Herb-Drug Interactions (2/2)

Pharmacokinetic Interactions
- Absorption
- Distribution
- Metabolism
- Elimination

Pharmacodynamic Interactions
- Synergy
- Antagonism

Classification of Herbs
- Exterior-Releasing Herbs
- Heat-Clearing Herbs
- Downward Draining Herbs
- Wind-Damp Dispelling Herbs
- Water-Regulating and Damp-Resolving Herbs
- Interior-Warming Herbs
- Qi-Regulating Herbs
- Digestive Herbs
- Blood-Invigorating and Stasis-Removing Herbs
- Phlegm-Resolving and Coughing- and Wheezing-Relieving Herbs
- Shen-Calming Herbs
- Liver-Calming and Wind-Extinguishing Herbs
- Astringent Herbs
- Tonic Herbs

Pharmacodynamic Interactions
- Synergistic Effect
  - 1+1=3
- Antagonist Effect
  - 1+1=1

Exterior-Releasing Herbs
- Substances that ‘release the exterior’ act to dispel pathogenic factors from the external and superficial parts of the body.

Clinical Presentation
- Aversion to cold, chills, fever, headache, muscle aches and pain, the inappropriate presence or absence of perspiration, and a superficial pulse.

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Diaphoretic & Antipyretic Effect

- Gui Zhi (Ramulus Cinnamomi)
- Ma Huang (Herba Ephedrae)

Antihistamine Effect

- Xin Yi Hua (Flos Magnoliae)
- Cang Er Zi (Fructus Xanthii)
- Chan Tui (Periostracum Cicadae)
- Fang Feng (Radix Saposhnikoviae)

Classic Formulas

- Ma Huang Tang (Ephedra Decoction)
- Gui Zhi Tang (Cinnamon Twig Decoction)
- Xin Yi San (Magnolia Flower Powder)
- Cang Er San (Xanthium Powder)
- Qing Bi Tang (Clear the Nose Decoction)
- Xiao Feng San (Eliminate Wind Powder)

Ma Huang (Herba Ephedrae)

- General effect:
  - Ma Huang contains ephedrine alkaloids that stimulate the central nervous system and the cardiovascular system. Combining Ma Huang with cardiac glycosides may lead to cardiac arrhythmia.

Stimulant effect:

- Ma Huang should not be combined with other sympathomimetic drugs, such as ephedrine, pseudoephedrine, theophylline, caffeine, monoamine oxidase inhibitors (MAOI), or substances with similar properties.

Beta blockers:

- The effect of beta blockers may be reduced when combined with Ma Huang because of increased levels of norepinephrine caused by the herb.\textsuperscript{20}

  [Note: Examples of beta blockers include atenolol (Tenormin), metoprolol (Lopressor/Toprol), sotalol (Betapace), propranolol (Inderal), and labetalol (Normodyne/Trandate).]
**Xiao Chai Hu Tang**
(Minor Bupleurum Decoction)

- **Drug-induced liver damage:**
- Administration of *Xiao Chai Hu Tang* has been shown to have beneficial effects in preventing and/or treating damage induced by drugs, such as halothane, danazol, D-galactosamine, and carbon tetrachloride.

**Xiao Chai Hu Tang**
(Minor Bupleurum Decoction)

- **Interferon:**
- It has been reported that increased risk of acute pneumonitis may be associated with use of interferon, *Xiao Chai Hu Tang*, or both in combination. Among patients with chronic hepatitis or liver cirrhosis, the frequency of drug-induced pneumonitis was:
  - 0.5% in those given only interferon-alpha
  - 0.7% in those given only *Xiao Chai Hu Tang*
  - 4.0% in those given both

**Da Qing Long Tang**
(Major Bluegreen Dragon Decoction)

- **Interferon-induced adverse reactions:**
- *Da Qing Long Tang, Ma Huang Tang* (Ephedra Decoction) and interferon-beta
- Concurrent use of herbs reduced the adverse effects of interferon in hepatitis C patients, such as discomfort, fever, general malaise, paresthesia and arthralgia.
- The study concluded that the use of these two formulas may reduce the adverse effects accompanying interferon-beta treatment in patients with chronic hepatitis C, without reducing the antiviral effects.

**Xiao Qing Long Tang**
(Minor Bluegreen Dragon Decoction)

- **Fluticasone**
- Forty-two asthma patients were divided into three groups: one group treated with *Xiao Qing Long Tang*, one group treated with fluticasone inhalation, and one group treated with both.
- The study reported that concurrent administration of fluticasone and *Xiao Qing Long Tang* was associated with superior results based on pulmonary function, in comparison with the other two groups.

**Downward Draining Herbs**

- ‘Downward draining’ describes the action of substances that eliminate pathogenic factors and conditions via purgative, laxative or cathartic actions.

**Clinical Presentation**

- **Constipation**
- **Food stagnation**
- **Intestinal obstruction**
Purgative / Laxative Effect

Strong Purgatives:
- *Da Huang* (Radix et Rhizoma Rhei)
- *Mang Xiao* (Natrii Sulfas)
- *Fan Xie Ye* (Folium Sennae)

Moist Laxatives:
- *Huo Ma Ren* (Semen Cannabis Sativae)
- *Yu Li Ren* (Semen Pruni)
- *Tao Ren* (Semen Persicae)

Osmotic Effect

- *Mang Xiao* (Natrii Sulfas) remains in the gastrointestinal system and is not absorbed systemically.
- As an osmotic agent, it increases the water content and pressure in the intestines, thus inducing peristalsis and bowel movement.
- *Mang Xiao* is most effective when taken with a large amount of water. The laxative effect is usually achieved 4-6 hours following oral ingestion.

