

# TREATMENT OF LEAKY GUT SYNDROME

Integrating Functional Medicine and Traditional Chinese Medicine

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Berkeley, November 17-18, 2007 • 12 Hours CEU

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## SATURDAY, November 17, 2007

8:30-9:00	Overview of Leaky Gut Syndrome	
9:00-10:00	Intestinal Physiology, Beneficial Bacteria	p. 3, 5
10:00-10:30	Leaky Gut Syndrome, 1	6
10:30-11:00	(Break)	
11:00-11:30	Leaky Gut Syndrome, 2	
11:30-12:30	Laboratory tests	16
12:30-2:00	Lunch	
2:00-2:30	Understanding Food Allergies	21
2:30-3:00	Functional Medicine Treatments, 1	23
3:30-4:00	(Break)	
4:00-5:00	Functional Medicine Treatments, 2	
5:00-5:30	Overview of TCM approach	33

## SUNDAY, November 18, 2007

TCM Herbal Protocols		p. 33
9:00-9:30	Review and Questions	
9:30-10:00	Intestinal Damp Heat, Liver Stagnation	
10:00-10:30	Liver-Stomach Stagnation, Gallbladder Damp-Heat	
10:30-11:00	Spleen <i>Qi</i> and Spleen <i>Yang</i> Deficiency	
11:00-11:20	(Break)	
11:20 -12:00	Deficiency of <i>Wei Qi</i> , Chronic sinusitis and ear	
12:00-12:30	Skin Eczema, Allergic Asthma	
12:30-1:00	Food Allergy, Arthritis	

*Codes for the Herbal Categories*

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LEAKY GUT SYNDROME (LGS) describes a cascade of disorders that stem from small intestine colitis, allowing infiltration of microbial and metabolic toxins as well as undigested food into the blood stream. These include fatigue, immune deficiency, food allergies, asthma and eczema. Leaky Gut Syndrome may be a contributor to other modern illnesses such as insulin resistance, obesity, neurotransmitter disorders, and cancer, and in fact may account for 50% of chronic illness. LGS is a modern disease with its origins in excessive antibiotics or, in children, early vaccination. Fortunately, Functional Medicine has stimulated the creation of modern laboratory tests for various components in the cascade, allowing treatment to be both focused and effective.

Jake Paul Fratkin has spent the last 20 years focusing on the integration of Functional Medicine with Traditional Chinese Medicine for the treatment of Leaky Gut Syndrome, Adrenal Fatigue, Insulin Resistance and Liver Detoxification. In this workshop, we will explain the etiology and mechanism of LGS, how to use lab testing (stool, saliva, urine, blood) to focus treatment, and the use of effective nutritional medicines. More importantly, Dr. Fratkin will demonstrate how to use Chinese herbal treatments within *zang-fu* organization to effectively navigate through and treat this common but complex syndrome.

**Biography: Jake Paul Fratkin, OMD, L.Ac.**

Jake Paul Fratkin has been a Doctor of Oriental Medicine since 1978, utilizing Chinese herbal medicine, Japanese meridian balancing and nutritional medicine. He is the author of *Chinese Herbal Patent Medicines: The Clinical Desk Reference* (2001), a work on 1280 available Chinese herbal patent medicines, and is the editor-organizer of Wu and Fischer's *Practical Therapeutics Of Traditional Chinese Medicine* (Paradigm Publications, 1997). He was awarded *Acupuncturist Of The Year* in 1999 by the American Association of Oriental Medicine (AAOM), and *Teacher Of The Year* in 2006 by the American Association of Teachers of Acupuncture and Oriental Medicine (AAOM). Dr. Fratkin is currently in private practice in Boulder, Colorado, where he specializes in internal disorders, infections and pediatrics.

# LEAKY GUT SYNDROME<sup>1</sup>

## I. INTESTINAL PHYSIOLOGY

### A. Healthy Gut Lining and Selective Permeability

1. Allows nutrients to be absorbed . . . .
  - a. Digested food
    1. Vitamins, oils and fats, amino acids, minerals, carbohydrates
2. . . . While blocking absorption of toxins
  - a. Metabolic wastes
    1. Cellular debris
    2. Hormones
    3. Chemical by-products
  - b. Microbial toxins (viruses, pathogenic bacteria, fungal, protozoa)
  - c. Environmental poisons
    1. Solvents, benzenes, styrenes, phthalates
    2. Heavy metals
    3. Pharmaceutical drug metabolites

### B. Normal Gut Defenses

1. The epithelial and mucosal lining
  - a. Immune agents
    1. Cell-mediated immunity
    2. Intestinal and salivary secretory IgA
    3. Intestinal IgA, IgM, IgG
    4. Phagocytes: macrophages, granulocytes
  - b. Physically tight junctions of epithelia

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<sup>1</sup> **Acknowledgments:** I am grateful to the following sources for information used in this presentation: 1) *FUNCTIONAL ENDOCRINOLOGY*, Datis Kharrazian, DC, published by Apex Energetics, 2003, 2004, 2005.

2) Randy Bimestefer, L.Ac, lecture notes from GI DYSFUNCTION ASSESSMENT, 2007.

2. GALT: Gut-Associated Lymphoid Tissue
  - a. Most complex and organized collection of immune cells in the body
    1.  $10^{10}$  lymphocytes per meter of bowel
    2. 60-70% of the immune system by weight
  - b. Consists of:
    1. Lymphocytes in mucosal endothelium
    2. Peyer's Patches - aggregates of lymphoid follicles
    3. Lamina propria lymphoid cells
    4. Intra-epithelial lymphocytes
    5. Mesenteric lymph nodes
  - c. GALT is activated by presence of:
    1. Food antigens
    2. Microbial antigens
    3. Chemicals and drugs: antibiotics, hormones, additives, preservatives, and factory farmed meats and dairy, etc.
3. Lumina
  - a. Gastric acid
    1. Creates correct pH for various parts of GI tract
    2. Acidifies nutrients for absorption
    3. Creates terrain for beneficial bacteria
    4. Different pH at each section of small intestine to support different colonies of bacteria
  - b. Bile acids
    1. Detoxifies certain metabolic wastes
    2. Caustic, and must be neutralized into bile salts by bacteria
4. Beneficial Bacteria (see below)

### C. Intestinal Immune System

1. Accounts for 80% of immune system
  - a. Part of *wei qi*: consider it an “outside skin”
  - b. Compromise of intestinal immunity compromises the whole immune system
2. Relies significantly on beneficial bacteria to neutralize, destroy, or detoxify microbial and metabolic toxins
  - a. This is why antibiotics dramatically impact systemic immunity

## II. IMPORTANCE OF BENEFICIAL BACTERIA

### A. Human life is dependent on bacteria

1. In the normal gut there are 500 species
  - a. 30-40 species account for 99% of the total intestinal load
    1. Lactobacillus accounts for 5%
  - b. 100,000 billion viable microbes
  - c. More bacteria than human cells
  - d. Makes up 60% of stool by weight
  - e. Oral cavity has 200 species
  - f. Approximately 80-90% are facultative anaerobes, therefore difficult to culture and thus poorly understood
2. Beneficial bacteria:
  - a. Acidifies guts, promoting beneficial bacteria
  - b. Destroy pathogenic microbes and prevents colonization of parasites
  - c. Detoxifies metabolic chemicals and hormones
  - d. Synthesizes vitamins
  - e. Digests foods, facilitate absorption
  - f. Synthesizes short chain fatty acids
  - g. Converts bile (caustic) to bile salts (inert)
  - h. Benefits immune response

- 1) Drives development of humoral and cell mediated immune tolerance in newborns

## **B. Negative aspects of pathogenic bacteria**

1. Deactivates trypsin, chymotrypsin
2. Consumes B12
3. Produces ammonia, increase pH (> more alkaline)
4. Alkaline pH promotes fungal growth
5. Inactivates epithelial border enzymes
6. Prevents breakdown of bile acids, estrogens, allowing reabsorption
7. Activates carcinogens
8. Absorption (in Leaky Gut) leads to antibody-antigen complexes leading to autoimmune diseases
  - a. Klebsiella > Ankylosing spondylitis, rheumatoid arthritis
  - b. Citrobacter, Proteus > Rheumatoid arthritis

