 allergic response
 - IgG, IgM, IgA, IgD: causes Type 2, 3, 4 inflammatory response



Complement

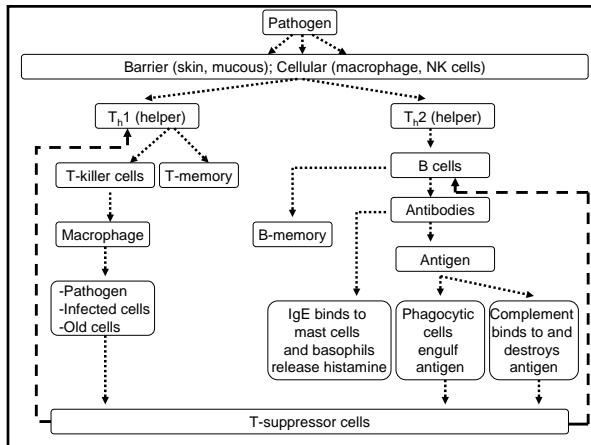
- Activated when antibodies bind to antigens, complement is a group of proteins that help to clear pathogens through many mechanisms, including cytolysis, chemotaxis, opsonization, immune clearance, inflammation, and marking of pathogens for phagocytosis.



Cytokines

- Cytokines are proteins produced by immune cells (macrophages, B lymphocytes, T lymphocytes and mast cells) to coordinate between humoral and cell-based immunity.
- Cytokines include interferons, interleukins, lymphokines, tumour necrosis factor and chemokines.
- Cytokines balance between rest and response of the immunity to antigen.
 - Stimulant cytokines for activation and growth of cells: IL-2, IL-4.
 - Pro-inflammatory cytokines to induce inflammation, lysis and apoptosis: IL-1, IL-6, IL-8, TNF-alpha.
 - Regulatory cytokines on differentiation and growth of cells: IL-3, IL-7.

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Immune tolerance

- Immune system's ability to distinguish between "self" and "non self."
- Balance between hypo- and hyper-immunity
- Balance between T-helper and T-suppressor cells

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Antigen

- Exogenous antigens
 - Bacteria, virus, fungus, parasite, allergens, chemicals, toxins, etc.
- Endogenous antigens
 - Cells that contain all or part of bacteria, virus, fungus, parasite, allergens, chemicals, toxins, etc.
- Autoantigens
 - A normal “self” protein that is mistaken by the immune system as “none self.”

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Autoimmune diseases

- Normally the immune system’s army of white blood cells helps protect the body from harmful substances, called antigens. Example of antigens include bacteria, viruses [and] toxins...
- But in patients with autoimmune disorder, the immune system can’t tell the difference between healthy body tissues and antigens. The result is an immune response that destroys normal body tissues.
 - National Institute of Health (NIH)

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Sir William Osler, 1849 – 1919.

“The good physician
treats the disease;
the great physician
treats the person who
has the disease.”

– Sir William Osler, M.D.

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Drugs for Autoimmune Disorders

- Corticosteroids
 - Prednisone, prednisolone, dexamethasone, triamcinolone and betamethasone
- Immune suppressants
 - Methotrexate (Trexall), cyclophosphamide (Cytoxan), azathioprine (Imuran)
- Biologics
 - Adalimumab (Humira), infliximab (Remicade), etanercept (Enbrel), abatacept (Orencia), rituximab (Rituxan)

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Corticosteroids, effect

- Corticosteroid drugs
 - prednisone,
 - prednisolone,
 - dexamethasone,
 - triamcinolone,
 - betamethasone
- Strong effect to suppress inflammation
- Strong effect to suppress cell-mediated immunity
- Moderate effect to suppress humoral immunity

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Corticosteroids, side effects

- | | |
|--------------------------------|--------------------------------|
| • Infection | • Osteoporosis |
| • Urinary tract infection | • Diabetes mellitus |
| • Herpes | • Hypertension Increase weight |
| • Oral candidiasis | • Hyperlipidemia |
| • Water and fat retention | • Pancreatitis |
| • Peptic ulcer disease | • Growth suppression |
| • Psychiatric and mood changes | • Adrenal gland atrophy |

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Immune suppressants, effect

- Immune suppressant drugs:
 - methotrexate (Trexall)
 - cyclophosphamide (Cytoxan)
 - azathioprine (Imuran)
- Suppress immune system and response
- Suppress inflammation
- Treat autoimmune disorders



Immune suppressants, side effects

- Bone marrow suppression
- Liver and kidney damages
- Increased risks of infection
- Increased risks of cancer
- Hair loss



Biologics

- T-cell blocker
 - abatacept (Orencia)
- B-cell destroyer
 - rituximab (Rituxan)
- Anticytokine; Anti-TNF-alpha
 - adalimumab (Humira),
 - infliximab (Remicade),
 - etanercept (Enbrel),



Biologics, effect

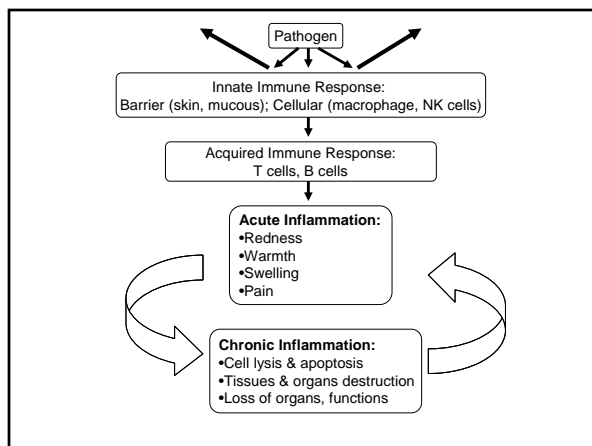
- Potent and more precise effect to block T-cells, destroy B-cells, and inhibit specific inflammatory pathways
- Treats autoimmune disorders

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Biologics, side effects

- Immune suppression
- Significant increase in risk of infection and cancer
- They are foreign antibodies that may trigger a separate autoimmune reaction
- Blood disorders (leukopenia, neutropenia)

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Integrated pathology

Bacteria, Virus, Fungus, Parasite, Allergens, Toxins	Wind, Cold, Heat, Summer-heat, Dampness, Dryness
Barrier (skin, mucous), Cellular (macrophage, NK cells)	<i>Wei</i> (defensive) <i>qi</i>
T cells B cells	<i>Zheng</i> (upright) <i>qi</i>

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Acute Inflammation

Redness	Heat
Warmth	Fire
Swelling	Damp and phlegm
Pain	Qi stagnation, blood stasis

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Chronic Inflammation

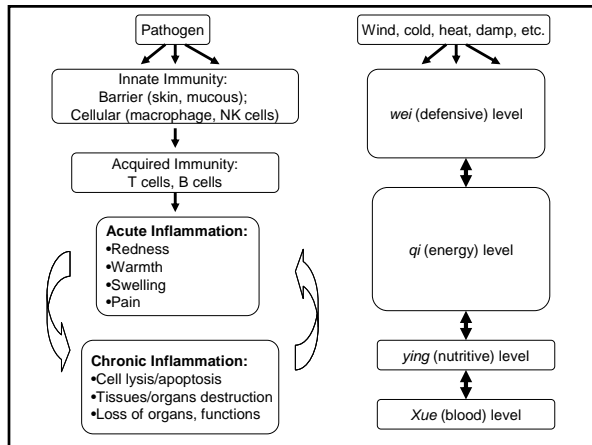
Cell lysis and apoptosis; destruction of tissues and organs	Yin deficiency
Loss of organs and their functions	Yang deficiency