Classic Formulas

- Strong Purgatives:
  - *Da Cheng Qi Tang* (Major Order the Qi Decoction)
  - *Xiao Cheng Qi Tang* (Minor Order the Qi Decoction)
  - *Tiao Wei Cheng Qi Tang* (Regulate the Stomach and Order the Qi Decoction)
  - *Zeng Ye Cheng Qi Tang* (Increase the Fluids and Order the Qi Decoction)

- Moist Laxatives:
  - *Run Chang Wan* (Moisten the Intestines Pill)
  - *Ma Zi Ren Wan* (Hemp Seed Pill)

Xiao Cheng Qi Tang
(Minor Order the Qi Decoction)

- Opioid-induced constipation and nausea:
  - Xiao Cheng Qi Tang relieved constipation and nausea caused by excessive use of opioid analgesics in 40 patients with terminal cancer.
  - For constipation, the study reported complete recovery in 30 cases, improvement in 8 cases, and no benefit in 2 cases. For nausea, the study reported complete relief in 19 cases and improvement in 9 cases.

Ma Zi Ren Wan
(Hemp Seed Pill)

- Drug-induced constipation:
  - Constipation caused by antipsychotic drugs in 80 individuals was treated with marked success using *Ma Zi Ren Wan*. The herbs were given at 9 to 15g per dose, three times daily. For those with severe constipation, the form was switched from pills to decoction.
  - Of 80 patients, the study reported complete recovery in 62 cases, improvement in 13 cases, and no effect on 5 cases.
Zeng Ye Cheng Qi Tang (Increase the Fluids and Order the Qi Decoction)

- Phenothiazine-induced constipation:
- Phenothiazine-induced side effects include constipation, a dry mouth with a bitter taste, nausea, etc.
- Patients were instructed to continue with phenothiazine and herbs concurrently for four weeks, while avoiding all other treatments.
- Use of modified Zeng Ye Cheng Qi Tang was beneficial in alleviating the side effects related to use of phenothiazine in 30 psychiatric patients.

Tiao Wei Cheng Qi Tang (Regulate the Stomach and Order the Qi Decoction)

- Drug overdose:
- Use of Tiao Wei Cheng Qi Tang was associated with satisfactory results in treating 24 patients with overdose of illegal drugs.
- The patients received gastric lavage first, followed by administration of the herbs via a gastric tube with warm water. Bowel movement was induced within 2.5 to 4.0 hours in all patients.

Potential Herb-Drug Interactions

- Downward draining herbs should be used with caution in patients taking pharmaceutical laxatives and diuretics, as these drugs also contribute to the elimination of water and electrolytes.
- The inappropriate or excessive combination of herbs and pharmaceuticals in this case might cause or exaggerate diarrhea, dehydration, and electrolyte imbalance.

Heat-Clearing Herbs

- Heat-clearing herbs address imbalances caused by excessive heat, whether mild or extreme, at various levels of pathological penetration of the body, by clearing heat, purging fire, or cooling organs or substances injured by heat.

Clinical Presentation

- Heat/Fire: high fever, aversion to heat, thirst, restlessness, irritability, delirium
- Damp heat: burning and pain during urination
- Heat in the blood: restlessness, irritability, delirium, semi-consciousness, purpura and bleeding
- Toxic heat: febrile diseases, diarrhea, dysentery, abscesses of internal organs, surface pus, burns, wounds, soreness and swelling of the throat
- Deficient heat: sensations of ‘steaming bones’, warmth in the palms and soles, night sweats, dry throat and mouth, irritability

Antibacterial Effect

- Huang Qin (Radix Scutellariae)
- Huang Lian (Rhizoma Coptidis)
- Huang Bo (Cortex Phellodendri Chinensis)
- Zhi Zi (Fructus Gardeniae)
Antiviral Effect

- Jin Yin Hua (Flos Lonicerae Japonicae)
- Lian Qiao (Fructus Forsythiae Suspensae)
- Long Dan (Radix et Rhizoma Gentianae)
- Dao Di Wu Gong (Rhizoma Helminthostachytopsis)
- Chuan Xin Lian (Herba Andrographitis Paniculatae)

Antineoplastic Effect

- Ku Shen Zi (Semen Sophorae Flavescentis)
- Ban Zhi Lian (Herba Scutellaria Barbatae)
- Bai Hua She She Cao (Herba Hedyotidis Diffusae)

Antipyretic Effect

- Shi Gao (Gypsum Fibrosum)
- Zhi Mu (Rhizoma Anemarrhenae)

Antihypertensive Effect

- Zhi Zi (Fructus Gardeniae Jasminoidis)
- Long Dan (Radix et Rhizoma Gentianae)
- Ye Ju Hua (Flos Chrysanthemi Indici)
- Xia Ku Cao (Spica Prunellae Vulgaris)
- Jue Ming Zi (Semen Cassiae)
- Zhen Zhu Mu (Concha Margaritiferae)

Hepatoprotective Effect

- Huang Qin (Radix Scutellariae Baicalensis)
- Zhi Zi (Fructus Gardeniae Jasminoidis)
- Long Dan (Radix et Rhizoma Gentianae)
- Yin Chen Hao (Herba Artemisiae Capillaris)
- Wu Wei Zi (Fructus Schisandrae Chinensis)

Classic Formulas

Formulas with localized effect:
- Qing Fei Tang (Clear the Lung Decoction)
- Qing Wei San (Clear the Stomach Powder)
- Qing Chang Tang (Clear the Intestines Decoction)
Classic Formulas

Formulas with systemic effect:
- **Long Dan Xie Gan Tang** (Gentiana Decoction to Drain the Liver)
- **Huang Lian Jie Du Tang** (Coptis Decoction to Relieve Toxicity)
- **Pu Ji Xiao Du Yin** (Universal Benefit Decoction to Eliminate Toxin)

Guan Ye Lian Qiao (Herba Hypericum)

- **SSRI’s**: Since St. John’s Wort and SSRI both inhibit the reuptake of serotonin, concurrent use of both the herb and the drug may lead to “serotonin syndrome” with symptoms such as sweating, tremor, flushing, confusion and agitation.
  
