

Coronavirus (Covid-19) Treatment with TCM in China

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张仲景 Zhāng Zhòng-Jǐng, 150-219 CE

- *Shang Han* 伤寒
(Cold-Induced Disorders)
 - Taiyang
 - Yangming
 - Shaoyang
 - Taiyin
 - Shaoyin
 - Jueyin



叶桂 Yè Guì, 1666-1745

- *Wen Bing* 温病
(Warm Disease):
 - *wei* (defensive) level
 - *qi* (energy) level
 - *ying* (nutritive) level
 - *xue* (blood) level



TCM Diagnosis

- Lymphopenia is common, seen in ~80% of patients.
- Mild thrombocytopenia is common.
- Qi deficiency
- Blood deficiency

•Guan W et al. Clinical Characteristics of Coronavirus Disease 2019 in China. The New England Journal of Medicine. February 28, 2020.

•Ruan Q et al. Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. Intensive Care Med <https://doi.org/10.1007/s00134-020-05991-x>

TCM Diagnosis

- S/Sx: severe inflammatory disease, shortness of breath, inflammation of the airway
- Yangming
- *Qi* (energy) level

TCM Diagnosis

- “Edema, proteinaceous exudate, focal reactive hyperplasia of pneumocytes with patchy inflammatory cellular infiltration, and multinucleated giant cells. Fibroblastic plugs were noted in airspaces.”
- Damp and phlegm in the Lung
 - Lung heat, with
 - Lung cold, with

TCM Diagnosis

- S/Sx: cytokine storm leading to acute respiratory distress syndrome and multiple organ failure.
- Shaoyang
- Taiyin
- Shaoyin
- Jueyin
- *Ying* (nutritive) level
- *Xue* (blood) level

TCM Diagnosis

- In addition to hyper-inflammatory injury, the lung suffers physical injuries (diffuse alveolar damage, including hyaline membranes) and physiological compromises (wheezing, shortness of breath, etc).
- Lung yin deficiency
- Lung qi deficiency

TCM Diagnosis

- Patients who survive the initial phases of the illness may still require prolonged ventilator support (due to pulmonary fibrosis).
- Lung yin deficiency
- Lung qi deficiency

TCM and Covid-19

- More than 85% of all patients with coronavirus, approximately 60,000 people, received herbal treatment along with western medicine treatments, as of late February 2020.



- Ministry of Science and Technology, China.



湖北省中醫院
HUBEI PROVINCIAL HOSPITAL OF TCM

- Hubei Provincial Hospital of TCM
 - Prevention Phase: 預防期
 - Early Phase: 流感期
 - Pneumonia Phase: 肺炎期
 - Recovery Phase: 恢復期



- Prevention Phase: 预防期
- Early Phase: 流感期
 - Wind-Cold Invading the Exterior 风寒袭表证
 - Toxic Heat Attacking the Lung 热毒袭肺证
 - Damp Cold in the Lung 湿寒鬱肺
- Pneumonia Phase: 肺炎期
 - Shaoyang Syndrome with Damp 少阳夹湿证
 - Damp Heat Afflicting the Lung 湿热郁肺证
 - Toxic Stagnation Obstructing the Lung 毒瘀壅肺证
 - Closed Interior and Abandoned Exterior Syndrome 内闭外脱证
- Recovery Phase: 恢复期

• 湖北省中医院新型冠状病毒感染的肺炎中医药防治协定方（第一版）

Prevention Phase: 预防期

- *Huang Qi* 黄芪 (Radix Astragali) 15g
- *Bai Zhu* 炒白术 (Rhizoma Atractylodis Macrocephalae), dry fried 10g
- *Fang Feng* 防风 (Radix Saposhnikoviae) 10g
- *Mian Ma Guan Zhong* 绵马贯众 (Rhizoma Dryopteridis Crassirhizomatis) 10g
- *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 10g
- *Chen Pi* 陈皮 (Pericarpium Citri Reticulatae) 6g
- *Pei Lan* 佩兰 (Herba Eupatorii) 10g

Prevention Phase: 预防期

- Bilateral *Zusanli* (ST 36), *Qihai* (CV 6), *Zhongwan* (CV 12)
 - Moxa *Zusanli* (ST 36) on both sides for 15 minutes. Moxa *Qihai* (CV 6) or *Zhongwan* (CV 12) for 10 minutes. (alternating from treatment to treatment).
 - Twice a day, once in the afternoon and once at night.