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TCM Pattern Differentiation

- *Liu Jing Bian Zheng* (Six Stages Differentiation): *taiyang, yangming, shaoyang, taiyin, shaoyin, jueyin*
- *Wei Qi Ying Xue Bian Zheng* (Defensive, Qi, Nutritive, Blood Differentiation)
- *San Jiao Bian Zheng* (Triple Burner Differentiation): upper, middle and lower burner

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Wen Bing (Warm Disease)

Wei (defensive) level	Pathogen attacks body surface
Fever, intolerance to cold and wind, sweating, red tongue tip, superficial rapid pulse; headache, thirst, cough, sore throat.	Innate immunity: skin, mucus, macrophages, NK cells

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Wen Bing (Warm Disease)

<i>Qi</i> (energy) level	Pathogen moves to the interior
High fever, heat intolerance, profuse sweating, extreme thirst, red tongue with yellow tongue coating, full and rapid pulse; irritability, dark urine, diarrhea, chest fullness, cough, thick sputu, delirium.	Acquired immune response, activation of T cells and B cells, increased production of various pro-inflammatory cytokines



Wen Bing (Warm Disease)

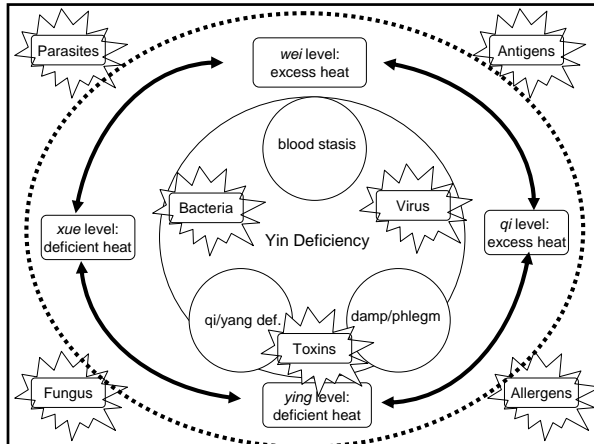
<i>Ying</i> (nutritive) level	Breakdown of immune tolerance
Fever with high temperature at night, thirst with no desire to drink, irritability or delirium, faint skin rashes, crimson tongue, thready rapid pulse	The immune system mistakens normal cells and tissues and "autoantigen;" attacks and damages varous tissues and organs



Wen Bing (Warm Disease)

<i>Xue</i> (blood) level	Tissue damage
Dark or purple skin rashes, hemorrhages at various parts of the body, crimson tongue, deep and rapid pulse, fever at night, flushed face, dry mouth, red eyes, burning sensations in the chest, palms and soles.	Fibrosis, scar tissue formation, atrophy of tissues and organs, dysfunction of the organism





黄帝内经 *Huang Di Nei Jing* (Yellow Emperor's Inner Classic), 2nd century A.D.

- “The sage does not wait for the disease to occur before treating it, but takes preventive measures in advance... To resort to treatment when a disease has already occurred... is just like digging a well when one is dying of thirst... Surely, is it not then too late?”

Treatment Principles

1. Avoid exposure to pathogens
2. Eliminate accumulated toxins and pathogens
3. Clear heat to treat acute and chronic inflammation
4. Nourish yin to repair tissue damages and restore normal forms
5. Move blood to treat fibrosis and scar tissues, and eliminate CIC
6. Dry dampness and eliminate phlegm
7. Tonify qi and yang to restore normal functions

1. Avoid exposure to pathogens

- Avoid exposure to environmental toxins
- Install air and water filters at homes
- Avoid contact with infected individuals
- Wear masks, wash hands
- Maintain moist mucous membrane
- Drink plenty of water and use humidifier

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2. Eliminate accumulated toxins and pathogens

- Eliminate accumulated allergens and toxins from the blood and tissues
- Enhance liver metabolic function
- Improve kidney excretion function

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2. Eliminate accumulated toxins and pathogens

- Eliminate accumulated allergens and toxins from the blood and tissues
 - *Lu Dou* (Semen Phaseoli Radiati) + *Gan Cao* (Radix et Rhizoma Glycyrrhizae)
 - *Lian Qiao* (Fructus Forsythiae) + *Fang Feng* (Radix Saposchnikoviae)
 - *Bai Mao Gen* (Rhizoma Imperatae) + *Da Huang* (Radix et Rhizoma Rhei)
- Enhance liver metabolic function
- Improve kidney excretion function

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2. Eliminate accumulated toxins and pathogens

- Eliminate accumulated allergens and toxins from the blood and tissues
- Enhance liver metabolic function
 - *Xiao Chai Hu Tang* (Minor Bupleurum Decoction)
 - *Da Chai Hu Tang* (Major Bupleurum Decoction)
 - *Yin Chen Hao Tang* (Artemisia Scoparia Decoction)
 - *Ge Hua* (Flos Puerariae)
 - *Wu Wei Zi* (Fructus Schisandrae Chinensis)
- Improve kidney excretion function

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2. Eliminate accumulated toxins and pathogens

- Eliminate accumulated allergens and toxins from the blood and tissues
- Enhance liver metabolic function
- Improve kidney excretion function
 - *Bai Mao Gen* (Rhizoma Imperatae) + *Huang Bo* (Cortex Phellodendri Chinensis)
 - *Huang Qi* (Radix Astragali) + *Lu Xian Cao* (Herba Pyrolae)
 - *Shan Zhu Yu* (Fructus Corni) + *Jin Ying Zi* (Fructus Rosae Laevigatae)

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3. Clear heat in acute and chronic inflammation

- Clear excess heat associated with acute inflammation due to invasion of pathogens
- Clear deficiency heat associated with lysis and apoptosis of cells/tissues/organs

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3. Clear heat in acute and chronic inflammation

- Herbs that clear heat
 - Select herbs based on *wei/qi/ying/xue* diagnosis
 - Select herbs based on pharmacology



3. Clear heat in acute and chronic inflammation

- *Wei, Qi, Ying, Xue* Levels
 - *Wei* (defensive) level
 - *Yin Qiao San* (Honeysuckle and Forsythia Powder)
 - *Qi* (energy) level
 - *Ying* (nutritive) level
 - *Xue* (blood) level



3. Clear heat in acute and chronic inflammation

- *Wei, Qi, Ying, Xue* Levels
 - *Wei* (defensive) level
 - *Qi* (energy) level
 - *Bai Hu Tang* (White Tiger Decoction), 321
 - *Huang Lian Jie Du Tang* (Coptis Decoction to Relieve Toxicity), 341
 - *Long Dan Xie Gan Tang* (Gentiana Decoction to Drain the Liver), 371
 - *Ying* (nutritive) level
 - *Xue* (blood) level



3. Clear heat in acute and chronic inflammation

- *Wei, Qi, Ying, Xue* Levels

- *Wei* (defensive) level
- *Qi* (energy) level
- *Ying* (nutritive) level
 - *Qing Ying Tang* (Clear the Nutritive Level Decoction), 330
 - *Qing Hao Bie Jia Tang* (Artemisia Annuum and Soft-Shell Turtle Shell Decoction), 412
 - *Zhi Bai Di Huang Wan* (Anemarrhena, Phellodendron, and Rehmannia Pill), 636
 - *Qi Ju Di Huang Wan* (Lycium Fruit, Chrysanthemum, and Rehmannia Pill), 640
- *Xue* (blood) level