## **III. LEAKY GUT SYNDROME**

### **A. What it is**

1. Increased epithelial permeability of small intestine
2. Allows absorption of substances not normally absorbed:
  - a. Metabolic wastes, including cellular chemicals and hormones
  - b. Pathogens, including virus, bacteria and fungus
  - c. Foods before they are fully digested
    - 1) Cause of most food allergies

### **B. What initiates it**

1. Usually starts with antibiotics
  - a. Antibiotics kill beneficial gut bacteria
    - 1) Allows alkalization of guts
    - 2) Allows proliferation of bad bacteria and fungus

- b. Antibiotics accumulate through medications or food chain (diary, meat, eggs, fish, etc)
2. Pathogenic microbes cause irritation and inflammation to SI epithelial lining
3. Foods allergens keep irritation going
4. In infants, measles vaccine can implant live measles virus in epithelium, leading to eczema and asthma
5. Preexisting adrenal stress encourages it
  - a. Poor immune function at epithelial wall
6. Heavy metals may also cause it

### **C. Consequences**

1. Over absorption of toxins (chemical and microbial) overwhelm liver detox pathways
  - a. Reabsorbed estrogens deposit in estrogen sensitive tissue
  - b. Reabsorbed cholesterol goes back in blood or collects as gallstones
2. Depletes immune system which now fights toxins and infections at epithelial mucosa
  - a. Formally neutralized by beneficial bacteria
3. Leads directly to adrenal stress syndrome

### **D. Illnesses directly resulting:**

1. Gastrointestinal disorders
  - a. Celiac disease
  - b. Chronic diarrhea or constipation
  - c. Diverticulitis
  - d. Hemorrhoids
  - e. Irritable Bowel Syndrome
  - f. Malabsorption syndromes
  - g. Gastritis
  - h. Peptic Ulcer

- i. Hepatic Dysfunction
- j. Pernicious anemia
- 2. Allergy Syndromes
  - a. Food Allergies
  - b. Sinus allergy
  - c. Asthma
  - d. Urticaria
  - e. Chemical sensitivities
- 3. Skin conditions
  - a. Psoriasis, eczema, urticaria, acne
  - b. Small intestine epithelial inflammation causing skin inflammation
- 4. Pain disorders
  - a. Fibromyalgia
  - b. Joint pains, arthritis
  - c. Headache, migraine
  - d. Peripheral neuropathy
- 5. Hormone disorders
  - a. Adrenal Stress Disorder
  - b. Menstrual disorders
    - 1) Reabsorption of unconjugated estrogen and progesterone
  - c. Menopausal disorder
  - d. Osteoporosis
- 6. Immune disorders
  - a. Recurrent infections
  - b. Recurrent ear infections
  - c. Chronic Fatigue Syndrome
  - d. Chronic yeast infections
- 7. Autoimmune Disorders
  - a. Absorption of Klebsiella or Proteus antibody-antigen complexes
    - 1) Ankylosing spondylitis
    - 2) Rheumatoid arthritis
  - b. Crohn's Disease - Ulcerative Colitis



8. Neurotransmitter Disorders
  - a. Childhood hyperactivity
  - b. Depression, anxiety
  - c. Insomnia
  - d. Memory Disorders
9. Cancer of pancreas, colon, breast
  - a. Due to toxic overload
10. Other
  - a. Chronic vaginitis/leukorrhea

### **E. The Inflammatory Process**

1. Inflammation is the body's normal physiologic response to injury, but is a complex, highly orchestrated process
2. Acute inflammation is an adaptive process that consists of defend and repair functions
3. Chronic inflammation is a destructive, maladaptive
4. Many chronic illnesses have a ongoing inflammatory component
5. Antigens that trigger inflammatory response create vicious cycle
  - a. Inflammation, pain, oxidative stress
  - b. Trigger release of inflammatory mediators
    - 1) Cytokines, histamine, etc.
      - a) Warn other immune agents of impending danger
  - c. In the brain, microglial cells hear the message and produce inflammatory hydrogen peroxide and nitric acid (peroxynitrate) to destroy pathogenic antigens
    - 1) These are powerful oxidants which damage epithelial tissue
  - d. Persistent over-activation of the microglial immune cells leads to a marked increase in oxidative stress in the brain and can alter brain metabolism
    - 1) Can leads to neurotransmitter damage, affecting mood, behavior and sleep

2) Contributes to Alzheimer's, Parkinson's disease, chronic fatigue, ADHD, ADD, etc.

a) ADHD: 44% have absent or decreased SIgA, 74% have increased intestinal permeability

6. Can cause Autoimmune disorders

a. Antigen stimulation causes release of inflammatory cytokines and antibodies

b. If over-active, can become confused and produce antibodies against itself

c. Includes hyperactive thyroid (Graves Disease), rheumatoid arthritis, multiple sclerosis

## F. Sources of Barrier Stress

1. Infectious exposure

a. Pathogenic microbes (bacteria, virus, fungi, protozoa)

b. Vaccinations, especially measles, mumps rubella (live virus)

1) Also tetanus

2. Toxic Exposure

a. Enterotoxins/Endogenous toxins

1) Bile, if not re-conjugated by beneficial bacteria

b. Xenobiotics

1) Solvents

2) Phthalates (plastics)

3) Pesticides

4) Benzenes

c. Pharmaceutical agents

1) Ibuprofen, NSAIDs

3. Malnutrition

a. Deficiency of essential fatty acids (EFAs), vitamins, minerals

b. Excess carbohydrates and simple sugars

c. Poor antioxidant protection

d. Inadequate digestion, especially of proteins (hypochlorhydria)

4. Stress causes cortisol and epinephrine Imbalances
  - a. Alters gut motility
  - b. Depletes HCL, enzyme & mucin secretion
  - c. Depletes SIgA
  - d. Depletes serotonin production (95% is in the GI)
  - e. Reduces phagocytosis, chemotaxis
  - f. Inability to inhibit inflammation
5. Sequence:
  - a. Poor dietary choices, stress & emotions, Infection, toxic exposure  
> weakened adrenals/immune system, low stomach acid  
1) TCM: weakened kidney fire leads to weakened stomach fire
  - b. Dysbiosis, Altered Intestinal Permeability > Food Allergy,  
Malnutrition, Toxic Overload > Systemic Disease

### **G. Intestinal Permeability and Food Sensitivities**

1. Healthy GI epithelia have tight junctions to prevent absorption of bacteria, food antigens, and other mid and large molecules
2. In chronic inflammation, tight cell margins relax, and allow microbes and undigested food to be absorbed
  - a. Foods are absorbed as polypeptides and proteins instead of amino acids
3. Undigested foods are tagged as antigens, and antibodies form, causing inflammatory reaction each time the food is eaten
  - a. Triggers histamines, leukotrienes, prostanoids and prostaglandins
  - b. Creates vicious cycle by promoting inflammation and leaky gut

### **H. Relationship to Adrenal Stress Syndrome**

1. Antigen response activates HPA axis (hypothalamus-pituitary-adrenal)
  - a. Alarm stage: elevated cortisol
  - b. Resistance stage: Pregnenolone steal  
1) Pregnenolone is derived from cholesterol and is usually used to make DHEA and sex hormones

- 2) In steal, pregnenolone is used to make cortisol instead
  - a) > elevated cortisol, lowered DHEA
- 3) Exhaustion stage: 3 patterns
  - a. Cortisol normal, DHEA low
  - b. Cortisol elevated or lowered, DHEA normal
  - c. Low cortisol, low DHEA
- 2. Antigen response activates HPA axis (hypothalamus-pituitary-adrenal)
- 3. GALT stress is major cause of adrenal stress syndrome.
  - a. Food sensitivities to gluten, dairy, soy and eggs may be without symptoms, but pose a constant stress to adrenals
  - b. Dysbiosis in form of bacteria, fungi, virus and protozoa stress adrenal, even without GI symptoms
    - 1) Does this by depleting SIgA and other immune agents
  - c. Impacts immune system: Lowered immunity, decreased WBC, atrophy of thymus gland, decreased SIgA
  - d. Adrenal stress leads to Metabolic Syndrome
    - 1) Elevated glucose and insulin, increased LDL cholesterol, hypoglycemic symptoms
  - e. Suppresses gut mucosa and epithelial regeneration
    - 1) Along with reduced SIgA, this creates vicious cycle
    - 2) Promotes and maintains dysbiosis