Early Phase: 流感期

- Wind-Cold Invading Exterior 风寒袭表证
- Toxic Heat Attacking the Lung 热毒袭肺证
- Damp Cold in the Lung 湿寒鬱肺

Early Phase:

- Wind-Cold Invading the Exterior

- **S/Sx:** Onset of fever (mostly low-grade fever), aversion to cold, chills, headache, ticklish throat, soreness of muscles of limbs, no sweat or night sweats.
- **Exam:** Lung CT negative. Tongue is pale, coating is white and thin. Floating pulse
- **Treatment:** Expel Wind, Release the Exterior; Clear Heat, Detoxify

Early Phase:

- Wind-Cold Invading the Exterior

- 葛根汤或柴葛解肌汤
- *Ge Gen Tang* (Kudzu Decoction) or *Chai Ge Jie Ji Tang* (Bupleurum and Kudzu Decoction to Release the Muscle Layer)

Early Phase:

- Wind-Cold Invading the Exterior

- *Ge Gen* 葛根 (Radix Puerariae Lobatae) 15g
- *Ma Huang* 麻黄 (Herba Ephedrae) 10g
- *Gui Zhi* 桂枝 (Ramulus Cinnamomi) 6g
- *Bai Shao* 白芍 (Radix Paeoniae Alba) 15g
- *Sheng Jiang* 生姜 (Rhizoma Zingiberis Recens) 10g
- *Gan Cao* 生甘草 (Radix et Rhizoma Glycyrrhizae) 10g
- *Da Zao* 大枣 (Fructus Jujubae) 10g
- *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 20g
 - with headache, add *Bai Zhi* 白芷 (Radix Angelicae Dahuricae) 15g
 - with dry or ticklish throat, add *She Gan* 射干 (Rhizoma Belamcandae) 15g

Early Phase:

- Toxic Heat Attacking the Lung

- **S/Sx:** Fever, aversion to cold, sore and dry throat, dry cough, scanty sputum, sore and painful muscles in the limbs, weakness, headache
- **Exam:** CT scan reveals both lungs to have scattered ground-glass opacity (GGO). Tip and sides of the tongue are red; thin white or yellow tongue coating. Floating and rapid pulse.
- **Treatment:** Expel Wind, Release the Exterior; Clear Heat, Detoxify

Early Phase:

- Toxic Heat Attacking the Lung

- 銀翹散加清瘟敗毒散加減
- *Yin Qiao San* (Honeysuckle and Forsythia Powder) and *Qing Wen Bai Du San* (Clear Epidemics and Overcome Pathogenic Influences Powder), modified

Early Phase:

- Toxic Heat Attacking the Lung

- *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 10g
- *Lian Qiao* 连翘 (Fructus Forsythiae) 10g
- *Jing Jie* 荆芥 (Herba Schizonepetae) 10g
- *Niu Bang Zi* 牛蒡子 (Fructus Arctii) 10g
- *Bo He* 薄荷 (Herba Menthae) 10g
- *Gan Cao* 生甘草 (Radix et Rhizoma Glycyrrhizae) 10g
- *Dan Zhu Ye* 淡竹叶 (Herba Lophatheri) 10g
- *Lu Gen* 芦根 (Rhizoma Phragmitis) 15g
- *Huang Lian* 黄连 (Rhizoma Coptidis) 6g

Early Phase:

- Damp Cold in the Lung

- **S/Sx** : Aversion to cold, fever or absence of fever, dry cough, dry throat, fatigue, weakness, chest stuffiness, epigastric distention, nausea, diarrhea.
- **Exam**: Pale tongue, white greasy coating, slippery pulse.
- **Treatment**: Expel Wind, Release the Exterior; Dispel Damp Cold

Early Phase:

- Damp Cold in the Lung

- *Cang Zhu* 蒼朮 (Rhizoma Atractylodis) 15g
- *Chen Pi* 陳皮 (Pericarpium Citri Reticulatae) 10g
- *Hou Po* 厚樸 (Cortex Magnoliae Officinalis) 10g
- *Huo Xiang* 藿香 (Herba Pogostemonis) 10g
- *Cao Guo* 草果 (Fructus Tsaoko) 6g
- *Ma Huang* 生麻黃 (Herba Ephedrae) 6g
- *Qiang Huo* 羌活 (Rhizoma et Radix Notopterygii) 10g
- *Sheng Jiang* 生薑 (Rhizoma Zingiberis Recens) 10g
- *Bing Lang* 檳榔 (Semen Arecae) 10g

Pneumonia Phase: 肺炎期

- *Shaoyang* Syndrome w/ Damp 少阳夹湿证
- Damp Heat Afflicting the Lung 湿热郁肺证
- Toxic Stagnation Obst the Lung 毒瘀壅肺证
- Closed Interior / Abandoned Exterior Syndrome 内闭外脱证

Pneumonia Phase:

- *Shaoyang* Syndrome with Damp

- **S/Sx** : Fever, which is more pronounced in the afternoon, alternating chills with fever, cough, absence of wheezing, bitter taste in the mouth, dry mouth, chest stuffiness, stifling sensation, chest and hypochondriac fullness and distention, irritability, nausea or vomiting, no appetite, weakness. Similar to the beginning stage of pneumonia.
- **Exam**: CT scan reveals both lungs to have multiple scattered or large pieces of ground-glass opacity (GGO). Slightly red tongue, thick and greasy, white or yellow coating, slippery, rapid pulse.
- **Treatment**: Harmonize *Shaoyang* Syndrome, Clear Damp-Heat

Pneumonia Phase:

- *Shaoyang* Syndrome with Damp

- 小柴胡汤合三仁汤或甘露消毒丹
- *Xiao Chai Hu Tang* (Minor Bupleurum Decoction) with *San Ren Tang* (Three-Nut Decoction) or *Gan Lu Xiao Du Dan* (Sweet Dew Special Pill to Eliminate Toxins)

Pneumonia Phase:

- *Shaoyang* Syndrome with Damp

- *Chai Hu* 柴胡 (Radix Bupleuri) 24g
- *Huang Qin* 黄芩 (Radix Scutellariae) 9g
- *Sheng Jiang* 生姜 (Rhizoma Zingiberis Recens) 10g
- *Fa Ban Xia* 法夏 (Rhizoma Pinelliae) 12g
- *Ku Xing Ren* 杏仁 (Semen Armeniacae Amarum) 15g
- *Bai Dou Kou* 白豆蔻 (Fructus Amomi Rotundus) 10g
- *Yi Yi Ren* 薏苡仁 (Semen Coicis) 30g
- *Dan Zhu Ye* 竹叶 (Herba Lophatheri) 15g
- *Hua Shi* 滑石 (Talcum) 15g
- *Tu Fu Ling* 土茯苓 (Rhizoma Smilacis Glabrae) 30g
- *Gan Cao* 生甘草 (Radix et Rhizoma Glycyrrhizae) 10g

Pneumonia Phase:

- Damp Heat Afflicting the Lung

- **S/Sx:** Low-grade fever or absence of fever, dry cough, scanty sputum, dry and sore throat, fatigue, weakness, poor appetite, chest stuffiness, epigastric distention, nausea or vomiting, loose stool.
- **Exam:** CT scan reveals both lungs to have multiple scattered or large pieces of ground-glass opacity (GGO). Pale or pink, puffy tongue with teeth marks. White or greasy white coating. Soft or slippery pulse.
- **Treatment:** Transform Dampness, Detoxify; Disperse the Lungs and Expel Pathogens

Pneumonia Phase:

- Damp Heat Afflicting the Lung

- 麻杏薏甘汤、小陷胸汤、草果知母汤
- *Ma Xing Yi Gan Tang* (Ephedra, Apricot Kernel, Coicis, and Licorice Decoction), *Xiao Xian Xiong Tang* (Minor Sinking into the Chest Decoction) and *Cao Guo Zhi Mu Tang* (Tsaoko and Anemarrhena Decoction)

Pneumonia Phase:

- Damp Heat Afflicting the Lung

- *Ma Huang* 麻黄 (Herba Ephedrae) 10g
- *Ku Xing Ren* 杏仁 (Semen Armeniacae Amarum) 10g
- *Yi Yi Ren* 薏苡仁 (Semen Coicis) 30g
- *Huang Lian* 黄连 (Rhizoma Coptidis) 6g
- *Fa Ban Xia* 法夏 (Rhizoma Pinelliae) 10g
- *Gua Lou Pi* 瓜蒌皮 (Pericarpium Trichosanthis) 10g
- *Cao Guo* 草果 (Fructus Tsaoko) 10g
- *Zhi Mu* 知母 (Rhizoma Anemarrhenae) 10g
- *Yu Xing Cao* 鱼腥草 (Herba Houttuyniae) 15g
- *Gan Cao* 生甘草 (Radix et Rhizoma Glycyrrhizae) 10g
- *Bai Dou Kou* 白豆蔻 (Fructus Amomi Rotundus) 9g

Pneumonia Phase:

- Toxic Stagnation Obstructing the Lung

- **S/Sx** Cough, stifling sensation, stuffiness and distention in the chest, asthma and wheezing that worsens with exertion, accelerated respiration, thirst, irritability, reddish yellow urine.
- **Exam:** CT scan reveals both lungs to have multiple scattered or large pieces of ground-glass opacity (GGO). Fibrotic changes of the lung are also visible. Dark purplish tongue, yellow dry tongue coating or thick and greasy yellow coating, rapid, slippery pulse.
- **Treatment:** Detoxify, Arrest Wheezing; Transform Blood Stasis and Open Collaterals

Pneumonia Phase:

- Toxic Stagnation Obstructing the Lung

- 白虎汤加人参汤合四土汤
- *Bai Hu Jia Ren Shen Tang* (White Tiger plus Ginseng Decoction) with *Si Tu Tang* (Four Wild Decoction)

Pneumonia Phase:

- Toxic Stagnation Obstructing the Lung

- *Shi Gao* 石膏 (Gypsum Fibrosum) 30g
- *Zhi Mu* 知母 (Rhizoma Anemarrhenae) 10g
- *Shan Yao* 山药 (Rhizoma Dioscoreae) 15g
- *Xi Yang Shen* 西洋参 (Radix Panacis Quinquefolii) 5g
- *Tu Fu Ling* 土茯苓 (Rhizoma Smilacis Glabrae) 30g
- *Tu Da Huang* 土大黄 (Radix Rumicis Obtusifolii) 10g
- *Tu Bei Mu* 土贝母 (Rhizoma Bolbostemmatidis) 10g
- *Tu Niu Xi* 土牛膝 (Rhizoma Achyranthes Sylvestris) 10g
- *Tu Bie Chong* 土鳖 (Eupolyphaga seu Steleophaga) 10g
- *Su Mu* 苏木 (Lignum Sappan) 10g
- *Ju Luo* 橘络 (Vascular Citri Reticulatae) 15g
- *Lai Fu Zi* 莱菔子 (Semen Raphani) 20g
- *Ting Li Zi* 葶苈子 (Semen Descurainiae seu Lepidii) 15g
- *Si Gua Luo* 丝瓜络 (Retinervus Luffae Fructus) 30g