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3. Clear heat in acute and chronic inflammation

- *Wei, Qi, Ying, Xue* Levels

- *Wei* (defensive) level
- *Qi* (energy) level
- *Ying* (nutritive) level
- *Xue* (blood) level
 - *Xi Jiao Di Huang Tang* (Rhinoceros Horn and Rehmannia Decoction), 333
 - Note: Replace *Xi Jiao* (Cornu Rhinoceri) with *Shui Niu Jiao* (Cornu Bubali).
 - *Qing Wen Bai Du Yin* (Clear Epidemics and Overcome Pathogenic Influences Decoction), 337

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3. Clear heat in acute and chronic inflammation

- Heat-clearing herbs that suppress immune system

- *Di Huang* (Radix Rehmanniae)
- *Xuan Shen* (Radix Scrophulariae)
- *Zhi Mu* (Rhizoma Anemarrhenae)
- *Shi Gao* (Gypsum Fibrosum)
- *Ren Dong Teng* (Caulis Lonicerae Japonicae)
- *Zhi Zi* (Fructus Gardeniae)

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Zhi Zi (Fructus Gardeniae)

- **Immunosuppressive:** significant inhibition of human peripheral blood T cells and IL-2 secretion.[1]
- **Anti-inflammatory:** suppresses vascular inflammation via inhibition of tumor necrosis factor (TNF)-alpha.[1]

[1] Chang WL, Wang HY, Shi LS, Lai JH, Lin HC. Immunosuppressive iridoids from the fruits of *Gardenia jasminoides*. School of Pharmacy, National Defense Medical Center, National Defense University, Taipei, Taiwan 114, Republic of China. *J Nat Prod*. 2005 Nov;68(11):1683-5.

[1] Hwang SM, Lee YJ, Yoon JJ, Lee SM, Kang DG, Lee HS. *Gardenia jasminoides* inhibits tumor necrosis factor-alpha-induced vascular inflammation in endothelial cells. *Professional Graduate School of Oriental Medicine, Wonkwang University, Chonbuk, Republic of Korea. Phytother Res*. 2010 Jun;24 Suppl 2:S214-9.



4. Nourish yin to repair tissue damages

- Increase generation of new cells/tissues
- New cells and tissues do not have antigen, and therefore will not trigger antibody production or autoimmune reactions



4. Nourish yin to repair tissue damages

- Select herbs based on *zang/fu* diagnosis
- Select herbs based on pharmacology



Five Element Chart

	Fire	Earth	Metal	Water	Wood
Yin organ	Heart	Spleen	Lung	Kidney	Liver
Yang organ	Small intestine	Stomach	Large intestine	Urinary bladder	Gall bladder
Sense organ	Tongue	Mouth	Nose	Ears	Eyes
Tissues	Blood vessels	Muscles	Skin	Bones	Tendons

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4. Nourish yin to repair tissue damages

- **Zang Fu diagnosis**

- Heart / Small Intestine / Tongue / Blood Vessels

- *Sheng Mai San* (Generate the Pulse Powder), 554, modified
 - *Mai Dong* (Radix Ophiopogonis)
 - *Di Huang* (Radix Rehmanniae)
 - *Wu Wei Zi* (Fructus Schisandrae Chinensis)
 - Remove: *Ren Shen* (Radix et Rhizoma Ginseng)

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4. Nourish yin to repair tissue damages

- **Zang Fu diagnosis**

- Spleen / Stomach / Mouth / Muscles

- *Mai Men Dong Tang* (Ophiopogonis Decoction), 1043
- *Sha Shen Mai Dong Tang* (Glehnia and Ophiopogonis Decoction), 1047
- *Zeng Ye Tang* (Increase the Fluids Decoction), 1054

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4. Nourish yin to repair tissue damages

- **Zang Fu diagnosis**

- Lung / Large Intestines / Nose / Skin

- *Bai He Gu Jin Tang* (Lily Bulb Decoction to Preserve the Metal), 1036
- *Mai Wei Di Huang Wan* (Ophiopogonis, Schisandra, and Rehmannia Pill), 642
- *Du Qi Wan* (Capital Qi Pill), 644



4. Nourish yin to repair tissue damages

- **Zang Fu diagnosis**

- Kidney / Urinary Bladder / Ear / Bones

- *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia), 627
- *Zhi Bai Di Huang Wan* (Anemarrhena, Phellodendron, and Rehmannia Pill), 636
- *Qi Ju Di Huang Wan* (Lycium Fruit, Chrysanthemum, and Rehmannia Pill), 640
- *Da Bu Yin Wan* (Great Tonify the Yin Pill), 649
- *Zuo Gui Wan* (Restore the Left [Kidney] Pill), 645



4. Nourish yin to repair tissue damages

- **Zang Fu diagnosis**

- Liver / Gall Bladder / Eyes / Tendons

- *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia), 627
- *Zhi Bai Di Huang Wan* (Anemarrhena, Phellodendron, and Rehmannia Pill), 636
- *Qi Ju Di Huang Wan* (Lycium Fruit, Chrysanthemum, and Rehmannia Pill), 640



4. Nourish yin to repair tissue damages

- Yin-nourishing herbs with regulatory or inhibitory effect on humoral and cell-mediated immunity
 - *Di Huang* (Radix Rehmanniae)
 - *Xuan Shen* (Radix Scrophulariae)
 - *Mai Dong* (Radix Ophiopogonis)
 - *Tian Dong* (Radix Asparagi)
 - *Nan Sha Shen* (Radix Adenophorae)
 - *Bei Sha Shen* (Radix Glehniae)

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Shu Di Huang (Radix Rehmanniae Praeparata)

- Hematopoietic: increases multiplication and differentiation of bone marrow hematopoietic cells (CFU-S and CFU-E).^[i]
 - Osteoporotic: stimulates the proliferation and activities of osteoblasts and prevents osteoporotic bone loss.^[ii]
 - Renoprotective: relieves progressive renal failure.^[iii]
 - Neuroprotective: improves cognitive functioning by stimulating cholinergic enzyme activities and alleviating inflammatory responses.^[iv]
- [i] Yuan Y, Hou S, Lian T, Han Y. Studies of Rehmannia glutinosa Libosch. f. hueichingensis as a blood tonic. Henan College of the Traditional Chinese Medicine, Zhengzhou. Zhongguo Zhong Yao Za Zhi. 1992 Jun;17(6):366-8, inside backcover.
- [ii] Oh KO, Kim SW, Kim JY, Ko SY, Kim HM, Baek JH, Ryoo HM, Kim JK. Effect of Rehmannia glutinosa Libosch extracts on bone metabolism. OC T Inc., 2-17, Omok-n, Seongseo-eup, Choongnam 330-831, Chonan, South Korea. Clin Chim Acta. 2002 Aug;334(1-2):155-55.
- [iii] Rehmannia glutinosa ameliorates the progressive renal failure induced by 5/6 nephrectomy. Department of Internal Medicine, College of Oriental Medicine, Kyung Hee University, 1 Hoegi-dong, Dongdaemum-Ku, Seoul 130-702, Republic of Korea. Lee BC, Choi JB, Cho HJ, Kim YS. J Ethnopharmacol. 2009 Feb 25;122(1):131-5. Epub 2008 Dec 25.
- [iv] Lee B, Shim I, Lee H, Hahn DH. Rehmannia glutinosa ameliorates scopolamine-induced learning and memory impairment in rats. J Microbiol Biotechnol. 2011 Aug;21(8):874-83.