### **I. Relationship to Hydrochloric Acid and Enzymes**

- 1. Chronic adrenal stress leads to diminished hydrochloric acid production
  - a. Low HCL leads to low pancreatic enzymes
  - b. In TCM, diminishing of *mingmen* fire leads to suppression of stomach fire
- 2. Low HCL and enzymes inhibit efficient digestion of foods
  - a. Creates more food antigens
  - b. Lack of HCL causes alkaline gut, promoting fungal growth
  - c. Promotes vicious cycle

### 3. Symptoms of low stomach acid

- a. Bad breath
- b. Dyspepsia after complex, protein meals
- c. Food “sits in the stomach”
- d. Frequent indigestion, heartburn, reflux
  - 1. Most acid reflux is actually HCL deficiency
  - 2. HCL keeps esophageal sphincter closed
  - 3. HCL controls Helicobacter pylori levels
- e. Frequent indigestion, heartburn, reflux
- f. Abdominal gas after eating
- g. Constipation and/or diarrhea
- h. Vomiting of undigested food
- i. Multiple food or pollen allergies
- j. Nausea with supplementation
- k. Unsuccessful treatment for anemia
  - l. B12, folic acid deficiency
- m. Weak, peeling and cracked fingernails
- n. Dry, brittle hair
- o. Chronic intestinal infections
- p. Acne, facial venous dilation

### **J. Impairs Hepatic Detoxification**

- 1. Liver detox is burdened by increased toxic infiltration in LGS
  - a. Metabolic wastes including hormones, cholesterol, cellular metabolites
  - b. Pathogens and pathogenic toxins
  - c. Inflammatory reaction agents
- 2. Pathogenic bacteria release lipopolysaccharides that down-regulate (reduce) P450 enzymes used in Phase I detoxification
- 3. Pathogenic bacteria deconjugate hormones that the liver has conjugated for elimination, and they are reabsorbed
  - a. For example, by up-regulation on GI beta-glucuronidase activity

## K. Relation to Disease and Organ Dysfunction

### 1. Cardiovascular disease

- a. GI inflammation aggravates cardiovascular disease
  - 1) C-Reactive Protein (CRP) elevates with GI inflammation, and affects blood vessels
- b. Bacterial infections can elevate homocysteine levels by reducing B12 and folic acid levels
- c. Dysbiosis inhibits cholesterol elimination and leaky gut allows reabsorption of cholesterol
- d. Stress response can lead to elevated blood pressure
- e. Cortisol imbalance > elevated blood insulin (insulin resistance) > sticky blood, damage to epithelia of blood vessels, clotting, atherosclerosis

### 2. Affects Endocrine system

- a. Can cause lowered T3 levels.
  - 1) T3 is inactive, but is activated in the gut mucosa by intestinal sulfatase.
  - 2) Sulfatase is dependent of healthy gut bacteria
  - 3) Dysbiosis > lowered T3 levels, elevated TSH.
- b. Antigen stress > elevated cortisol production
  - 1) Elevated cortisol inhibits T4 conversion to active T3
- c. Promotes Estrogen dominance
  - 1) Beneficial bacteria deconjugate estrogen before elimination
  - 2) Dysbiosis and leaky gut allows estrogens to be reabsorbed and deposited in estrogen sensitive tissue
  - 3) Healthy deconjugation requires beta glucuronidase, a GI enzyme
    - a) This level can be measured (Genova Labs)
  - 4) Estrogen dominance can be helped by Indole-3-Carbinol, found in cruciferous vegetables (broccoli, cauliflower, kale, etc), or as supplement.

### 3. Chronic Fatigue

- a. Malabsorption of nutrients > malnourishment
- b. Decreases conversion of inactive T3 to active T3
- c. Chronic inflammation aggravates insulin resistance, adrenal stress, hypoglycemia
  - 1) Short-circuits citric acid cycle (CAC) and electron transport chain, affecting ATP production
  - 2) Hyper-activates immune system to place body in chronic stress

### 4. Neurotransmitter imbalances

- a. The enteric nervous system produces 99% of the body's serotonin levels
  - 1) Brain only produces 1%
- b. Dependent on healthy gut biosis
- c. Also, leaky gut can influence glucose absorption, and lead to mood disorders or hypoglycemia

### 5. Neurodegenerative patterns

- a. Intestinal inflammatory cytokines stimulates brain's glial cells to produce local inflammatory cytokines plus neurotoxic nitric acid
- b. Can cause neuron death (apoptosis)
- c. Can lead to Alzheimer's, multiple sclerosis, ischemia, edema, seizures, etc.

### 6. Weight loss

- a. Inability to lose weight despite diet and exercise
- b. Release of inflammatory cytokines inhibits lipolysis (breakdown of fats) and increases lipogenesis (formation of fatty acids)
- c. Increased cytokines release fats stored in liver, which end up as body fats

## IV. LABORATORY TESTS

A. **DIAGNOSTIC-TECHS**, Kent, WA. (800-818-3787). [www.diagnostechs.com](http://www.diagnostechs.com)

1. **FLEXI-MATRIX**: choose 3-5, 6-9, 10-15, 16-20, 21-25. Priced differently.

### A. Saliva

1. Food Tolerance and Immunity
  - a. Saliva antibodies for egg, milk, soy, gliadin
  - b. Total (systemic) SIgA
2. Parasites (Saliva antibodies)
  - a. Ameba, toxoplasma, H. pylori, Giardia
  - b. Worms: Ascaris, trichinella, tapeworm
3. Other
  - a. Male and female hormones
  - b. Adrenal and stress hormones
  - c. Metabolism module (thyroid, insulin, etc.)

### B. Stool (2 samples)

1. Ova & parasites, Giardia, cryptosporidium
2. Fungal/yeast; bacteria; clostridium difficile
3. GI Function markers
  - a. Lysozyme (colon inflammation)
  - b. Alpha Antichymotrypsin (SI inflammation)
  - c. Stool SIgA
  - d. Chymotrypsin (global for pancreatic enzymes)
  - e. Occult blood
  - f. Fecal pH

## 2. NOTES OF SALIVA FLEXI-MATRIX TESTS

### A. Saliva antibodies to foods

1. If negative, don't proceed with further blood tests
2. If positive, proceed with blood test
  - a. Many "false positives" on saliva test

### B. Total SIgA (salivary)

1. Targets various food antigens, microbes, microbial toxins



2. Marker for general immune system in whole body
  3. Depressed SIgA is a direct marker of cortisol induced immunosuppression
    - a. Usually indicates reduced or impaired adrenal function
  4. Good to compare with stool SIgA
- C. Salivary antibodies to protozoa
1. More accurate (97-99%) than microscopic detection
  2. Saliva amoeba detection with stool amoeba means older exposure, or in cyst stage in liver
  3. H. Pylori should be reconfirmed with blood test
  4. Toxoplasmosis common, especially patients with cats
    - a. Can be a major pathogen, or benign
  5. Worms are rare except for people who have spent time in tropics
    - a. Usually symptomatic

### 3. NOTES OF STOOL FLEXI-MATRIX TESTS

#### A. Ova and Parasites

1. Good to do in general
  - a. Always do if abdominal complaints that started in tropics
  - b. Will show Blastocystis hominis and amoebas
2. Giardia and cryptosporidium – only do if strong abdominal pain symptoms
3. Symptoms of parasites:
  - a. Digestive: constipation, watery diarrhea, abdominal cramps, bloat, flatulence, maldigestion, rectal itching
  - b. Fatigue, allergy, nervous disorders, depression, headaches, muscle aches, respiratory and skin disorders, insomnia, joint pain
  - c. Fever, rectal bleeding, weight loss
  - d. Symptoms come and go depending on stage of life-cycle