  [Note: Examples of SSRI’s include fluoxetine (Prozac), paroxetine (Paxil), sertraline (Zoloft), citalopram (Celexa), and fluvoxamine (Luvox).]

Cross-allergy

- **Da Qing Ye** (Folium Isatidis)
- **Ban Lan Gen** (Radix Isatidis)
- **Qing Dai** (Indigo Naturalis)

- Sulfonylureas: tolbutamide (Orinase), glipizide (Glucotrol), and glyburide (DiaBeta/Micronase)
- Sulfonamides: sulfadiazine, sulfisoxazole, sulfamethoxazole, trimethoprim/sulfamethoxazole (Bactrim/Septra), and erythromycin/sulfisoxazole (Pediazole).

Huang Qin (Radix Scutellariae)

- **Antibiotics**: Concurrent use of baicalin, a flavone isolated from *Huang Qin*, was found to have synergistic antibiotic effect with beta-lactam antibiotics, such as ampicillin, amoxicillin, methicillin and cefotaxime.
- The addition of baicalin restored the effectiveness of these drugs against beta-lactam-resistant *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* (MRSA).

Wind-Damp Dispelling Herbs

Herbs that dispel wind and dampness eliminate these pathogenic factors from muscles and joints to relieve obstruction and pain in *bi zheng* (painful obstruction syndrome).

Clinical Presentation

- Muscle aches and pain, muscle spasms and cramps, weakness and pain of the lower back and knees, numbness and atrophy of muscle, hemiplegia and paralysis.
Anti-Inflammatory Effect
- *Qiang Huo* (Rhizoma et Radix Notopterygii)
- *Du Huo* (Radix Angelicae Pubescentis)

Anti-Inflammatory Effect
- *Gui Zhi* (Ramulus Cinnamomi)
- *Sang Zhi* (Ramulus Mori)

Synergistic Effect
- Analgesic Effect
  - *Fang Ji* (Radix Stephaniae Tetrandae)
- Anti-Inflammatory Effect
  - *Lei Gong Teng* (Radix Tripterygii Wilfordii)

Rheumatoid Arthritis
- *Lei Gong Teng* and *Fang Ji* exert a powerful suppressive effect on human immune responses.
- Inhibited prostaglandin E2 secretion from monocytes
- Inhibited IL-1, IL-6, IL-8, and tumor necrosis factor-alpha
- Therapeutically effective in rheumatic diseases

**Bi zheng** (painful obstruction syndrome)
- *Xing bi* (mobile painful obstruction) - wind.
- *Tong bi* (extremely painful obstruction) - cold.
- *Zhuo bi* (fixed painful obstruction) - dampness.
- *Re bi* (heat painful obstruction) - heat.
- *Wan bi* (stubborn painful obstruction) - chronic injuries.
- *Wei bi* (atrophic painful obstruction) - deficiencies.
- *Xue bi* (blood painful obstruction) blood stagnation.
- *Zhou bi* (generalized painful obstruction) - generalized pain.

Classic Formulas
- *Juan Bi Tang* (Remove Painful Obstruction Decoctions)
- *Shang Zhong Xia Tong Yong Tong Feng Wan* (Upper, Middle and Lower General-Use Pills for Wind-Pain)
Potential Herb-Drug Interactions
- Analgesics and anti-inflammatories:
- Herbs that dispel wind and dampness are usually characterized by pronounced analgesic and anti-inflammatory activity. There is little or no documentation of any incidents of adverse interaction between analgesic and anti-inflammatory herbs and drug therapy.

Water-Regulating and Damp-Resolving Herbs
- Substances that regulate water and drain or transform dampness act to normalize water circulation, eliminate water accumulation and drain dampness.

Clinical Presentation
- Dysuria, anuria, edema and phlegm accumulation.

Diuretic Effect
- Ze Xie (Rhizoma Alismatis)
- Zhu Ling (Polyporus)
- Mu Tong (Caulis Akebiae)
- Chuan Mu Tong (Caulis Clematidis Armandii)

Diuretic Effect
- Zhu Ling (Polyporus)
- Intravenous or intramuscular injection
- Increased the excretion of water, sodium, chloride, and potassium.

Classic Formulas
- Wu Ling San (Five-Ingredient Powder with Poria)
- Wu Pi Yin (Five-Peel Decoction)
- Ba Zheng San (Eight-Herb Powder for Rectification)
- Long Dan Xie Gan Tang (Gentiana Decoction to Drain the Liver)
Potential Herb-Drug Interactions

- Diuretics:
  - Herbs that regulate water and transform dampness often have diuretic characteristics to eliminate the accumulation of excess water in the body. Therefore, it is prudent to avoid combining these herbs with drugs that exert diuretic effects, as there may be additive or synergistic results. Combination therapy may lead to excessive loss of fluids and electrolytes.

Interior-Warming Herbs

- Herbs that warm the interior, as the name implies, warm the body’s interior and dispel pathogenic cold.

Clinical Presentation

- Aversion to cold, cold extremities, pale face, clear urine, pale white tongue, and deep, thready pulse.

Cardiovascular Effect

- **Fu Zi** (Radix Aconiti Lateralis Praeparata)
  - Positive inotropic and chronotropic effects.
  - In animal experiments, intravenous injection increased the cardiac contractility, dilated blood vessels, and increased the cardiac output.
  - It also increases the heart rate and is used to treat patients with bradycardia or bradyarrhythmia.

Acute cardiac infarction

- **Si Ni Tang** (Frigid Extremities Decoction) has a marked effect on the cardiovascular system to increase the contractile force of the heart, increase blood pressure, and restore normal heart rhythm. Clinically, it has been used to treat patients with acute cardiac infarction, with good success.