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Mai Dong (Radix Ophiopogonis)

- Cardioprotective: potent cardioprotective effect in cardiac cells.^[i]
- Anti-inflammatory: exerts anti-inflammatory activity by inhibiting the release of the inflammatory chemokine,^[ii] suppressant effects on nitric oxide production.^[iii]

- [i] Tao J, Wang H, Zhou H, Li S. The saponin monomer of dwarf lilyturf tuber, DT-13, reduces L-type calcium currents during hypoxia in adult rat ventricular myocytes. Life Sci. 2005 Oct 28;77(24):3021-30. Epub 2005 Jun 23.
- [ii] Hung TM, Thu CV, Dat NT, Ryoo SW, Lee JH, Kim JC, Na M, Jung HJ, Bae K, Min BS. Homoisoflavonoid derivatives from the roots of Ophiopogon japonicus and their in vitro anti-inflammation activity. College of Pharmacy, Catholic University of Daegu, Gyeongsan, Republic of Korea. Bioorg Med Chem Lett. 2010 Apr 15;20(8):2412-6. Epub 2010 Mar 11.
- [iii] Li N, Zhang JY, Zeng KW, Zhang L, Che YY, Tu PF. Anti-inflammatory homoisoflavonoids from the tuberous roots of Ophiopogon japonicus. Fitoterapia. 2012 May 22.

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Tian Dong (Radix Asparagi)

- Hepatoprotective: protects against alcohol-induced hepatotoxicity via the suppression of tumour necrosis factor-alpha (TNF-alpha) secretion and the TNF-alpha-induced cytotoxicity.[i]
- Anti-inflammatory: suppresses the production of pro-inflammatory cytokines (tumor necrosis factor (TNF)-alpha, interleukin (IL)-1beta) to treat acute and chronic inflammation.[ii]

- [i] Kim H., Lee E., Lim T., Jung J. & Lyu, Y. Inhibitory effect of *Asparagus cochinchinensis* on tumor necrosis factor-alpha secretion from astrocytes. *Int J Immunopharmacol*. 1998; 20(4-5): 153-162.
- [ii] Lee do Y, Choo BK, Yoon T, Cheon MS, Lee HW, Lee AY, Kim HK. Anti-inflammatory effects of *Asparagus cochinchinensis* extract in acute and chronic cutaneous inflammation. Department of Herbal Resources Research, Korea Institute of Oriental Medicine, 483 Exporo, Daejeon 305-811, Republic of Korea. *J Ethnopharmacol*. 2009 Jan 12;121(1):28-34. Epub 2008 Jul 18.



5. Move blood and eliminate blood stasis

- Reverses fibrosis
- Eliminates scar tissues
- Eliminates circulating immune complex (CIC)
- Treats vasculitis
- Relieves pain
- Facilitates overall healing



5. Move blood and eliminate blood stasis

- Select herbs based on *sanjiao* diagnosis
- Select herbs based on pharmacology



5. Move blood and eliminate blood stasis

- *Sanjiao* diagnosis
 - *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction), 879
 - *Ge Xia Zhu Yu Tang* (Drive Out Blood Stasis Below the Diaphragm Decoction), 885
 - *Shao Fu Zhu Yu Tang* (Drive Out Blood Stasis in the Lower Abdomen Decoction), 889
 - *Shen Tong Zhu Yu Tang* (Drive Out Blood Stasis from a Painful Body Decoction), 893
 - *Tao Hong Si Wu Tang* (Four-Substance Decoction with Safflower and Peach Pit), 571



Chuan Xiong (Rhizoma Chuanxiong)

- Anti-inflammatory: inhibits TNF-alpha production and TNF-alpha bioactivity, and are promising agents in the treatment of inflammation and related diseases.[i]
- [i] Liu L, Ning ZQ, Shan S, Zhang K, Deng T, Lu XP, Cheng YY. Phthalide Lactones from Ligusticum chuanxiong inhibit lipopolysaccharide-induced TNF-alpha production and TNF-alpha-mediated NF-kappaB Activation. *Planta Med.* 2005 Sep;71(8):808-13.



Tao Ren (Semen Persicae)

- Antiallergic and anti-inflammatory: treats mast cell-mediated allergic symptoms and diseases, such as asthma and sinusitis. It reduces histamine release from mast cells and inhibited artificially-induced systemic anaphylaxis and immunoglobulin E (IgE)-mediated local allergic reactions.[i]
- [i] Shin TY, Park SB, Yoo JS, Kim IK, Lee HS, Kwon TK, Kim MK, Kim JC, Kim SH. Anti-allergic inflammatory activity of the fruit of *Prunus persica*: role of calcium and NF-kappaB. *College of Pharmacy, Woosuk University, Jeonju 565-701, Republic of Korea. Food Chem Toxicol.* 2010 Oct;48(10):2797-802. Epub 2010 Jul 13.



Mu Dan Pi (Cortex Moutan)

- Anti-inflammatory: *Mu Dan Pi* significantly suppresses histamine release and prostaglandin D(2) synthesis from mast cells.[i]
- Anticomplement: The monoterpenoid glucosides from *Mu Dan Pi*, including suffrupaeoniflorin A and galloyloxypaeoniflorin, have been shown to exhibit anticomplement effects.[ii]

[i] Chan BC, Hon KL, Leung PC, Sam SW, Fung KP, Lee MY, Lau HY. Traditional Chinese medicine for atopic eczema: PentalHerbs formula suppresses inflammatory mediators release from mast cells. *J Ethnopharmacol.* 2008 Oct 30;120(1):85-91. Epub 2008 Aug 3.

[ii] Song WH, et al. Anticomplement monoterpenoid glucosides from the root bark of *Paeonia suffruticosa*. *J Nat Prod.* 2014 Jan 24;77(1):42-8. doi: 10.1021/np400571x.



6. Dry dampness and eliminate phlegm

- Pleural effusion, pericardial effusion, edema, ascites, intracranial edema, ocular edema, exudation in the joints
 - *Ting Li Zi* (Semen Descurainiae seu Lepidii), *Jie Zi* (Semen Sinapis), and *Sang Bai Pi* (Cortex Mori) reduce exudation and promote absorption of effusion.