**B. Fungus and yeast**

1. Always test
2. Detects *Candida albicans*, 8 other pathogenic *Candida* species, as well as several non-*Candida* yeasts
3. Fungus, esp. *Candida*, puts off an aldehyde which irritates intestinal epithelia, precipitating Leaky Gut.
4. Quantifies intestinal fungus on 0-5 scale.
  - a. 0, 1 = OK to ignore
  - b. 2-4, always treat (5 very rare)
  - c. Use scale as number of months requiring treatment with natural medicines or Nystatin, e.g., +3 = recommended three months of therapy
  - d. Avoid anti-fungals for 2 weeks prior to testing/retesting
  - e. (Also consider US Biotek's finger-prick blood test for *Candida*)

**C. Bacteria**

1. Good bacteria
  - a. If abundant, doesn't need Probiotics
2. Bad bacteria: *Klebsiella*, *Proteus*, *Citrobacter*, pathogenic *e. coli*, beta hemolytic strep, *Campylobacter*, *Pseudomonas*, *Bacillus*
  - a. Very pathogenic
  - b. Irritates mucosal lining, released endotoxins
3. *Clostridium (c. difficile)*
  - a. Stool sample has 98% sensitivity
  - b. Ubiquitous: dirt, hay, feces, hospitals
  - c. Can survive for months as spores
  - d. 60% of post antibiotic users are asymptomatic carriers
  - e. Principle causative agent of antibiotic associated Pseudomembranous colitis (PMC), Antibiotic associated diarrhea (ADD), Antibiotic associated colitis (AAC)

#### 4. GI FUNCTION TESTS

##### A. Lysozyme

1. A natural anti-histamine that elevates in response to inflammation or infection in the large intestine
2. Elevated levels in Crohn's disease, ulcerative colitis, GI infections and colon cancer
3. Elevations found in persons with IBD but not in IBS

##### B. Alpha Antichymotrypsin (ACHY)

1. Elevates in response to inflammation or infection in the small intestine
2. Elevations indicate food allergies, microbe irritation, or autoimmune process (Crohn's or ulcerative colitis)
3. False "normal" ACHY
  - a. May indicate depletion of ACHY due to colon inflammation (with elevated Lysozyme)
  - b. Not enough immune response to mount an inflammatory response (very low SIgA)

##### C. Stool SIgA

1. Depleted in chronic infections, food allergies, dysbiosis
2. Compare stool SIgA with total (saliva) SIgA
3. Many chronic patients have levels < 10% of "normal".

##### D. Chymotrypsin

1. Measurement of pancreatic enzyme output
  - a. Actually, measures protease, but considered a global for all enzymes
  - b. Trypsin and lipase are degraded during passage through the GI and cannot be accurately measured
2. Allows us to assess the need for enzyme supplementation

**E. Occult blood**

1. For detecting colon cancer
2. Will be inaccurate during menses or hemorrhoids

**F. Fecal pH****B. US BIOTEK**, Seattle, WA. (877-318-8728) [www.usbiotek.com](http://www.usbiotek.com)

1. Fingerprick IgG Antibody Food Panels, 96 foods (\$126)
2. Urinary Metabolic Profile (with Crayhon interpretation)
3. Environmental pollutants

**C. CRAYHON RESEARCH**, Reno, NV. (775-823-5333). [www.crauhonresearch.com](http://www.crauhonresearch.com)

1. Lab Assist Report on blood panel
2. Urine or Plasma Amino Acids

**D. DOCTOR'S DATA**, Reno, NV. (800.323.2784). [www.crayhonresearch.com](http://www.crayhonresearch.com)

1. Lab Assist Report on blood panel
2. Hair Toxic Element Exposure profile
3. Urine or Plasma Amino Acids
4. Comprehensive Stool Analysis

**E. GENOVA LABS**, Asheville, NC. (800-522-4762). [www.gdx.net/home/](http://www.gdx.net/home/)

1. Comprehensive Digestive Stool Analysis (CDSA)
2. Intestinal Permeability Assessment
  - A. Lactulose - Mannitol challenge
    1. Lab measures total amounts of sugars in urine and calculates lactulose/mannitol ratio
    2. Lactulose, a disaccharide, remains poorly absorbed by an intact intestinal mucosa
    3. Mannitol, a monosaccharide, is well absorbed by the intestinal mucosa
      - a. Not metabolized; excreted in urine

- B. Normally, little lactulose is absorbed while much of the mannitol is absorbed
  - 1. Lactulose/mannitol ratio should be low.
  - 2. If elevated = leaky gut
  - 3. Depressed mannitol with elevated *or* normal ratio = malabsorption

**F. SIGNET DIAGNOSTIC CORP. LABS, Riviera Beach, FL. (561-848-7111).**

[www.nowleap.com](http://www.nowleap.com)

- 1. LEAP MRT Food Sensitivity Test

## **V. UNDERSTANDING FOOD ALLERGIES/SENSITIVITIES**

### **A. FOOD ALLERGIES/SENSITIVITIES ARE FOCUSED**

- 1. **90% Of Food Allergies Belong To 5 Groups:**
  - a. Glutens (wheat, oats, rye, spelt, possibly corn)
  - b. Dairy, including goat, butter, yogurt
  - c. Soy and other beans
  - d. Eggs (usually due to MMR or flu vaccines)
  - e. Nuts and seeds
- 2. Other food allergies/sensitivities
  - a. Shellfish, oranges, strawberries
  - b. Some people are sensitive to nightshade plants: potatoes, tomatoes, pimentos, peppers, causing fibromyalgic pain
- 3. Other Reactants in Food
  - a. Pesticides
  - b. Additives: preservatives, hormones, antibiotics, enzymes, MSG
  - c. Processing: smoking, salting
  - d. Natural processes: aging, insects, fungi, fermentation
- 4. Non-allergenic foods:
  - a. Meats, most vegetables, most fruits, rice, millet

## **B. ALLERGY VS. HYPERSENSITIVITY VS. INTOLERANCE**

1. Traditional view of allergy: IgE mediated
  - a. Will show as RAST (skin) test only
  - b. Food allergies tend to be delayed
2. Expanded view: “Hypersensitivity”
  - a. Involves IgG, IgM, IgA, IgE, T-cells
    1. Blood tests can test food allergies through IgG
3. “Intolerance”: non-immunologic (no Ig) but poor digestion
  - a. Usually enzyme deficiency, eg. lactose intolerance
  - b. May be due to food additives, MSG, salicylates, etc.

## **C. IgG FOOD REACTIONS AND SYMPTOMS**

1. Mouth: itching, swelling, choking
2. Gastrointestinal: Nausea, heartburn, regurgitation, pain (sharp, dull), vomiting, diarrhea, bleeding, etc.
3. Skin: Hives, eczema, rash, acne
4. Lungs: Cough, asthma
5. Kidneys: Bleeding, loss of protein, hypertension
6. Muscles: Fatigue, wasting, soreness
7. Joints: Swelling, pain, limitation of motion
8. CNS: Migraines, epilepsy, depression, hyperactivity, cognitive changes
9. Heart: Arterial spasm, palpitations, arrhythmia

## **D. TESTING FOR FOOD ALLERGIES**

1. Elimination Diet
  - a. 3-week minimum of elimination diet
  - b. Reintroduce one food only at a time
  - c. Symptoms usually include malaise, joint or muscle aches and pains, changes in sleep patterns, headaches, constipation, diarrhea, or rash.
2. LEAP test is most accurate, but expensive (Signet Labs)
3. Most practical test is US Biotek’s 96 food panel, finger-prick blood.