Gastrointestinal Effect

- **Gan Jiang** (Rhizoma Zingiberis)
- **Gao Liang Jiang** (Rhizoma Alpiniae Officinarum)*
### Gastrointestinal disorders

- Nausea, vomiting, anorexia, diarrhea, dysentery, constipation, peptic ulcer, gastritis (atrophic gastritis, superficial gastritis, gastritis with ulcer), enteritis, ulcerative colitis, irritable bowel syndrome, obstructive bowel disease, intestinal obstruction, and post-operative ileus.
- The mechanisms of action have been attributed in part to the antiulcer effects of these formulas to inhibit the production of gastric acid, their analgesic effects to relieve pain, and their antiemetic effects to relieve nausea and vomiting.

### Analgesic & Anesthetic Effect

- **Wu Zhu Yu** (Fructus Evodiae)
- **Xi Xin** (Radix et Rhizoma Asari)
- **Ding Xiang** (Flos Caryophylli)
- **Fu Zi** (Radix Aconiti Lateralis Praeparata)*

### Pain

- Many types and presentations of pain, such as headaches, cancer pain, sciatica, frostbite, peripheral neuritis, diabetic neuropathy, periarthritis of shoulder, frozen shoulder, neck and shoulder stiffness and pain, and general aches and pains.

### Classic Formulas

- **Xiao Jian Zhong Tang** (Minor Construct the Middle Decoction)
- **Da Jian Zhong Tang** (Major Construct the Middle Decoction)
- **Li Zhong Tang** (Regulate the Middle Decoction)
- **Si Ni Tang** (Frigid Extremities Decoction)

### Interior-Warming Formulas

- **Antipsychotic drugs**: recurrent constipation and/or intestinal obstruction caused by use of antipsychotic drugs
- **Chlorpromazine-induced hypoperistalsis**: it can be treated effectively with a dose-dependent effect to improve small intestinal peristalsis and distal colonic propulsion.
- **Morphine-induced constipation**: it alleviates severe constipation in cancer patients taking morphine to relieve pain. Use of **Du Jian Zhong Tang** did not alter the anti-nociceptive effect of morphine.

### Potential Herb-Drug Interactions

- **Cardiovascular agents**:
- **Interior-warming herbs** have marked positive inotropic and chronotropic effects. Thus, they should be used with caution in patients having certain cardiovascular disorders (such as arrhythmia) or who are on certain medications (such as digoxin or thyroid supplements).
**Fu Zi** (Radix Aconiti Lateralis Praeparata)

- **Antiarrhythmics:** Patients who have a past history of cardiovascular disorders or are taking antiarrhythmic medications should take *Fu Zi* with extreme caution.13
- Same caution applies to *Chuan Wu* (Radix Aconiti) and *Cao Wu* (Radix Aconiti Kusnezoffii)
- [Note: Examples of antiarrhythmics include quinidine, procainamide (Pronestyl), disopyramide (Norpace), flecainide (Tambocor), propafenone (Rythmol), and amiodarone (Cordarone).]

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**Qi-Regulating Herbs**

- Herbs that regulate qi function to promote normal circulation of qi, correct reversed flow of qi, and eliminate qi stagnation.

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**Clinical Presentation**

- Spleen/Stomach: nausea, vomiting, hiccups, epigastric and abdominal bloating, fullness and pain, acid regurgitation, belching, poor appetite
- Lung: stifling sensation in the chest, cough, dyspnea and wheezing
- Liver: emotional disturbance, stress, irritability, anger, hypochondriac distension or pain, hernial pain, breast distension and tenderness with or without palpable mass, irregular menstruation

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**Gastrointestinal Effect**

- Both herbs have effect to stimulate or inhibit the GI tract
  - *Zhi Shi* (Fructus Aurantii Immaturus)
  - *Zhi Qiao* (Fructus Aurantii)*

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**Respiratory Effect**

- *Chen Pi* (Pericarpium Citri Reticulatae)
- *Qing Pi* (Pericarpium Citri Reticulatae Viride)
- *Fo Shou* (Fructus Citri Sarcodactylis)

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**Cardiovascular Effect**

- *Zhi Shi* (Fructus Aurantii Immaturus)
- *Zhi Qiao* (Fructus Aurantii)
- *Qing Pi* (Pericarpium Citri Reticulatae Viride)
Classic Formulas for Lung qi

- Su Zi Jiang Qi Tang (Perilla Fruit Decoction for Directing Qi Downward)
- Ding Chuan Tang (Arrest Wheezing Decoction)

Classic Formulas for Spleen/Stomach qi

- Yue Ju Wan (Escape Restraint Pill)
- Ban Xia Hou Po Tang (Pinellia and Magnolia Bark Decoction)

Classic Formulas for Liver qi

- Xiao Yao San (Rambling Powder)
- Jia Wei Xiao Yao San (Augmented Rambling Powder)
- Chai Hu Jia Long Gu Mu Li Tang (Bupleurum plus Dragon Bone and Oyster Shell Decoction)

Class Formulas for Liver qi

- Chai Hu Shu Gan Tang (Bupleurum Decoction to Spread the Liver)
- Ju He Wan (Tangerine Seed Pill)

Potential Herb-Drug Interactions

- Sympathomimetics:
- Some herbs that move qi may exert stimulant influence. For example, herbs that contain components that stimulate the sympathetic nervous system include
  - Chen Pi (Pericarpium Citri Reticulatae)
  - Qing Pi (Pericarpium Citri Reticulatae Viride)
  - Zhi Shi (Fructus Aurantii Immaturus)
  - Zhi Qiao (Fructus Aurantii)

Potential Herb-Drug Interactions

- Sympathomimetics:
- Therefore, such herbs should be used with caution in patients who take medications for pre-existing conditions such as hypertension, diabetes mellitus, hyperthyroidism, and seizures.
Potential Herb-Drug Interactions

- Cardiovascular agents: Some qi-regulating herbs stimulate the cardiovascular system and increase blood pressure, while others dilate the blood vessels to decrease blood pressure. Therefore, these herbs should be used with caution in patients taking cardiovascular medications.