7. Restore yang to increase adrenal gland functions, raise corticosteroids production

- Kidney yang tonic formulas as replacement for corticosteroids
 - *Jin Gui Shen Qi Wan* (Kidney Qi Pill from the Golden Cabinet), 668
 - *Ba Wei Di Huang Wan* (Eight-Ingredient Pill with Rehmannia), 672
 - *You Gui Wan* (Restore the Right [Kidney] Pill), 678



7. Restore yang to increase adrenal gland functions, raise corticosteroids production

- Fu Zi (Radix Aconiti Lateralis Praeparata)
- Rou Gui (Cortex Cinnamomi)
- Lu Jiao (Cornu Cervi)
- Rou Cong Rong (Herba Cistanches)
- Yin Yang Huo (Herba Epimedii)
- Dong Chong Xia Cao (Cordyceps)
- Gui Ban (Plastrum Testudinis)
- Ge Jie (Gecko)



Autoimmune Diseases

- Acute Disseminated Encephalomyelitis (ADEM)
- Acute necrotizing hemorrhagic leukoencephalitis
- Addison's disease
- Agammaglobulinemia
- Alopecia areata
- Amyloidosis
- Ankylosing spondylitis
- Anti-GBM/Anti-TBM nephritis
- Antiphospholipid syndrome (APS)
- Autoimmune angioedema
- Autoimmune aplastic anemia
- Autoimmune dysautonomia
- Autoimmune hepatitis
- Autoimmune hyperlipidemia
- Autoimmune immunodeficiency
- Autoimmune inner ear disease (AIED)
- Autoimmune myocarditis
- Autoimmune oophoritis
- Autoimmune pancreatitis
- Autoimmune retinopathy
- Autoimmune thrombocytopenic purpura (ATP)
- Autoimmune thyroid disease
- Autoimmune urticaria
- Axonal & neuronal neuropathies
- Balo disease
- Behcet's disease
- Bullous pemphigoid
- Cardiomyopathy
- Castleman disease
- Celiac disease
- Chagas disease
- Chronic fatigue syndrome**
- Chronic inflammatory demyelinating polyneuropathy (CIDP)
- Chronic recurrent multifocal osteomyelitis (CRMO)
- Churg-Strauss syndrome
- Cicatricial pemphigoid/benign mucosal pemphigoid
- Crohn's disease
- Cogans syndrome
- Cold agglutinin disease
- Congenital heart block
- Coxsackie myocarditis
- CREST disease
- Essential mixed cryoglobulinemia
- Demyelinating neuropathies
- Dermatitis herpetiformis
- Dermatomyositis
- Devic's disease (neuromyelitis optica)
- Discoid lupus
- Dressler's syndrome



Autoimmune Diseases

- Endometriosis
- Eosinophilic esophagitis
- Eosinophilic fasciitis
- Erythema nodosum
- Experimental allergic encephalomyelitis
- Evans syndrome
- Fibromyalgia**
- Fibrosing alveolitis
- Giant cell arteritis (temporal arteritis)
- Giant cell myocarditis
- Glomerulonephritis
- Goodpasture's syndrome
- Granulomatosis with Polyangiitis (GPA)
- Graves' disease
- Guillain-Barre syndrome
- Hashimoto's encephalitis
- Hashimoto's thyroiditis
- Hemolytic anemia
- Henoch-Schonlein purpura
- Herpes gestationis
- Hypogammaglobulinemia
- Idiopathic thrombocytopenic purpura (ITP)
- IgA nephropathy
- IgG4-related sclerosing disease
- Immunoregulatory lipoproteins
- Inclusion body myositis
- Interstitial cystitis
- Juvenile arthritis
- Juvenile diabetes (Type 1 diabetes)
- Juvenile myositis
- Kawasaki syndrome
- Lambert-Eaton syndrome
- Leukocytoclastic vasculitis
- Lichen planus
- Lichen sclerosus
- Ligneous conjunctivitis
- Linear IgA disease (LAD)
- Lupus (SLE)
- Lyme disease, chronic
- Meniere's disease
- Microscopic polyangiitis
- Mixed connective tissue disease (MCTD)
- Mooren's ulcer
- Mucha-Habermann disease
- Multiple sclerosis
- Myasthenia gravis
- Myositis
- Neuromyelitis optica (Devic's)
- Neutropenia
- Ocular cicatricial pemphigoid
- Optic neuritis
- Palindromic rheumatism
- PANDAS
- Paraneoplastic cerebellar degeneration



Autoimmune Diseases

- Paroxysmal nocturnal hemoglobinuria (PNH)
- Parry Romberg syndrome
- Parsonage-Turner syndrome
- Pars planitis (peripheral uveitis)
- Pemphigus
- Peripheral neuropathy
- Perivascular encephalomyelitis
- Pernicious anemia
- POEMS syndrome
- Polyarteritis nodosa
- Type I, II, & III autoimmune polyglandular syndromes
- Polymyalgia rheumatica
- Polymyositis
- Postmyocardial infarction syndrome
- Postpericardiotomy syndrome
- Progesterone dermatitis
- Primary biliary cirrhosis
- Primary sclerosing cholangitis
- Psoriasis
- Psoriatic arthritis
- Idiopathic pulmonary fibrosis
- Pyoderma gangrenosum
- Pure red cell aplasia
- Raynauds phenomenon
- Reactive Arthritis
- Reflex sympathetic dystrophy
- Reiter's syndrome
- Relapsing polychondritis
- Restless legs syndrome
- Retroperitoneal fibrosis
- Rheumatic fever
- Rheumatoid arthritis
- Sarcoidosis
- Schmidt syndrome
- Scleritis
- Scleroderma
- Sjogren's syndrome
- Sperm & testicular autoimmunity
- Stiff person syndrome
- Subacute bacterial endocarditis (SBE)
- Susac's syndrome
- Sympathetic ophthalmia
- Takayasu's arteritis
- Temporal arteritis/Giant cell arteritis
- Thrombocytopenic purpura (TTP)
- Tolosa-Hunt syndrome
- Transverse myelitis
- Type 1 diabetes
- Ulcerative colitis
- Undifferentiated connective tissue disease (UCTD)
- Uveitis
- Vasculitis
- Vesiculobulbous dermatosis
- Vitiligo
- Wegener's granulomatosis



Autoimmune diseases

1. Raynaud's disease
2. Sjogren's syndrome
3. Hashimoto's thyroiditis



Raynaud's disease

- A disorder characterized by periodic vasospastic attacks of pallor and coldness of the fingers, toes, ears and nose
- More common in women
- Onset in patients under 40 years of age.



Auguste Gabriel Maurice Raynaud, 1809-1877

The French doctor who discovered Raynaud's Disease, a rare vasospastic disorder which contracts blood vessels in extremities, in the late 19th century.

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Clinical Manifestations

- Early phase: vasospasm with ischemic manifestations, such as pale skin, cold fingers, stabbing pain, numbness and rigidity of fingers.
- Late phase: skin swelling and cyanosis, turning dark blue or dark brown, with stabbing pain and throbbing sensation

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Etiology

- Cause: unknown
- Risk factors:
 - Emotional stress
 - Chronic exposure to cold environment
 - Smoking
 - Physical injuries
 - Drugs (beta blockers, ergotamine, sumatriptan, chemotherapy agents; and drugs that cause blood vessels to narrow
 - Certain chemicals, such as vinyl chloride

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Pathology

- Exposure to pathogen
- Triggers the immune system to attack the blood vessels
 - Physiological change: increased vasoconstriction of the arteries and arterioles
 - Physical change: increased platelet activation, increased blood viscosity, impaired fibrinolysis
- Sudden attacks of pallor and coldness to the fingers, toes, ears and nose, lasting from minutes to longer than one hour.

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Diagnosis

- Positive antinuclear antibody (ANA)
- Abnormal erythrocyte sedimentation rate (ESR)
- Vasospastic attacks of pallor and cyanosis
- Abnormal nailfold pattern
- Pitting scars, ulcers, or gangrene of the skin, fingers or toes

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医宗金鉴 *Yi Zong Jin Jian* (Golden Mirror of the Medical Tradition), in 1742

“In blood vessel *bi zheng* (painful obstruction syndrome), blood does not flow harmoniously in the vessels, leading to a change in color.”