## **E. OTHER NOTES CONCERNING FOOD ALLERGIES**

1. Keeps intestinal mucosa inflamed, prolonging absorption of toxins
2. Candida markers may be absent, but undiagnosed food allergies maintain leaky gut syndrome
3. Food antibodies will disappear in 8-11 months if the food is stopped
4. NAET and BIOSET can help clear antibodies from system more quickly
  - a. Contrary to claims, one cannot introduce the foods immediately or within 24 hours.
  - b. The intestinal lining needs to heal for one to two months.
  - c. Introduce foods one at a time and make sure they are clear, using electro-dermal testing or muscle testing
  - d. Start with simplest foods first; introduce glutens and dairy last.
5. Some foods are constitutional, esp. dairy and gluten
  - a. Get family history
  - b. Blood type O reportedly has more problems with glutens and dairy
  - c. Northern Europeans tolerate dairy the best
  - d. Worst for dairy: Asians, Africans (except NE pastoralists)
  - e. 50% intolerance: Jews, Mediterraneans

## **VI. FUNCTIONAL MEDICINE TREATMENTS**

### **A. TREATMENT PROTOCOL: THE 5 Rs.**

1. REMOVE pathogenic bacteria, yeast, parasites
2. REINOCULATE good bacteria
3. REPLACE
4. REPAIR gastrointestinal lining
5. REVITALIZE gastrointestinal tract

**B. TREATMENT BASED ON LAB TESTS****1. DIAGNOS-TECH FLEXI-PANEL (STOOL AND SALIVA)****a. SIGA – IMMUNE DYSFUNCTION**

1. Boost adrenals
  - a. Glandulars
    1. Thorne Cortine
    2. Thorne Adrenal Cortex
    3. Thorne Cortrex
  - b. Nutritional complexes
    1. Thorne Phytisone
    2. Xymogen Adrenal Essence
    3. Apex Adaptocrine
    4. Apex Adrenastim
    5. Apex Adrenacalm
  - c. Nutrients
    1. Pantethine B3
  - d. Western herbal
    1. Rhodiola
  - e. Chinese herbal (singles)
    1. Glycyrrhiza
    2. Cordyceps
    3. Siberian Ginseng
2. Enhance immune system
  - a. Chinese herbal (singles)
    4. Reishi products or extracts
    5. Astragalus vials
    6. Jiao Gu Lan
    7. Cordyceps



## b. PATHOGENIC MICROBES

### 1. Protozoa

- a. Acute
  - 1. Biocidin
  - 2. Huang Lian Su
  - 3. *Artemisia Qing Hao*
    - a. Taiwan extracted granules
    - b. Thorne Articin
  - 4. Flagyl
- b. Chronic
  - 1. Various anti-protozoa medicines
    - a. Systemic Formulas (VRM 1, 2, 3, 4)
    - b. Oregano oil
    - c. Black Walnut
    - d. Pumpkin seed
    - e. "Rainforest" South American Herbs
    - f. Enzymes (between meals) to break down cell walls
- c. *Blastocystis hominis*
  - 1. Combine anti-fungal and anti-bacterial medicines

### 2. Worms – use Western medicines if possible

### 3. Bacteria

- a. Huang Lian Su, 2 tablets, 2 x day
- b. Allicin, Cinnamon Oil, Oregano, Berberine, Citrus Seed Extract, Black Walnut, Plant Tannins, Olive Leaf Extract
- c. Start with one, switch to another at 3 to 4 weeks
- d. Treat 4-8 weeks
- e. Treatment of *C. Difficile*, add:
  - 1. *Saccaromyces Boulardii*
  - 2. EPA/DHA to decrease inflammation

## 2. Fungus (Candida)

- a. Children who can't swallow, use Px:
  1. Pediatric suspension Nystatin
    - 15 mos old: 2 ml, 4 x day
    - 2 yrs: 5 ml (1 tsp), 2 x day
    - 3 yrs: 7.5 ml (1.5 tsp), 2 x day
    - 4 yrs: 10 ml (2 tsp), 2 x day
  2. Pediatric Diflucan
    - a. Children (above 2 weeks): Use oral suspension, 40 mg/ml preparation.
    - b. Take 6 mg/kg wt per day total.
    - c. 1 to 2 doses per day, 10 days, every day.
- b. Effective antifungals
  1. Oregano Oil
  2. Undecylenic acid (castor oil)
  3. Grapefruit seed extract (aka Citrus seed)
  4. Berberines
  5. Combination products
  6. Not very effective: capsaicin, tea tree oil
  7. Pharmaceutical: Nystatin, Diflucan, Sporanox, Lamisil
  8. Notes:
    - a. Natural antifungals should be rotated every month
    - b. Assume one month of treatment for every number on the fungal scale (+1-5)
- c. Add immune modulators
  1. Lactoferrin, Whey, IgG 2000 (Xymogen), Probiotics
  2. IgG 2000 DF delivers 3x more IgG and total immunoglobulin

## 3. Use of Probiotics

- a. If beneficial bacteria say "abundant" on test, then patient may not need probiotics

- b. Patients usually need probiotics in the presence of significant Candida, pathogenic bacteria or after taking antibiotics

### c. GI FUNCTIONS

#### 1. Lysozyme and Anti-Chymotrypsin (ACHY)

- a. L-Glutamine, up to 6 g. day.
  - 1. Increases number of cells in small intestine
  - 2. Increases the number and height of villi
  - 3. Increases intestinal SIgA production
- b. Mucilaginous herbs - soothe and increase normal mucosal
  - 1. Marshmallow, Slippery Elm, Aloe, Okra
  - 2. Thorne GI-Encap
- c. Combination products:
  - 1. Xymogen GlutAloeMine
  - 2. Xymogen Med Caps GI
  - 3. Apex Gasto-ULC
  - 4. Metagenics UltraInflam
- d. Bioflavonoids (Quercitin, rutin, hesperidin)

#### 2. Chymotrypsin

- a. HCL/Pepsin
  - 1. HCL should be combined with pepsin
  - 2. Supplementation helps pollen and food allergies
  - 3. Usually 3 capsules with each meal. May be increased to 8 in severe cases
- b. HCL/Pepsin
  - 1. Digestive enzymes
  - 2. Same symptoms as deficient HCL
  - 3. Low enzymes may be best treated with HCL/Pepsin, a combination of HCL and digestive enzymes, or enzymes alone
  - 4. May be porcine (pancreatin), plant, or fungal in origin.

5. Undigested food in stool is usually sign of low pancreatic enzymes

### 3. Stool SIgA

- a. Treat same as Saliva SIgA

## C. FUNCTIONAL MEDICINE TREATMENT PROTOCOL: THE 5 Rs

### 1. REMOVE irritants

- a. Pathogenic bacteria, yeast, parasites
- b. Food Allergens
- c. NSAIDS
- d. Alcohol
- e. Sugar, refined foods
- f. Additives/Preservatives

### 2. REINOCULATE good bacteria

#### a. Prebiotics: food for good bacteria

1. FOS (fructo-oligo-saccharides)
  - a. Preferred fuel for bifido & lactobacilli
2. Inulin (Jerusalem Artichoke)
3. Fiber - soluble/insoluble
  - a. Bacteria need to live on fiber
  - b. Cannot live on mucosal lining
  - c. Types of Fiber
    1. Soluble: psyllium husk or seed, flax, pectin, oat bran, dried beans and peas, nuts, fruits such as oranges and apples, vegetables such as carrots
    2. Insoluble: rice bran, wheat bran, flax seed, vegetables such as green beans, cauliflowers and potato skins, fruit skins and root vegetable skins
  - d. Other benefits of fiber
    1. Keeps waste material in GI soft and bulky

2. Slows the absorption of carbohydrates
3. Lowers cholesterol
4. Benefits estrogen metabolism

**b. Good probiotics - a mix of various strains**

1. Compete aggressively with pathogenic bacteria and fungi
2. Good manufacturers: Pharmex, Metagenics, Xymogen
3. Best refrigerated, but good bottle should be OK for 1 – 2 months room temperature
4. Most store probiotics are dead, inert (using microscope)
5. Avoid enteric coated
6. With or without meals
7. Dosage:
  - a. Must implant, establish dominance, fortify, and maintain
  - b. Neonate: 2-6 billion/day
  - c. Adults for LGS or after antibiotics: 35 billion organisms daily
    1. Treat 3-4 weeks after use of prescription and natural antimicrobials
  - d. Irritable Bowel Syndrome - 25-75 billion organisms daily
  - e. Irritable Bowel Disease - 100-450 billion organisms daily

**c. *Saccharomyces boulardii* – a non-pathogenic fungus**

1. Stimulates an immune response along the intestinal lining
  - a. Stimulates the production of SIgA and IgG to strengthen the digestive tract's defenses against infection
  - b. Helpful in diarrhea, esp. pediatric, geriatric
  - c. Dose: Adult 250-1000 mg/day, condition dependent, small children 250 mg/day
2. Promotes enzyme production, helping with repair and maintenance of normal gut mucosa
3. Promotes activity of disaccharide enzymes which can help prevent diarrhea