Digestive Herbs

- Herbs that promote digestion function to strengthen the Spleen, enhance the appetite, promote digestion, and relieve food stagnation.

Clinical Presentation

- Epigastric and abdominal fullness and distension, belching or acid regurgitation, irregular bowel movement, indigestion and weakness of digestion.

Gastrointestinal Effect

- *Shan Zha* (Fructus Crataegi)
- *Mai Ya* (Fructus Hordei Germinatus)
- *Gu Ya* (Fructus Setariae Germinatus)
- *Shen Qu* (Massa Fermentata)
- *Hong Qu* (Monascus)
- *Ji Nei Jin* (Endothelium Corneum Gigeriae Galli)

Shan Zha (Fructus Crataegi)

- Digoxin (Lanoxin):
- Both *Shan Zha* and digoxin have marked cardiotonic effects. Therefore, concurrent use of *Shan Zha* and digoxin (Lanoxin) should be monitored carefully to avoid possible side effects.

Classic Formulas

- *Bao He Wan* (Preserve Harmony Pill)
**Bao He Wan (Preserve Harmony Pill)**

- **Chemotherapy-induced gastrointestinal side-effects:**
  - Use of modified Bao He Wan relieved gastrointestinal side effects associated with chemotherapy in cancer patients in one study. The treatment protocol was to administer the herbs in decoction for 10 days. Of 110 patients, 105 had complete recovery and 5 had improvement.

**Shen-Calming Herbs**

- **Sedative / Hypnotic effect.**
  - When dealing with imbalances of Shen and emotions, the herbs that are used have sedative and tranquilizing properties.

**Clinical Presentation**

- **Deficient-type:** dizziness, lightheadedness, palpitations, restlessness, irritability, forgetfulness, night sweats, pale tongue, and thready pulse.
- **Excess-type:** irritability, anxiety, restlessness, fearfulness, insomnia, headache, chest congestion, red eyes, bitter taste in the mouth, yellow tongue coating, and a slippery, rapid pulse.

**Sedative / Hypnotic Effect**

- **Suan Zao Ren** (Semen Ziziphi Spinosae)
- **He Huan Hua** (Flos Albiziae)
- **Yuan Zhi** (Radix Polygalae)
- **Shou Wu Teng** (Caulis Polygoni Multiflori)
- **Xie Cao** (Radix et Rhizoma Valerianae)

**Classic Formulas**

- **For Deficiency:**
  - **Suan Zao Ren Tang** (Sour Jujube Decoction)
  - **Tian Wang Bu Xin Dan** (Emperor of Heaven's Special Pill to Tonify the Heart)
  - **Gan Mai Da Zao Tang** (Licorice, Wheat, and Jujube Decoction)

- **For Excess:**
  - **Xiao Yao San** (Rambling Powder)
  - **Jia Wei Xiao Yao San** (Augmented Rambling Powder)
  - **Chai Hu Jia Long Gu Mu Li Tang** (Bupleurum plus Dragon Bone and Oyster Shell Decoction)
Potential Herb-Drug Interactions

- Sedatives: Herbs that calm the shen (spirit) have marked sedative and tranquilizing effects.
- Therefore, they should be used with caution when prescribed for a patient also taking other agents that may cause drowsiness, such as alcohol, antihistamines, benzodiazepines, opioid analgesics, and barbiturates.
- Individuals who take such herbs and/or drugs should exercise caution if driving or operating heavy machinery.

Liver-Calming and Wind-Extinguishing Herbs

- Substances said to calm Liver wind and sedate Liver Yang address a complex range of disorders involving the need to regulate or sedate mild-to-severe spontaneous movement or seizure(s), heat and mood disturbances, and problems in the head, face and eyes.

Clinical Presentation

- Dizziness, vertigo, headache, seizure, tremors, convulsions, sudden unconsciousness, deviation of the eyes and mouth, and hemiplegia.

Antihypertensive Effect

- Tian Ma (Rhizoma Gastrodiae)
- Gou Teng (Ramulus Uncariae cum Uncis)

Antiseizure & Antiepileptic

- Tian Ma (Rhizoma Gastrodiae)
- Gou Teng (Ramulus Uncariae cum Uncis)
- Di Long (Pheretima)
- Quan Xie (Scorpio)
- Wu Gong (Scolopendra)

Classic Formulas

- Tian Ma Gou Teng Yin (Gastrodia and Uncaria Decoction)
- Long Dan Xie Gan Tang (Gentiana Decoction to Drain the Liver)
- Qian Zheng San (Lead to Symmetry Powder)
- Bu Yang Huan Wu Tang (Tonify the Yang to Restore Five Decoction)
Potential Herb-Drug Interactions

- **Antihypertensives:**
  - Herbs with antihypertensive action may lower blood pressure. To avoid inducing hypotension, they should not be used aggressively by patients already taking antihypertensive medications.

Potential Herb-Drug Interactions

- **Sedatives:**
  - Herbs with antiseizure and antiepileptic action may induce drowsiness, and should be used with caution by patients concurrently taking drugs that also have sedative properties, such as alcohol, benzodiazepines, opioid analgesics, and barbiturates.

Blood-Invigorating and Stasis-Removing Herbs

- **Herbs that invigorate blood circulation and eliminate blood stasis**
  - open blood vessels,
  - activate blood circulation,
  - disperse blood stagnation,
  - and break blood stasis.

Clinical Presentation

- Stabbing pain in a fixed location or all over the body, numbness of the limbs and extremities, lumps found on the skin or internal palpable masses, swelling caused by traumatic injuries or internal bleeding, internal bleeding with visible blotches of bruises, purpura of the skin, and purple spots on the tongue.