- 吳謙 Wu Qian

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Differential Diagnosis & Customized Treatment

Impaired blood circulation due to vasoconstriction and increased blood viscosity	Blood stasis
More pallor with numbness of the affected area	Blood stasis with qi stagnation
More cyanosis with sharp stabbing pain	Blood stasis with cold
Warm/burning sensation of the body, cold and pain of the fingers and toes	Blood stasis with yin deficiency

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Blood stasis

- *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction), 879
- *Ge Xia Zhu Yu Tang* (Drive Out Blood Stasis Below the Diaphragm Decoction), 885
- *Shao Fu Zhu Yu Tang* (Drive Out Blood Stasis in the Lower Abdomen Decoction), 889
- *Shen Tong Zhu Yu Tang* (Drive Out Blood Stasis from a Painful Body Decoction), 893
- *Tao Hong Si Wu Tang* (Four-Substance Decoction with Safflower and Peach Pit), 571

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Blood stasis with complications

- Qi stagnation
 - *Si Ni San* (Frigid Extremities Powder), 233
- Cold
 - *Dang Gui Si Ni Tang* (Tangkuei Decoction for Frigid Extremities), 494
- Yin deficiency
 - *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia), 627
- Localized toxic heat
 - *Si Miao Yong An Tang* (Four-Valiant Decoction for Well-Being), 1344

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Blood movers with anti-inflammatory effect

- *Chi Shao* (Radix Paeoniae Rubra)
- *Mu Dan Pi* (Cortex Moutan)
- *Dan Shen* (Radix et Rhizoma Salviae Miltiorrhizae)
- *San Leng* (Rhizoma Sparganii)
- *E Zhu* (Rhizoma Curcumae)
- *Shui Zhi* (Hirudo)



Diet

- Cool and cold foods should be avoided because they will further impair blood circulation.
- Hot or spicy foods should also be avoided because they will generate internal heat.
- Eat neutral temperature foods, such as green vegetables, black jelly fungus, coarse food grain (such as maize, millet or bean).



Lifestyle

- Regular exercise to improve circulation and keep body warm.
- Avoid exposure to cold. Always keep the body and limbs warm.
- Stop smoking. Control stress.



Clinical Note

- Coldness with pallor and cyanosis appearance of the hands is not a symptom of qi or yang deficiency; but an indication of internal heat with qi or yang stagnation due to blood stasis.
- Therefore, treatment should focus on using herbs to invigorate blood circulation, move qi and yang, but not to tonify qi and yang.
- Note: Raynaud's disease usually occurs prior to, or in conjunction with, other autoimmune disorders, such as scleroderma, Sjogren's, SLE, etc.



Sjogren's syndrome

- A disorder of the immune system identified by its two most common symptoms — dry eyes and a dry mouth.
- The the mucous membranes are affected first, followed by destruction of the lacrimal and salivary glands.
- More common in women than men, 9:1.
- Usually diagnosed in people older than 40 yo.



Henrik Sjögren, 7/23/1899 - 9/17/1986

A Swedish ophthalmologist who first identified a group of women and correlated the triad of dry eyes, dry mouth and polyarthritis



Clinical Manifestations

- Dry eyes due to destruction of lacrimal glands
- Dry mouth due to destruction of salivary glands
- Skin rashes or dry skin
- Vaginal dryness
- Persistent dry cough
- Prolonged fatigue
- Joint pain, swelling and stiffness



Etiology

- Cause: unknown
- Risk factors:
 - Genetics
 - Infection: bacteria or virus (i.e., EBV)
 - Environmental toxins
 - Smoking
 - Air travel



Pathology

- Pathogen triggers immune response
- Migration of lymphocytes to target organs
- Increased production of inflammatory cytokines (IL-2 and interferon-gamma)
- Increased inflammation and apoptosis of target organs



Diagnosis

- Diagnosis:
 - Sjögren's syndrome antibody (anti-SSA)
 - Antinuclear antibody (ANA)
 - Elevated IgA, IgM, IgG, IgE, IgD.
 - Decreased tear and saliva production

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Diagnosis

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Tong Su Shang Han Lun (Plain Version of Discussion of Cold-Induced Disorder), 1916

- “[Pathogenic dryness] first damages the Lung channel, then Stomach fluids and finally Liver blood and Kidney yin.”
- It can therefore be said that dryness symptoms are related to damage to the *zang fu* organs, in particular the Lung, Stomach and Kidney.

– Yu Genchu

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Differential Diagnosis & Customized Treatment

Dry eyes	Liver yin deficiency
Dry mouth	Stomach yin deficiency
Dry skin with skin rashes	Lung yin deficiency
Persistent dry cough	Lung yin deficiency
Vaginal dryness	Kidney yin deficiency



Lung yin deficiency

- *Qing Zao Jiu Fei Tang* (Eliminate Dryness and Rescue the Lung Decoction), 1029
- *Bai He Gu Jin Tang* (Lily Bulb Decoction to Preserve the Metal), 1036



Stomach yin deficiency

- *Yu Nu Jian* (Jade Woman Decoction), 398
- *Mai Men Dong Tang* (Ophiopogonis Decoction), 1043
- *Sha Shen Mai Dong Tang* (Glehnia and Ophiopogonis Decoction), 1047
- *Zeng Ye Cheng Qi Tang* (Increase the Fluids and Order the Qi Decoction), 190



Liver and Kidney yin deficiency

- *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia), 627
- *Qi Ju Di Huang Wan* (Lycium Fruit, Chrysanthemum, and Rehmannia Pill), 640
- *Zhi Bai Di Huang Wan* (Anemarrhena, Phellodendron, and Rehmannia Pill), 636



Blood stasis

- *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction), 879



Herbs to stimulate salivary and lacrimal glands

- *Di Huang* (Radix Rehmanniae)
- *Xuan Shen* (Radix Scrophulariae)
- *Shi Hu* (Caulis Dendrobii)
- *Bei Sha Shen* (Radix Glehniae)
- *Mai Dong* (Radix Ophiopogonis)
- *Bai Mao Gen* (Rhizoma Imperatae)
- *Lu Gen* (Rhizoma Phragmitis)
- *Gou Qi Zi* (Fructus Lycii)
- *Shi Gao* (Gypsum Fibrosum)
- *Zhi Mu* (Rhizoma Anemarrhenae)



Diet

- Avoid hot and spicy foods
- Avoid foods that are warm or hot in nature.
- Drink tea made from *Wu Mei* (Fructus Mume) and *Gan Cao* (Radix et Rhizoma Glycyrrhizae) throughout the day.
- Eat sweet, cool, nourishing and moistening foods, preferably in liquid or semi-liquid form.
- Eat in small quantity several times daily.

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Lifestyle

- Get adequate rest
- Avoid dry environment
- Use humidifier
- Avoid prolong exposure to TV and computers
- Use artificial tears and saline nose drops
- Drink fluids throughout the day
- Reduce frequency of shower/bath, avoid soaps with fragrance, use body lotion.