4. Good to take during antibiotics because they inhibit growth of *Candida albicans*
5. Dose: Adult 250-1000 mg/day, small children 250 mg/day

**d. Lactoferrin**

1. Lactoferrin is a transferrin, an iron binding protein that inhibits bacterial growth

**3. REPLACE**

- a. Lost vitamins and minerals
- b. Lost probiotics

**4. REPAIR**

**a. Gastrointestinal lining**

1. Glutamine repairs damaged epithelia
2. Omega-3-oils such as EPA/DHA in fish oil suppress production of inflammatory mediators
3. Arctic Nordic Natural Cod Liver Oil; Xymogen Arctic Oil
  - a. One to two tablespoons a day
  - b. Some take 8 tablespoons a day
4. Deglycerated Licorice
  - a. 1 - 2 g/day
  - b. Soothes and coats the linings of the GI and urinary tract
5. MSM: 3-10g/day
6. NAG (N-acetyl glucosamine) - key precursor for gut epithelium
7. NAC (N-acetyl cysteine) : 1000-2000mg/day
8. Vitamins C, A, Zinc, pantothenic acid (B5)
  - a. Zinc directly inhibits inflammation by blocking mast cell release of histamine (also HCL)
9. Anti-oxidants for free radical scavenging

## 5. REVITALIZE

### a. Digestion

1. Stomach-pancreas HCL and enzymes
2. Gallbladder metabolism causing biliary maldigestion
  - a. Symptoms: fat intolerance, gastric distress, hypochondriac
  - b. Stool: White or grayish, stringy, or floating.
  - c. Treatment:
    1. Cholagogues: dandelion (taraxacum), celandine, ox bile, B-12, folic acid, methionine, taurine
    2. Cholaretics:
      - a. Curcumin: 500-1500 mg a day
      - b. Globe artichoke: 300-900mg
      - c. Berberine: 300-900 mg
      - d. Dandelion: 500-1500 mg
      - e. Calcium-D-glucarate: found in cruciferous veggies, citrus, apples, apricots, bean sprouts and cherries

### b. Immune System

1. See SIgA, above
2. Zinc with Vitamin A enhances production
3. Colostrum is a rich source of SIgA, but derived from cow/goat
  - a. Avoid in dairy allergic patients
4. Immunoglobulins
  - a. IgG 2000 (Xymogen)
  - b. Probioplex (Metagenics)
5. Larch Arabinoglycan enhances SIgA production

## VII. TCM HERBAL PROTOCOLS

### A. Evaluate for and treat *zang-fu* in following sequence

1. Intestine Damp-Heat
2. Liver stagnation
3. Liver Overacting on Spleen or Stomach
4. Stagnation of Stomach *Qi*
5. Gallbladder Damp-heat
6. Deficiency of Spleen *Qi*
7. Deficiency of Spleen *Yang*
8. Deficiency of *Wei Qi*
9. Deficiency of Kidney *Qi*
10. Systemic Tonics

### B. Special Conditions in Leaky Gut

1. Chronic sinusitis or ear congestion
2. Skin eczema
3. Allergic Asthma
4. Food Allergy
5. Arthritis

### C. *Zang-fu* Disorders: Representative Formulas

1. Intestine Damp-Heat
  - a. Pulsatilla Intestinal Formula (Golden Flower) p. 34
  - b. Intestinal Fungus Formula (Golden Flower) 34
2. Liver stagnation
  - a. *Chai Hu Shu Gan Wan* 35
  - b. *Xiao Chai Hu Tang* 35
3. Liver Overacting on Spleen or Stomach
  - a. *Shu Gan Wan* 36
4. Stagnation of Stomach *Qi*
  - a. *Xiang Sha Yang Wei Wan* 37
  - b. *Zi Sheng Wan* 38



5. Gallbladder Damp-heat	
a. <i>Long Dan Xie Gan Tang</i>	p. 39
b. <i>Li Dan Wan</i>	39
6. Deficiency of Spleen <i>Qi</i>	
a. <i>Xiang Sha Liu Jun Zi Tang</i>	40
b. <i>Jian Pi Wan</i>	40
c. Gallus Malt (Seven Forest)	41
7. Deficiency of Spleen <i>Yang</i>	
a. <i>Fu Zi Li Zhong Tang</i>	41
b. <i>Xiao Jian Zhong Tang</i>	42
8. Deficiency of <i>Wei Qi</i>	
a. <i>Yu Ping Feng San</i>	42
b. Astragalus Vials	
9. Deficiency of Kidney <i>Qi</i>	
10. Systemic Tonics	

#### **D. Special Conditions in Leaky Gut**

1. Chronic sinusitis or ear congestion	
a. Children's Ear Formula	43
b. <i>Bi Min Gan Wan</i>	44
2. Skin eczema	
a. <i>Jie Yang Wan</i>	44
b. Kochia 13 (Seven Forest)	45
3. Allergic Asthma	
a. <i>Asthma-MSSN-02</i>	45
b. <i>Ding Chuan Wan</i>	46
4. Food Allergies	
a. <i>Wu Mei Wan</i>	47
5. Arthritis	
a. <i>Shen Tong Zhu Yu Tang</i>	48

## Herbal Formulas

### PULSATILLA INTESTINAL FORMULA

#### Golden Flower

<i>Poria Fu Ling</i>	17 %	FC
<i>Pulsatilla Bai Tou Weng</i>	15	DD
<i>Phellodendron Huang Bai</i>	14	DB
<i>Atractylodes Cang Zhu</i>	14	FB
<i>Paeonia Bai Shao</i>	12	AB
<i>Coptis Huang Lian</i>	12	DB
<i>Aucklandia Mu Xiang</i>	8	G
<i>Glycyrrhiza Gan Cao</i>	8	AA

### INTESTINAL FUNGUS FORMULA

#### Golden Flower

<i>Poria Fu Ling</i>	15 %	FC
<i>Coix Yi Yi Ren</i>	15	FC
<i>Pinellia Ban Xia</i>	14	CA
<i>Coptis Huang Lian</i>	14	DB
<i>Phellodendron Huang Bai</i>	14	DB
<i>Pulsatilla Bai Tou Weng</i>	14	DD
<i>Artemesia Yin Chen Hao</i>	14	FC

7A2-11

**CHAI HU SHU GAN WAN****Herbal Times***chai hu shu gan wan* • “Bupleurum Dredge Liver Pill”**Origin:** Zhang Jiebing, 1624.

Bupleurum <i>Chai Hu</i>	25 %	BB
Cyperus <i>Xiang Fu</i>	19	G
Citrus Aurantium <i>Zhi Shi</i>	19	G
Paeonia <i>Bai Shao</i>	19	AB
Ligusticum <i>Chuan Xiong</i>	12	K
Glycyrrhiza <i>Gan Cao</i>	6	AA

7A2-1

**XIAO CHAI HU TANG WAN****Minshan , Lanzhou Foci Herb Factory; Lanzhou***xiao chai hu tang wan* • “Minor Bupleurum Decoction Pills”**Origin:** Zhang Zhongjing, 220.

Bupleurum <i>Chai Hu</i>	28 %	BB
Pinellia <i>Ban Xia</i>	14	CA
Codonopsis <i>Dang Shen</i>	14	AA
Scutellaria <i>Huang Qin</i>	14	DB
Zizyphus Jujube <i>Da Zao</i>	14	AA
Glycyrrhiza <i>Gan Cao</i>	9	AA
Zingiberis <i>Sheng Jiang</i>	7	BA

7A2-13

**SHU GAN WAN**

Herbal Times Brand

*shu gan wan* • “Dredge Liver Pill”**Origin:** Zhu Tianbi, Ming dynasty (1368-1644)

<i>Melia Chuan Lian Zi</i>	13.0 %	G
<i>Paeonia Bai Shao</i>	10.4	AB
<i>Poria Fu Ling</i>	8.6	FC
<i>Citrus Aurantium Zhi Ke</i>	8.6	G
<i>Aquilaria Chen Xiang</i>	8.6	G
<i>Curcuma Jiang Huang</i>	8.6	K
<i>Corydalis Yan Hu Suo</i>	8.6	K
<i>Citrus Chen Pi</i>	6.9	G
<i>Amomum Sha Ren</i>	6.9	FB
<i>Aucklandia Mu Xiang</i>	6.9	G
<i>Amomum Bai Dou Kou</i>	5.3	FB
<i>Magnolia Hou Po</i>	5.2	FB
<i>Curcuma Yu Jin</i>	2.3	K

5C1-2

**XIANG SHA YANG WEI WAN**

Herbal Times Brand

*xiang sha yang wei wan* • “Aucklandia, Amomum Nourish Stomach Pill”**Origin:** Gong Tingxian, 1587.