Pneumonia Phase:

- Closed Interior / Abandoned Exterior Syndrome

- **S/Sx:** Mental incoherence, irritability, burning or heat sensation in the chest and abdomen, cold extremities, accelerated respiration and need for assisted breathing, scarlet purple tongue, dry yellow or yellowish brown coating, floating, forceful pulse that is empty in the deep level, or rootless.
- **Treatment:** Open the Closed, Consolidate the Abandoned, Detoxify, Rescue Reversal

Pneumonia Phase:

- Closed Interior / Abandoned Exterior Syndrome

- 四逆加人参汤、送服安宫牛黄丸、紫雪散
- *Si Ni Jia Ren Shen Tang* (Frigid Extremities Decoction plus Ginseng), taken with *An Gong Niu Huang Wan* (Calm the Palace Pill with Cattle Gallstone) and *Zi Xue San* (Purple Snow Powder)

Pneumonia Phase:

- Closed Interior / Abandoned Exterior Syndrome

- *Ren Shen* 人參 (Radix et Rhizoma Ginseng) 10g
- *Fu Zi* 制附子 (Radix Aconiti Lateralis Praeparata) 10g
- Serve with *An Gong Niu Huang Wan* (Calm the Palace Pill with Cattle Gallstone) and *Zi Xue San* (Purple Snow Powder).

Recovery Phase: 恢复期

- **S/Sx:** Absence of fever, dry cough, chest stuffiness, shortness of breath, shortness of breath upon exertion, dry mouth, weakness.
- **Exam:** CT reveals inflammation begins to subside as well as pulmonary interstitial changes. Pale red tongue, thick or greasy coating, thread, rapid pulse.
- **Treatment:** Tonify Qi, Nourish Yin, Tonify Lung and Open the Collaterals

Recovery Phase: 恢复期

- 沙参麦门冬汤
- *Sha Shen Mai Dong Tang* (Glehnia and Ophiopogonis Decoction)

Recovery Phase: 恢复期

- *Sha Shen* 沙参 (Radix Glehniae seu Adenophorae) 15g
- *Mai Dong* 麦冬 (Radix Ophiopogonis) 15g
- *Wu Wei Zi* 五味子 (Fructus Schisandrae Chinensis) 15g
- *Ren Shen* 人参 (Radix et Rhizoma Ginseng) 12g
- *Lai Fu Zi* 莱菔子 (Semen Raphani) 15g
- *Si Gua Luo* 丝瓜络 (Retinervus Luffae Fructus) 15g
- *Ju Luo* 橘络 (Vascular Citri Reticulatae) 15g
- *Zi Su Zi* 苏子 (Fructus Perillae) 12g
- *Zhe Bei Mu* 浙贝 (Bulbus Fritillariae Thunbergii) 12g
- *Ku Xing Ren* 杏仁 (Semen Armeniacae Amarum) 12g
- *Huang Qin* 黄芩 (Radix Scutellariae) 15g
- *Gan Cao* 生甘草 (Radix et Rhizoma Glycyrrhizae) 10g

Wuhan Union Hospital 武汉协和医院

- Prevention 预防
- Wind-Heat Invading the Exterior Syndrome 风热袭表证
- Damp Warmth in Early Phase 湿温初期
- Damp Heat Obstructing the Lung Syndrome 湿热壅肺证
- Epidemic Toxins Blocking the Lung 疫毒闭肺证
- Closed Interior and Abandoned Exterior 内闭外脱
- Insufficiency of qi and yin, Deficiency of Lung and Spleen.
气阴不足，肺脾两虚