Cardiovascular Effect

- **Improve micro-circulation**
  - *Chuan Xiong* (Rhizoma Chuanxiong)
  - *Dan Shen* (Radix et Rhizoma Salviae Miltiorrhizae)
  - *Hong Hua* (Flos Carthami)
  - *Dang Gui* (Radix Angelicae Sinensis)

Hematological Effect

- **Anti-coagulant:**
  - *Dan Shen* (Radix et Rhizoma Salviae Miltiorrhizae)
  - *Chi Shao* (Radix Paeoniae Rubra)
Hematological Effect

- **Anti-platelet:**
  - *Dan Shen* (Radix et Rhizoma Salviae Miltiorrhizae)
  - *Chuan Xiong* (Rhizoma Chuanxiong)
  - *Hong Hua* (Flos Carthami)

- **Thrombolytic:**
  - *Shui Zhi* (Hirudo)
  - *San Leng* (Rhizoma Sparganii)
  - *E Zhu* (Rhizoma Curcumae)

Classic Formulas

- *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction)
- *Ge Xia Zhu Yu Tang* (Drive Out Blood Stasis Below the Diaphragm Decoction)
- *Shao Fu Zhu Yu Tang* (Drive Out Blood Stasis in the Lower Abdomen Decoction)
- *Shen Tong Zhu Yu Tang* (Drive Out Blood Stasis from a Painful Body Decoction)

Herb-Drug Interaction

- **Thrombolytic drugs:**
  - Streptokinase
- **Anticoagulant drugs:**
  - *Coumadin, Heparin, Rifludan*
- **Antiplatelet drugs:**
  - Persantine, Plavix, Aspirin
- Use herbs with caution when patients are taking these drugs

- **Coumadin (warfarin)**
  - An anti-coagulant medication
  - Blocks the re-cycling process of vitamin K
  - Slow onset of action, long duration of action
  - Lab monitor with INR (International Normalization Ratio)
  - Symptom/Sign monitor with possible bleeding/bruises or clotting
**Coumadin (warfarin)**

- Over **1000 interactions documented**
- Potential interaction with any other anticoagulant or anti-platelet drugs
- Potential interaction with OTC drugs, dietary supplements, and food
- Potential adverse reaction with acupuncture
- Potential interactions with Chinese herbs

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**Yin Xing Ye (Folium Ginkgo)**

- **Anticoagulant drugs**: *Yin Guo Ye* may alter bleeding time and should be used with caution for patients also taking anticoagulant and antiplatelet medications, such as warfarin.
- Actual reports of problematic interactions between *Yin Guo Ye* and warfarin remain rare, but this possibility should be monitored in all patients who receive these substances.
- [Note: Examples of anticoagulants include heparin, warfarin (Coumadin) and enoxaparin (Lovenox).]

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**Stop-Bleeding Herbs**

- **Surgery**: It has been recommended that the use of *Yin Guo Ye* should be discontinued for two to three weeks prior to surgery, to avoid potential interaction with anesthetics and/or increased risk of bleeding.

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**Yin Xing Ye (Folium Ginkgo)**

- **Antiplatelet drugs**: It was suggested in one animal study that the use of *Yin Guo Ye* extract may potentiate the antiplatelet and antithrombotic effects of ticlopidine.

  [Note: Examples of antiplatelets include aspirin, dipyridamole (Persantine), and clopidogrel (Plavix).]
**Da Ji (Herba Cirsii Japonici)**

- **Anticoagulant drugs:**
  - *Da Ji* contains vitamin K, which may reduce the anticoagulant effect of warfarin. While use of the herb is not contraindicated, it should be used with caution to prevent the formation of clots.¹²

**Xian He Cao (Herba Agrimoniae)**

- **Anticoagulant drugs:**
  - *Xian He Cao* contains vitamin K, which may reduce the anticoagulant effect of warfarin (Coumadin). While use of the herb is not contraindicated, it should be used with caution, in order to prevent formation of clots.¹³

**San Qi (Radix et Rhizoma Notoginseng)**

- **Anticoagulant or antiplatelet drugs:**
  - *San Qi* has an unique action to regulate the blood, with action to invigorate blood circulation and stop bleeding. Though this potential interaction has not been documented, use of this herb may interfere with anticoagulant or antiplatelet medications.¹⁹
  - [Note: Examples of anticoagulants include heparin, warfarin (Coumadin) and enoxaparin (Lovenox); and examples of antiplatelets include aspirin, dipyridamole (Persantine), and clopidogrel (Plavix).]

**Tonic Herbs**

- ‘To tonify’ is to strengthen qi, tonify Blood, nourish yin, and build yang.

- Tonic herbs improve functioning of internal organs, strengthen bodily constitution, boost immunity, and improve overall health.

**Clinical Presentation**

- **Qi tonic herbs**
- **Blood tonic herbs**
- **Yin tonic herbs**
- **Yang tonic herbs**

**Qi Tonic Herbs**

- Spleen: lethargy, lack of energy, weakness of the extremities, poor appetite, abdominal fullness and distention, diarrhea, weight loss, edema, organ prolapse (mostly stomach, uterus or rectum), and bleeding.
- Lung: shortness of breath, lack of desire to speak, wheezing and dyspnea following minimal physical activity, and perspiration.
Qi Tonics

- Si Jun Zi Tang (Four-Gentlemen Decoction)
- Liu Jun Zi Tang (Six-Gentlemen Decoction)
- Shen Ling Bai Zhu San (Ginseng, Poria, and Atractylodes Macrocephala Powder)

Blood Tonic Herbs

- Sallow facial appearance, pale lips and nails, excessive worries, palpitations, forgetfulness, insomnia, excessive dreaming, being easily frightened, weight loss, edema, diminished menses, light-colored menstrual flow, delayed menstruation, or amenorrhea.