Pinellia <i>Ban Xia</i>	10 %	CA
Poria <i>Fu Ling</i>	10	FC
Citrus <i>Chen Pi</i>	10	G
Atractylodes <i>Bai Zhu</i>	10	AA
Agastache <i>Huo Xiang</i>	7	FB
Magnolia <i>Hou Po</i>	7	FB
Amomum <i>Bai Dou Kou</i>	7	FB
Citrus Aurantium <i>Zhi Shi</i>	7	G
Aucklandia <i>Mu Xiang</i>	7	G
Amomum <i>Sha Ren</i>	7	FB
Cyperus <i>Xiang Fu</i>	7	G
Zizyphus Jujube <i>Da Zao</i>	5	AA
Zingiberis <i>Gan Jiang</i>	3	E
Glycyrrhiza <i>Gan Cao</i>	3	AA

5C1-8

**ZI SHENG WAN**

Minshan Brand, Lanzhou Foci Herb Factory; Lanzhou

*zi sheng wan* • “Provide Life Pills”**Origin:** Modern patent medicine

Codonopsis <i>Dang Shen</i>	11.7 %	AA
Atractylodes <i>Bai Zhu</i>	11.7	AA
Coix <i>Yi Yi Ren</i>	11.7	FC
Massa Fermentata <i>Shen Qu</i>	7.8	H
Citrus <i>Ju Hong</i>	7.8	G
Crataegus <i>Shan Zha</i>	7.8	H
Dioscorea <i>Shan Yao</i>	5.9	AA
Euryale <i>Qian Shi</i>	5.9	L
Poria <i>Fu Ling</i>	5.9	FC
Hordeum <i>Mai Ya</i>	5.8	H
Dolichoris <i>Bai Bian Dou</i>	3.9	DF
Nelumbo <i>Lian Zi</i>	3.9	L
Platycodon <i>Jie Geng</i>	2.0	CA
Agastache <i>Huo Xiang</i>	2.0	FB
Glycyrrhiza <i>Gan Cao</i>	2.0	AA
Alisma <i>Ze Xie</i>	1.4	FC
Amomum <i>Bai Dou Kou</i>	1.4	FB
Coptis <i>Huang Lian</i>	1.4	DB

## LONG DAN XIE GAN TANG

### Gentiana Combination

#### Taiwan Extract Granules

*long dan xie gan tang* • “Gentiana Drain Liver Decoction”

Origin: Wang Ang, 1682 and later, Wu Qian et al, 1742.

Gentiana <i>Long Dan Cao</i>	15.4 %	DA
Bupleurum <i>Chai Hu</i>	15.4	BB
Alisma <i>Ze Xie</i>	15.3	FC
Plantago <i>Che Qian Zi</i>	7.7	FC
Clematis (Akebia) <i>Chuan Mu Tong</i>	7.7	FC
Rehmannia <i>Sheng Di Huang</i>	7.7	DC
Angelica <i>Dang Gui Wei</i>	7.7	AB
Gardenia <i>Zhi Zi</i>	7.7	DA
Scutellaria <i>Huang Qin</i>	7.7	DB
Glycyrrhiza <i>Gan Cao</i>	7.7	AA

7C3-3

## LI DAN PIAN

### Plum Flower Brand

*li dan pian* • “Benefit Gallbladder Tablets”

Scutellaria <i>Huang Qin</i>	30 %	DB
Aucklandia <i>Mu Xiang</i>	16	G
Desmodium <i>Jin Qian Cao</i>	10	FC
Lonicera <i>Jin Yin Hua</i>	10	DD
Artemesia <i>Yin Chen Hao</i>	10	FC
Bupleurum <i>Chai Hu</i>	10	BB
Isatis <i>Da Qing Ye</i>	10	DD
Rheum <i>Da Huang</i>	4	PA

**XIANG SHA LIU JUN ZI TANG**  
**Saussurea & Cardamon Combination**

**Taiwan Extract Granule**

*xiang sha liu jun zi tang* • “Aucklandia, Amomum, Six Gentlemen Decoction”

**Origin:** Wang Ang, 1682 and Zhang Luxuan, 1695.

<i>Atractylodes Bai Zhu</i>	18.0 %	AA
<i>Poria Fu Ling</i>	17.9	FC
<i>Zingiberis Sheng Jiang</i>	17.9	BA
<i>Ginseng Ren Shen</i>	8.9	AA
<i>Pinellia Ban Xia</i>	8.9	CA
<i>Amomum Sha Ren</i>	7.1	FB
<i>Citrus Chen Pi</i>	7.1	G
<i>Aucklandia Mu Xiang</i>	7.1	G
<i>Glycyrrhiza Gan Cao</i>	7.1	AA

5C1-11

**JIAN PI WAN**

Minshan Brand, Lanzhou Foci Herb Factory; Lanzhou

*jian pi wan* • “Strengthen the Spleen Pill”

**Origin:** Wang Ang, 1682.

<i>Atractylodes Bai Zhu</i>	23 %	AA
<i>Citrus Aurantium Zhi Shi</i>	16	G
<i>Codonopsis Dang Shen</i>	16	AA
<i>Citrus Chen Pi</i>	16	G
<i>Hordeum Mai Ya</i>	16	H
<i>Crataegus Shan Zha</i>	11	H



## GALLUS MALT

### Seven Forest

Gallus <i>Ji Nei Jin</i>	50 %	H
Hordeum <i>Mai Ya</i>	30	H
Mume <i>Wu Mei</i>	10	L
Agastache <i>Huo Xiang</i>	10	FB

5B-1

## FU ZI LI ZHONG WAN

Minshan Brand, Lanzhou Foci Herb Factory; Lanzhou

*fu zi li zhong wan* • “Aconite Benefit the Center Pills”

**Origin:** Chen Shiwen et al, 1080.

Codonopsis <i>Dang Shen</i>	23.1%	AA
Glycyrrhiza <i>Gan Cao</i>	23.1	AA
Zingiberis <i>Gan Jiang</i>	23.1	E
Atractylodes <i>Bai Zhu</i>	23.1	AA
Aconite <i>Fu Zi</i>	7.6	E

## ASTRAGALUS FORMULA

Golden Flower Brand

**Origin:** *xiao jian zhong tang*, “Minor Strengthen the Center Pills”, Zhang Zhongjing, 220.

<i>Saccharum Yi Tang</i>	32.3%	AA
<i>Paeonia Bai Shao</i>	19.4	AB
<i>Cinnamomum Gui Zhi</i>	9.7	BA
<i>Zingiber Sheng Jiang</i>	9.7	BA
<i>Ziziphus Jujube Da Zao</i>	9.7	AA
<i>Astragalus Huang Qi</i>	6.4	AA
<i>Glycyrrhiza Zhi Gan Cao</i>	6.4	AA
<i>Atractylodes Bai Zhu</i>	6.4	AA

12A1-6

## YU PING FENG SAN WAN

Herbal Times

*yu ping feng san wan* • “Jade Screen (against the) Wind Powder Pills”

**Origin:** Zhu Zhenheng (Danxi), 1481 and later, Zhang Jiebing, 1624.

<i>Astragalus Huang Qi</i>	35 %	AA
<i>Atractylodes Bai Zhu</i>	33	AA
<i>Ledebouriella Fang Feng</i>	32	BA

## CHILDREN'S EAR FORMULA

### Golden Flower

*Origin:* Jake Paul Fratkin, OMD

Agastache <i>Huo Xiang</i>	10 %	FC
Poria <i>Fu Ling</i>	10	FC
Chrysanthemum <i>Ju Hua</i>	8	BA
Coptis <i>Huang Llan</i>	8	DB
Forsythia <i>Lian Qlao</i>	8	DD
Paeonia <i>Chi Shao</i>	8	K
Peucedanum <i>Qian Hu</i>	8	CB
Angelica <i>Bai Zhi</i>	7	BA
Bupleurum <i>Chal Hu</i>	7	BB
Fritillaria <i>Zhe Bel Mu</i>	7	CB
Pinellia <i>Zhi Ban Xia</i>	7	CA
Vitex <i>Man Jing Zi</i>	7	BB
Zingiberis <i>Sheng Jiang</i>	5	BA