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Hashimoto's thyroiditis

- A chronic autoimmune disease of the thyroid gland characterized by destruction of the thyroid gland and reduced production of thyroid hormones.
- Also known as
 - Autoimmune thyroiditis
 - Chronic lymphocytic thyroiditis

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Hakaru Hashimoto, 1881-1934

A Japanese physician who first described chronic thyroid disorder with diffuse lymphocytic infiltration, fibrosis and parenchymal atrophy.

eLotus

Clinical Manifestations

- Goiter, pale face, fatigue, weight gain, sleepiness, loose stools, intolerance to cold, cold limbs, reduced body temperature, coarse dry skin, hair loss.
- Women: Men - 20:1
- Most common in middle ages of 40-50

eLotus

Etiology

- Cause: unknown
- Possible factors:
 - virus
 - bacteria
 - heredity
 - sex
 - age

eLotus

Pathology

- Pathogen activates the immune system
 - Increased T helper cells
 - Increased B cell
 - Increased production of antibodies against thyroglobulin, TSH receptors, TPO enzymes
- Increased inflammation causing destruction of thyroid cells and atrophy and fibrosis of the thyroid glands

eLotus

Diagnosis

- Low T4, low T3, high TSH
- Antibodies against
 - Antithyroglobulin antibodies [anti-TG Ab]
 - Thyroid-stimulating antibodies [TSAb]
 - TSH receptors binding immunoglobulins [TBII]
 - Anti-thyroid peroxidase antibodies [anti-TPO Ab]

eLotus

TCM View of Hashimoto's thyroiditis

- Inappropriate diet or unhealthy lifestyle causing internal damage
- Spleen qi and yang deficiencies
- Kidney qi and yang deficiencies

eLotus

Differential Diagnosis & Customized Treatment

Intolerance to cold, cold limbs, reduced body temperature	Kidney qi and yang deficiency
Pale face, fatigue, weight gain, sleepiness, loose stools	Spleen qi and yang deficiency
Coarse dry skin, hair loss, destruction of thyroid cells, atrophy / fibrosis of thyroid glands	Yin deficiency
Goiter	Phlegm accu., blood stasis

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Kidney qi and yang deficiency

- *Jin Gui Shen Qi Wan* (Kidney Qi Pill from the Golden Cabinet), 668
- *Ba Wei Di Huang Wan* (Eight-Ingredient Pill with Rehmannia), 672

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Metabolic effect

- *Rou Gui* (Cortex Cinnamomi) and *Fu Zi* (Radix Aconiti Lateralis Praeparata) have stimulating effects on the body and elevate basal metabolism, leading to excitation of the cardiovascular,^[i] gastrointestinal,^[ii] and immune systems.^[iii]

- [i] Zhou, YD, *Journal of Herbolgy*, 1983; 18(5):394
- [ii] Chen, Y, *Journal of Chinese Herbolgy*, 1981; 6(5):32
- [iii] Wang, YS, *Pharmacology and Applications of Chinese Herbs*, 1983; 443

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Spleen qi and yang deficiency

- *Si Jun Zi Tang* (Four-Gentlemen Decoction), 522
- *Liu Jun Zi Tang* (Six-Gentlemen Decoction), 527



Yin deficiency

- *Liu Wei Di Huang Wan* (Six-Ingredient Pill with Rehmannia), 627



Goiter (phlegm accumulation)

- *Xia Ku Cao* (Spica Prunellae)
- *Shan Ci Gu* (Pseudobulbus Cremastrae seu Pleiones)
- *Ban Xia* (Rhizoma Pinelliae)
- *Tian Nan Xing* (Rhizoma Arisaematis)
- *Chuan Bei Mu* (Bulbus Fritillariae Cirrhosae)
- *E Zhu* (Rhizoma Curcumae)



Blood stasis

- *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction), 879



Diet

- Eat a highly nutritious diet with fresh vegetables.
- Avoid fatty, aromatic, pungent and spicy foods.
- Do not eat foods that are cold in nature.
- Stop drinking and smoking.



Lifestyle

- Avoid stress and emotional stimulation.
- Do not squeeze the neck or the thyroid gland.
- Refrain from strenuous exercise.



Clinical note

- Caution:
 - Qi tonics
 - Yang tonics



The Effects of Traditional Antirheumatic Herbal Medicines on Immune Response Cells

DM Chang et al. *J Rheumatol* 24 (3), 436-441. 3 1997. [more](#)

OBJECTIVE: Clinically, some traditional Chinese herbal medicines have been thought to be effective in treating rheumatic diseases such as rheumatoid arthritis and systemic lupus erythematosus. To examine the mechanism by which such herbal remedies might be effective, we investigated the ability of Tripterygium wilfordii Hook-f (TWHF) and tetrandrine (TTD) to affect human immune responsiveness in vitro.

METHODS: We measured the ability of these agents to affect cytokine secretion from monocytes or T cells, prostaglandin E2 (PGE2) secretion from monocytes, IgG production from B cells, and the phagocytosis of bacteria by neutrophils.

RESULTS: These studies revealed that both TWHF and TTD significantly inhibited interleukin-1 (IL-1), tumor necrosis factor-alpha (TNF-alpha), IL-6, and IL-8 secretion from monocytes, IgG secretion from B cells, and phagocytosis of bacteria by neutrophils; however, only TWHF inhibited IL-2 and IL-4 production from lymphocytes, and PGE2 secretion from monocytes.

CONCLUSION: TWHF and TTD exert a powerful suppressive effect on human immune responses. This action might account for their therapeutic effectiveness in rheumatic diseases, and might support broader and more rigorous clinical trials.



Current Events

- *Lei Gong Teng* (Radix Tripterygii Wilfordii)



Lei Gong Teng (Radix Tripterygii Wilfordii)

- **Immunosuppressive and antirheumatic:** *Lei Gong Teng* is a herb with an immunosuppressive effect that inhibit the expression of proinflammatory cytokines, proinflammatory mediators, adhesion molecules, and matrix metalloproteinases by macrophages, lymphocytes, synovial fibroblasts, and chondrocytes. It is considered an alternative disease modifying anti-rheumatic drug (DMARD) for the patients with rheumatoid arthritis refractory to conventional therapy.[1]

[1] Bao J, Dai SM. A Chinese herb *Tripterygium wilfordii* Hook F in the treatment of rheumatoid arthritis: mechanism, efficacy, and safety. Department of Rheumatology & Immunology, Changzheng Hospital, Second Military Medical University, Shanghai, China. *Rheumatol Int.* 2011 Mar 2.



Lei Gong Teng (Radix Tripterygii Wilfordii)

- In a multicentre, open-label, randomised controlled trial, 207 patients with active rheumatoid arthritis were divided into three groups: *Lei Gong Teng* only, methotrexate only, or *Lei Gong Teng* and methotrexate. After 12 weeks of treatment, the researchers evaluated and concluded that treatment with *Lei Gong Teng* or methotrexate with *Lei Gong Teng* showed comparable effectiveness, and both are better than methotrexate as monotherapy.[1]

[1] Lv QW, et al. Comparison of *Tripterygium wilfordii* Hook F with methotrexate in the treatment of active rheumatoid arthritis (TRIFRA): a randomised, controlled clinical trial. *Ann Rheum Dis.* 2014 Apr 14. doi: 10.1136/annrheumdis-2013-204807.



Toxicities

- Adverse reactions: local irritation of the gastrointestinal tract, damage to the central nervous system, internal bleeding and necrosis of the organs.
- Gross overdose may cause bleeding in the stomach, intestines, liver and lungs. Other symptoms include dizziness, dry mouth, palpitations, necrosis of mucous membranes and irregular menstruation.[1]

[1] *Zhong Yao Du Li Xue (Toxicology of Chinese Herbs)* 1989:154-155.