Prevention 预防

- *Huang Qi* 生黄芪 (Radix Astragali) 12g
- *Bai Zhu* 白朮 (Rhizoma Atractylodis Macrocephalae) 9g
- *Fang Feng* 防风 (Radix Saposchnikoviae) 6g
- *Bei Sha Shen* 北沙参 (Radix Glehniae) 10g
- *Mian Ma Guan Zhong* 贯众 (Rhizoma Dryopteridis Crassirhizomatis) 10g
- *Lian Qiao* 连翘 (Fructus Forsythiae) 10g
- *Yu Xing Cao* 鱼腥草 (Herba Houttuyniae) 15g
- *Jie Geng* 桔梗 (Radix Platycodonis) 10g
- *Gan Cao* 甘草 (Radix et Rhizoma Glycyrrhizae) 5g
- *Cang Zhu* 苍朮 (Rhizoma Atractylodis) 10g
- *Yi Yi Ren* 薏苡仁 (Semen Coicis) 30g
- *Guang Huo Xiang* 藿香 (Herba Pogostemonis) 5g
- *Fu Shen* 茯神 (Poria Paradicis) 15g

Wind-Heat Invading Exterior Syndrome 风热袭表证

- S/sx: headache, sore throat, cough, thick tongue coating, red tongue tip

Wind-Heat Invading Exterior Syndrome 风热袭表证

- *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 15g
- *Lian Qiao* 连翘 (Fructus Forsythiae) 10g
- *Bo He* 薄荷 (Herba Menthae) 5g
- *Niu Bang Zi* 牛蒡子 (Fructus Arctii) 10g
- *Ban Xia* 法半夏 (Rhizoma Pinelliae) 10g
- *Chai Hu* 柴胡 (Radix Bupleuri) 10g
- *Huang Qin* 黄芩 (Radix Scutellariae) 10g
- *Ban Lan Gen* 板蓝根 (Radix Isatidis) 15g
- *Jie Geng* 桔梗 (Radix Platycodonis) 10g
- *Gan Cao* 甘草 (Radix et Rhizoma Glycyrrhizae) 6g
- *Xuan Shen* 玄参 (Radix Scrophulariae) 15g
- *She Gan* 射干 (Rhizoma Belamcandae) 10g
- *Fang Feng* 防风 (Radix Saposhnikoviae) 10g
- *Ku Xing Ren* 苦杏仁 (Semen Armeniacae Amarum) 10g
- *Qiang Huo* 羌活 (Rhizoma et Radix Notopterygii) 10g
- *Cang Zhu* 苍术 (Rhizoma Atractylodis) 10g
- *Dou Kou* 蔻仁 (Fructus Amomi Rotundus) 6g

Damp Warmth in Early Phase 濕溫初期

- S/sx: muscle aches and pain, poor appetite, low grade fever, thick tongue coating

Damp Warmth in Early Phase 濕溫初期

- *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 25g
- *Lian Qiao* 连翘 (Fructus Forsythiae) 15g
- *Sheng Ma* 升麻 (Rhizoma Cimicifugae) 25g
- *Dang Gui* 当归 (Radix Angelicae Sinensis) 15g
- *Ban Xia* 法半夏 (Rhizoma Pinelliae) 10g
- *Ju Hong* 橘红 (Exocarpium Citri Rubrum) 10g
- *Fu Ling* 茯苓 (Poria) 15g
- *Cang Zhu* 苍术 (Rhizoma Atractylodis) 15g
- *Da Fu Pi* 大腹皮 (Pericarpium Arecae) 15g
- *Chai Hu* 柴胡 (Radix Bupleuri) 10g
- *Huang Qin* 黄芩 (Radix Scutellariae) 15g
- *Ku Xing Ren* 杏仁 (Semen Armeniacae Amarum) 10g
- *Guang Huo Xiang* 藿香 (Herba Pogostemonis) 10g
- *Hou Po* 厚朴 (Cortex Magnoliae Officinalis) 6g
- *She Gan* 射干 (Rhizoma Belamcandae) 10g
- *Zhi Qiao* 枳壳 (Fructus Aurantii) 10g
- *Zhu Ru* 竹茹 (Caulis Bambusae in Taenia) 10g
- *Ma Huang* 炙麻黄 (Herba Ephedrae), honey-baked 6g
- *Hong Jing Tian* 红景天 (Radix et Rhizoma Rhodiolae Crenulatae) 10g