Blood Tonics

- Si Wu Tang (Four-Substance Decoction)
- Gui Pi Tang (Restore the Spleen Decoction)
- Dang Gui Bu Xue Tang (Tangkuei Decoction to Tonify the Blood)

Combination Tonics

- Ba Zhen Tang (Eight-Treasure Decoction)
- Shi Quan Da Bu Tang (All-Inclusive Great Tonifying Decoction)
- Bu Zhong Yi Qi Tang (Tonify the Middle and Augment the Qi Decoction)
- Ren Shen Yang Ying Tang (Ginseng Decoction to Nourish the Nutritive Qi)

Yin Tonic Herbs

- Emaciation, soreness and pain of the lower back and knees, weakness of muscles and bones, decreased sperm production, dizziness, tinnitus, dry eyes, lightheadedness, and forgetfulness.

Kidney Yin Tonics

- Liu Wei Di Huang Wan (Six-Ingredient Pill with Rehmannia)
- Zhi Bai Di Huang Wan (Anemarrhena, Phellodendron, and Rehmannia Pill)
- Qi Ju Di Huang Wan (Lycium Fruit, Chrysanthemum, and Rehmannia Pill)
Yang Tonic Herbs

- Aversion to cold, weakness and pain of the lower back and knees, coldness and pain of the lower abdomen, infertility, premature ejaculation, impotence, leukorrhea with clear discharge, frequent nighttime urination, and urinary incontinence.

Kidney Yang Tonics

- Jin Gui Shen Qi Wan (Kidney Qi Pill from the Golden Cabinet)
- Ba Wei Di Huang Wan (Eight-Ingredient Pill with Rehmannia)
- Gui Lu Er Xian Jiao (Tortoise Shell and Deer Antler Syrup)

Immunostimulant Effect

- Ren Shen (Radix et Rhizoma Ginseng)
- Dang Shen (Radix Codonopsis)
- Huang Qi (Radix Astragali)
- Dong Chong Xia Cao (Cordyceps)

Adaptogenic Effect

- Ren Shen (Radix et Rhizoma Ginseng)
- Ci Wu Jia (Radix et Rhizoma seu Caulis Acanthopanacis Senticosi)

Endocrine Effect

- Corticosteroids:
  - Ren Shen (Radix et Rhizoma Ginseng)
  - Ci Wu Jia (Radix et Rhizoma seu Caulis Acanthopanacis Senticosi)
  - Gan Cao (Radix et Rhizoma Glycyrrhizae)
- Male hormones:
  - Lu Rong (Cornu Cervi Pantotrichum)
  - Yin Yang Huo (Herba Epimedii)
  - Dong Chong Xia Cao (Cordyceps)
- Female hormones:
  - Dang Gui (Radix Angelicae Sinensis)
  - She Chuang Zi (Fructus Cnidii)
Metabolic Effect

**Hypoglycemic effect:**
- *Ren Shen* (Radix et Rhizoma Ginseng)
- *Bai Zhu* (Rhizoma Atractylodis Macrocephalae)
- *Shu Di Huang* (Radix Rehmanniae Praeparata)
- *Gou Qi Zi* (Fructus Lycii)
- *Huang Jing* (Rhizoma Polygonati)

**Reduce plasma cholesterol:**
- *Ren Shen* (Radix et Rhizoma Ginseng)
- *He Shou Wu* (Radix Polygoni Multiflori)
- *Gou Qi Zi* (Fructus Lycii)
- *Huang Jing* (Rhizoma Polygonati)

**Regulate** and **Restore**

*Liù Wèi Dì Huáng Wán* (Six-Ingredient Pill with Rehmannia)
- *Shu Di Huang* (Radix Rehmanniae Praeparata)
- *Shan Zhu Yu* (Fructus Corni)
- *Shan Yao* (Rhizoma Dioscoreae)
- *Ze Xie* (Rhizoma Alismatis)
- *Mu Dan Pi* (Cortex Moutan)
- *Fu Ling* (Poria)

*Guì Shèn Qì Wàn* (Kidney Qi Pill from the Golden Cabinet)
- *Sheng Di Huang* (Radix Rehmanniae)
- *Shan Zhu Yu* (Fructus Corni)
- *Shan Yao* (Rhizoma Dioscoreae)
- *Ze Xie* (Rhizoma Alismatis)
- *Mu Dan Pi* (Cortex Moutan)
- *Fu Ling* (Poria)
- *Gui Zhi* (Ramulus Cinnamomi)
- *Fu Zi* (Radix Aconiti Lateralis Praeparata)

*Bā Wèi Dì Huáng Wán* (Eight-Ingredient Pill with Rehmannia)
- *Shu Di Huang* (Radix Rehmanniae Praeparata)
- *Shan Zhu Yu* (Fructus Corni)
- *Shan Yao* (Rhizoma Dioscoreae)
- *Ze Xie* (Rhizoma Alismatis)
- *Mu Dan Pi* (Cortex Moutan)
- *Fu Ling* (Poria)
- *Rou Gui* (Cortex Cinnamomi)
- *Fu Zi* (Radix Aconiti Lateralis Praeparata)
Bái Di Húáng Wán (Anemarrhena, Phellodendron, and Rehmannia Pill)

- Shu Di Huang (Radix Rehmanniae Praeparata)
- Shan Zhu Yu (Fructus Corni)
- Shan Yao (Rhizoma Dioscoreae)
- Ze Xie (Rhizoma Alismatis)
- Mu Dan Pi (Cortex Moutan)
- Fu Ling (Poria)
- Zhi Mu (Rhizoma Anemarrhenae)
- Huang Bo (Cortex Phellodendri Chinensis)

Jú Di Húáng Wán (Lycium Fruit, Chrysanthemum, and Rehmannia Pill)