Antidote

- General toxicity of the herb may be treated with the following herbs in decoction:
- *Lu Dou* (Semen Phaseoli Radiati) 120 grams and *Gan Cao* (Radix et Rhizoma Glycyrrhizae) 30 grams.
- *Feng Wei Cao* (Herba Pteris) 90 grams.
- *Wu Jue* (Folium Stenolomatis) 60 grams.
- *Xian Di Huang* (Radix Rehmanniae Recens) 90-100 grams.^{[i],[ii]}

- ^[i] Shi Yong Zhong Yao Du Li Xue (Practical Toxicology of Chinese Medicine) 2007; 315-325
- ^[ii] Hu Nan Yi Yao Za Zhi (Hunan Journal of Medicine and Herbolgy), 1977; 5:3



Antidote

- Other options ?



Current Events

- *Chang Shan* (Radix Dichroae)



Chang Shan (Radix Dichroae)

- **Anti-inflammatory and immunosuppressant:** Halofuginone, a febrifugine derivative from *Chang Shan*, showed great promise to treat autoimmune disorders by preventing inflammatory pathology without inducing generalized immunosuppression.
- Halofuginone inhibits T helper 17 (T_h17) cell differentiation by activating the amino acid starvation response to exert a potent and selective regulation of inflammatory T cell differentiation *in vivo*. According to the researchers, halofuginone holds great promises in the treatment of certain types of autoimmune and inflammatory diseases, such as inflammatory bowel disease, rheumatoid arthritis, multiple sclerosis, type 1 diabetes, eczema, and psoriasis.^[i]

^[i] Sundrud MS, Korolov SB, Fauereer M, Calado DP, Kozhaya AE, Rhule-Smith A, Lefebvre RE, Unutmaz D, Mazitschek R, Waldner H, Whitman M, Keller T, Rao A. Halofuginone inhibits TH17 cell differentiation by activating the amino acid starvation response. Department of Pathology, Harvard Medical School and Immune Disease Institute, Boston, MA 02115, USA. *Science* 2006;312:5324(5932):1334-8.

eLotus

Toxicities

- Overdose reactions generally occur 30 minutes to 2 hours after the ingestion of the herb. Early reaction is characterized by nausea, vomiting, abdominal pain, diarrhea, blood in the stool, and upper gastrointestinal bleeding. In severe cases, there may be palpitation, irregular heart beat and rhythm, and possibly death.^{[i],[ii]}

- ^[i] *Lin Chuang Shou Ce You Du Zhong Yao Shi Yong* (Clinical Handbook on Applications of Toxic Chinese Herbs) 1992;86-87.
- ^[ii] Miao M. *Zhong Yao Bu Liang Fan Ying Ji Jiu Zhi* (Adverse Reactions and Treatment of Chinese Medicine), People's Military Medical Press; 2006; 56.

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Antidote

- Overdose of *Chang Shan* (Radix Dichroae) may be treated with the following herbal decoction:
- *Chen Pi* (Pericarpium Citri Reticulatae), *Ban Xia* (Rhizoma Pinelliae), *Fu Ling* (Poria), *Zhi Shi* (Fructus Aurantii Immaturus), *Zhu Ru* (Caulis Bambusae in Taenia), *Gan Cao* (Radix et Rhizoma Glycyrrhizae) and post-decocted *Da Huang* (Radix et Rhizoma Rhei), 9 grams each.^[i]
- *Gan Cao* (Radix et Rhizoma Glycyrrhizae) 45g and *Lu Dou* (Semen Phaseoli Radiati) 60g.
- *Gan Cao* (Radix et Rhizoma Glycyrrhizae) 30g, *Sheng Jiang* (Rhizoma Zingiberis Recens) 30g, *Huang Qin* (Radix Scutellariae) 9g, and *Da Zao* (Fructus Jujubae) 10 pieces.
- *Bai Fan* (Alumen) 3g, *Da Huang* (Radix et Rhizoma Rhei) 15g and *Gan Cao* (Radix et Rhizoma Glycyrrhizae) 15g.^[ii]

^[i] *Lin Chuang Shou Ce You Du Zhong Yao Shi Yong* (Clinical Handbook on Applications of Toxic Chinese Herbs) 1992;86-87.
^[ii] *Chang Shan Zhong Yao You Du Fu Fan Ying Ji Jiu Zhi* (Toxicities and Applications of Commonly-Used Chinese Herbs) 2006;136-138.

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Stress

- Chronic stress triggers the release of IL-6, a strong pro-inflammatory cytokine

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素问

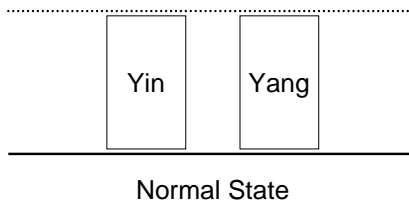
When one is joyous,
qi is in harmony and the mind is unimpeded.
Nourishing qi and protective qi pass freely.

When one is sad,
the heart connection is tense and
the upper burner is impassable.
Ying and *wei* do not disperse.

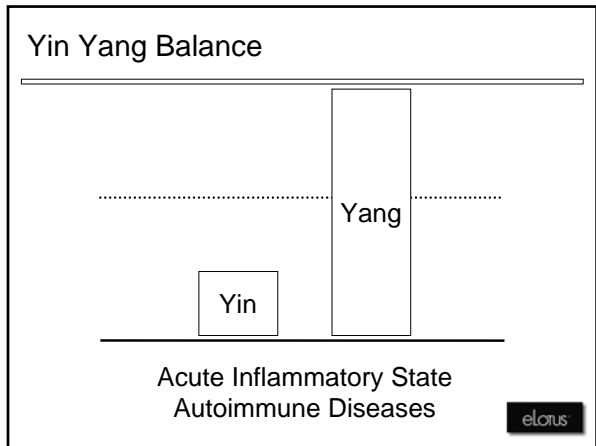
Su Wen (Basic Questions), 2nd century A.D.

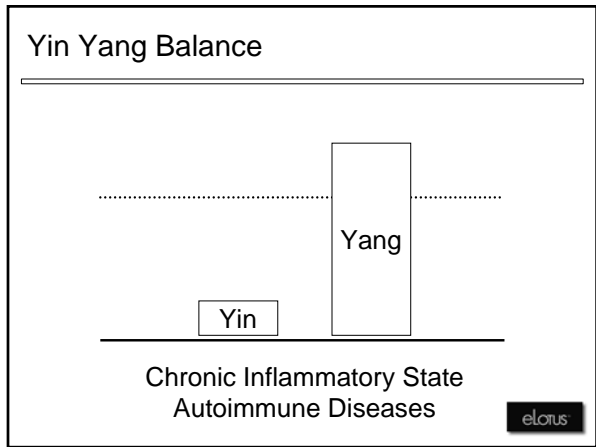
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Yin Yang Balance



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朱丹溪 Zhú Dán-Xí, 1281 – 1358.

“阳常有余，阴常不足。”
“Yang is often in excess.
Yin is often insufficient.”

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- More information on the classic formulas can be found in the ***Chinese Herbal Formulas and Applications***
- Collection formulas can be found in the Lotus ***Clinical Manual of Oriental Medicine***
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