1C2-4

**BI MING GAN WAN (ALLERGY SEASON PILL)****Bio Essence Brand***bi min gan wan* • “Nasal Susceptibility Pill”

Magnolia <i>Xin Yi Hua</i>	22 %	BA
Xanthium <i>Cang Er Zi</i>	22	FA
Schizonepeta <i>Jing Jie</i>	8	BA
Anemarrhena <i>Zhi Mu</i>	8	DA
Glycyrrhiza <i>Gan Cao</i>	7	AA
Chrysanthemum <i>Ye Ju Hua</i>	7	BB
Angelica <i>Bai Zhi</i>	6	BA
Forsythia <i>Lian Qiao</i>	6	DD
Ledebouriella <i>Fang Feng</i>	6	FA
Platycodon <i>Jie Geng</i>	4	CA
Schisandra <i>Wu Wei Zi</i>	4	L

**JIE YAN WAN****Herbal Times***jie yang wan* • “Resolve Itching Pills”

Chinemys <i>Gui Ban</i>	20 %	AD
Smilax <i>Tu Fu Ling</i>	12	DD
Cnidium <i>She Chuang Zi</i>	12	R
Dictamnus <i>Bai Xian Pi</i>	12	DD
Agkistrodon <i>Bai Hua She</i>	12	FA
Ledebouriella <i>Fang Feng</i>	10	BA
Angelica <i>Dang Gui</i>	8	AB
Phellodendron <i>Huang Bai</i>	8	DB
Astragalus <i>Huang Qi</i>	6	AA

## KOCHIA 13

### Seven Forests

<i>Kochia Di Fu Zi</i>	13%	FC
<i>Smilax Tu Fu Ling</i>	9	DD
<i>Ledebouriella Fang Feng</i>	9	BA
<i>Sophora Huai Hua</i>	8	J
<i>Salvia Dan Shen</i>	8	K
<i>Tribulus Bai Ji</i>	8	O
<i>Dictamnus Bai Xian Pi</i>	7	DD
<i>Scrophularia Xuan Shen</i>	7	DC
<i>Cicada Chan Tui</i>	7	BB
<i>Dioscorea Bei Xie</i>	7	FC
<i>Rehmannia Sheng Di Huang</i>	6	DC
<i>Platycodon Jie Geng</i>	6	CA
<i>Glycyrrhiza Gan Cao</i>	5	AA

## ASTHMA MSSN-02 FORMULA

### Beijing Hospital Formula

<i>Ganoderma Ling Zhi</i>	9 g.	AA
<i>Glycyrrhiza Gan Cao</i>	7	AA
<i>Zizyphus Jujube Da Zao</i>	4 pc	AA.
<i>Angelica Dang Gui</i>	9	AB
<i>Paeonia Bai Shao</i>	9	AB
<i>Pueraria Ge Gen</i>	9	BB
<i>Platycodon Jie Geng</i>	7	CA
<i>Lepidium Ting Li Zi</i>	9	CB
<i>Armeniaca Xing Ren</i>	9	CC
<i>Perilla Su Zi</i>	9	CC
<i>Scutellaria Huang Qin</i>	9	DB
<i>Sophora Ku Shen</i>	9	DD
<i>Zingiberis Gan Jiang</i>	6	E
<i>Margaritifera Zhen Zhu Mu</i>	7	N

3E-7

**DING CHUAN WAN • CLEAR MOUNTAIN AIR**

Plum Flower Brand

*ding chuan wan* • “Stabilize Panting Pill”**Origin:** Wu Min, 1530. Also attributed to Zhang Shiche, 1550.

Ginkgo <i>Bai Guo</i>	12.2 %	L
Morus <i>Sang Bai Pi</i>	12.2	CC
Platycodon <i>Jie Geng</i>	10.2	CA
Perilla <i>Su Zi</i>	10.2	BA
Armeniaca <i>Xing Ren</i>	10.2	CC
Scutellaria <i>Huang Qin</i>	10.2	DB
Pinellia <i>Ban Xia</i>	10.2	CA
Glycyrrhiza <i>Gan Cao</i>	8.2	AA
Stemona <i>Bai Bu</i>	8.2	CC
Aster <i>Zi Wan</i>	8.2	CC

5D-12

**WU MEI WAN**

Herbal Times Brand

*wu mei wan* • “Mume Pills”**Origin:** Zhang Zhongjing, 220.

Mume <i>Wu Mei</i>	18.5 %	L
Angelica <i>Dang Gui</i>	11.1	AB
Ginseng <i>Ren Shen</i>	11.1	AA
Phellodendron <i>Huang Bai</i>	11.1	DB
Aconite <i>Fu Zi</i>	11.1	E
Cinnamomum <i>Gui Zhi</i>	11.1	BA
Zingiberis <i>Gan Jiang</i>	11.1	E
Coptis <i>Huang Lian</i>	7.4	DB
Zanthoxylum <i>Chuan Jiao</i>	3.7	E
Asarum <i>Xi Xin</i>	3.7	BA

4C2-3

**SHEN TONG ZHU YU WAN • THE GREAT INVIGORATOR TEAPILLS**

Plum Flower Brand

*shen tong zhu yu tang* • “Body Pain Drive Out Stasis Decoction”**Origin:** Wang Qingren, 1830.s

<i>Persica Tao Ren</i>	12 %	K
<i>Carthamus Hong Hua</i>	12	K
<i>Angelica Dang Gui</i>	12	AB
<i>Cyathula Chuan Niu Xi</i>	12	K
<i>Ligusticum Chuan Xiong</i>	8	K
<i>Glycyrrhiza Gan Cao</i>	8	AA
<i>Myrrha Mo Yao</i>	8	K
<i>Trogopterus Wu Ling Zhi</i>	8	K
<i>Lumbricus Di Long</i>	8	O
<i>Gentiana Qin Jiao</i>	4	FA
<i>Notopterygium Qiang Huo</i>	4	BA
<i>Cyperus Xiang Fu</i>	4	G



## VIII. CODES FOR THE HERB CATEGORIES

AA	TONIFY <i>QI</i>
AB	TONIFY BLOOD
AC	TONIFY (KIDNEY) <i>YANG</i>
AD	TONIFY <i>YIN</i>
BA	WARM-PUNGENT RELEASE EXTERIOR
BB	COOL-PUNGENT RELEASE EXTERIOR
CA	TRANSFORM PHLEGM-DAMP
CB	TRANSFORM PHLEGM-HEAT
CC	RELIEVE COUGH & ASTHMA
DA	CLEAR HEAT AND DRAIN FIRE
DB	CLEAR HEAT AND DRY DAMPNES
DC	CLEAR HEAT AND COOL BLOOD
DD	CLEAR HEAT AND RESOLVE TOXINS
DE	CLEAR HEAT DUE TO <i>YIN</i> DEFICIENCY
DF	CLEAR AND RELIEVE SUMMER HEAT
E	WARM THE INTERIOR (SPLEEN <i>YANG</i> )
FA	DISPEL WIND AND DAMPNES
FB	TRANSFORM (SPLEEN) DAMPNES
FC	DRAIN DAMPNES (DIURETICS)
G	REGULATE (STAGNANT) <i>QI</i>
H	RELIEVE FOOD STASIS
J	STOP BLEEDING
K	INVIGORATE BLOOD AND BREAK BLOOD STASIS
L	STABILIZE AND BIND (ASTRINGENTS)
M	OPEN ORIFICES (SENSES)
N	CALM <i>SHEN</i> (SPIRIT)
O	EXTINGUISH (ENDOGENOUS) WIND AND STOP TREMORS
PA	PURGATIVES
PB	LUBRICATING PURGATIVES
PC	DIURETIC PURGATIVES
Q	EXPEL PARASITES
R	EXTERNAL APPLICATION