- Shu Di Huang (Radix Rehmanniae Praeparata)
- Shan Zhu Yu (Fructus Corni)
- Shan Yao (Rhizoma Dioscoreae)
- Ze Xie (Rhizoma Alismatis)
- Mu Dan Pi (Cortex Moutan)
- Fu Ling (Poria)
- Gou Qi Zi (Fructus Lycii)
- Ju Hua (Flos Chrysanthemi)

Jí Wèi Di Húáng Wán (Ophiopogonis, Schisandra, and Rehmannia Pill)

- Shu Di Huang (Radix Rehmanniae Praeparata)
- Shan Zhu Yu (Fructus Corni)
- Shan Yao (Rhizoma Dioscoreae)
- Ze Xie (Rhizoma Alismatis)
- Mu Dan Pi (Cortex Moutan)
- Fu Ling (Poria)
- Mai Dong (Radix Ophiopogonis)
- Wu Wei Zi (Fructus Schisandraceae Chinensis)

“Di Huang Wan (Rehmannia Pill)”

- Asthma
- Dizziness
- Diabetes mellitus
- Female infertility
- Gynecomastia
- Hypertension
- Hypotension
- Hyperthyroidism
- Hypothyroidism
- Impotence
- Infertility
- Lumbago
- Menopause
- Nephritis
- Nephrotic syndrome
- Prostatitis
- Prostatic hypertrophy
- Spontaneous perspiration
- Thyroid adenoma

“Restore”

Liu Jun Zi Tang (Six-Gentlemen Decoction)

Chemotherapy-induced side effects:

Administration of Liu Jun Zi Tang showed effectiveness in alleviating gastrointestinal side effects associated with chemotherapy. Patients were given herbs three times daily until the end of their chemotherapy treatment. Of 74 patients, the study reported complete relief in 49 cases, improvement in 24 cases, and no effect in 1 case. The rate of effectiveness was 98.6%.
**Bu Zhong Yi Qi Tang (Tonify the Middle and Augment the Qi Decoction)**

- Mitomycin C-induced immunosuppression:
- Administration of mitomycin C, a chemotherapy agent for cancer, is often associated with immunosuppression and infectious diseases. One study reported that *Bu Zhong Yi Qi Tang* had beneficial effects in mice, with improvements in spleen weight, number of colonies of granulocytes and macrophages forming in the bone-marrow cells, natural killer activity in splenocytes, and in susceptibility to lethal herpes simplex virus type-1 infection.

**Bu Zhong Yi Qi Tang (Tonify the Middle and Augment the Qi Decoction)**

- Cyclophosphamide-induced leukopenia:
- Administration of *Bu Zhong Yi Qi Tang* (1000 mg/kg) in mice treated with cyclophosphamide significantly prevented leukopenia. *Bu Zhong Yi Qi Tang* enhanced the production of hematopoietic lymphokines, stimulated the proliferation of hematopoietic progenitor cells, and consequently accelerated recovery from leukopenia. *Bu Zhong Yi Qi Tang* also contributed a protective effect against bacterial infection by activating phagocyte cells.

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**Si Wu Tang (Four-Substance Decoction)**

- Scopolamine-induced spatial cognitive deficits:
- Administration of *Si Wu Tang* has a dose-dependent effect to reverse scopolamine-induced impairments in radial maze performance in mice.

**Dang Gui Bu Xue Tang (Tangkuei Decoction to Tonify the Blood)**

- Chemotherapy- and radiation-induced leucopenia:
- One study reported 90.2% effectiveness using modified *Dang Gui Bu Xue Tang* to treat 102 patients with leucopenia due to chemotherapy and radiation. The average increase in white blood cell count was 1.665x10⁹/L, from 2.939x10⁹/L before herbal treatment to 4.600x10⁹/L after the treatment. Of 102 patients, the study reported significant improvement in 39 cases, moderate improvement in 53 cases, and no effect in 10 cases.

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**Shi Quan Da Bu Tang (All-Inclusive Great Tonifying Decoction)**

- Chemotherapy- and radiation-induced neutropenia:
- One study reported 84.32% effectiveness using *Shi Quan Da Bu Tang* to treat decreased white blood cell count induced by chemotherapy and/or radiation in 134 patients (39 with stomach cancer, 28 with lung cancer, 17 with breast cancer, 13 with rectal cancer, 12 with lymphatic cancer, 12 with liver cancer, 7 with bladder cancer, and others).

**Shi Quan Da Bu Tang (All-Inclusive Great Tonifying Decoction)**

- Cyclophosphamide- or prednisolone-induced immunosuppression:
- One study demonstrated that use of *Shi Quan Da Bu Tang* and *Ren Shen Yang Ying Tang* (Ginseng Decoction to Nourish the Nutritive Qi) effectively prolonged survival rate and life span in mice with candida infection associated with immunosuppression induced by cyclophosphamide or prednisolone.
**Shi Quan Da Bu Tang (All-Inclusive Great Tonifying Decoction)**

- Carboplatin- or cisplatin-induced myelosuppression:
  - One study reported that administration of *Shi Quan Da Bu Tang* was effective in mice to prevent myelosuppression induced by nine-times intraperitoneal administration of 15 mg/kg carboplatin or 3.0 mg/kg cisplatin, without affecting the antitumor activities of these agents.

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

- Chemotherapy-induced toxicities:
  - One study reported marked improvement using *Liu Wei Di Huang Wan* as an adjunct to chemotherapy. Clinical benefits included relief of nausea and vomiting, a decrease of hair loss and stomatitis, an improvement in appetite, and an increase in white blood cells, red blood cells, platelets, T-lymphocytes, and natural killer (NK) cells.

**Conclusion**

- Educate and general public on the effect of herbal medicine
- Increase education and training among practitioners
- Regulation of herbs as “traditional medicine”