Damp Heat Obstructing Lung Syndrome 濕熱壅肺証

- S/sx: dry cough, shortness of breath

Damp Heat Obstructing Lung Syndrome 濕熱壅肺証

- *Sang Bai Pi* 桑白皮 (Cortex Mori) 15g
- *Chuan Bei Mu* 川贝 (Bulbus Fritillariae Cirrhosae) 10g
- *Bai Bu* 百部 (Radix Stemonae) 10g
- *Yu Xing Cao* 鱼腥草 (Herba Houttuyniae) 30g
- *Lian Qiao* 连翘 (Fructus Forsythiae) 15g
- *Bai Jiang Cao* 败酱草 (Herba cum Radice Patriniae) 15g
- *Yi Yi Ren* 薏苡仁 (Semen Coicis) 15g
- *Mai Dong* 麦冬 (Radix Ophiopogonis) 15g
- *Lu Gen* 芦根 (Rhizoma Phragmitis) 25g
- *Dong Gua Zi* 冬瓜仁 (Semen Benincasae) 10g
- *Jie Geng* 桔梗 (Radix Platycodonis) 10g
- *Ku Xing Ren* 苦杏仁 (Semen Armeniacae Amarum) 10g
- *Chai Hu* 柴胡 (Radix Bupleuri) 10g
- *Huang Qin* 黄芩 (Radix Scutellariae) 15g
- *Hou Po* 厚朴 (Cortex Magnoliae Officinalis) 10g
- *Hong Jing Tian* 红景天 (Radix et Rhizoma Rhodiolae Crenulatae) 15g
- *Sheng Ma* 升麻 (Rhizoma Cimicifugae) 30g
- *Dang Gui* 当归 (Radix Angelicae Sinensis) 25g
- *Bing Lang* 槟榔 (Semen Arecae) 10g
- *Cao Guo* 草果 (Fructus Tsaoko) 6g
- *Zhi Mu* 知母 (Rhizoma Anemarrhenae) 10g
- *Bai Shao* 芍药 (Radix Paeoniae Alba) 10g
- *Chao San Xian* 炒三仙: *Shen Qu* (Massa Medicata Fermentata), *Shan Zha* (Fructus Crataegi) and *Mai Ya* (Fructus Hordei Germinatus), blend & dry-fry together 20g

Epidemic Toxins Blocking the Lung

疫毒闭肺证

-
- S/sx: fever, severe breathing difficulties, wheezing, severe hypoxemia, dark red tongue, thick tongue coating

Epidemic Toxins Blocking the Lung

疫毒闭肺证

-
- *Ting Li Zi* 葶苈子 (Semen Descurainiae seu Lepidii) 15g
 - *Ma Huang* 炙麻黄 (Herba Ephedrae), honey-fried 10g
 - *Sheng Ma* 升麻 (Rhizoma Cimicifugae) 30g
 - *Dang Gui* 当归 (Radix Angelicae Sinensis) 25g
 - *Lu Gen* 芦根 (Rhizoma Phragmitis) 25g
 - *Yi Yi Ren* 薏米仁 (Semen Coicis) 30g
 - *Dong Gua Zi* 冬瓜仁 (Semen Benincasae) 15g
 - *Tao Ren* 桃仁 (Semen Persicae) 12g
 - *Ban Xia* 法半夏 (Rhizoma Pinelliae) 10g
 - *Gua Lou Pi* 瓜蒌皮 (Pericarpium Trichosanthis) 15g
 - *Cang Zhu* 苍术 (Rhizoma Atractylodis) 15g
 - *Jie Geng* 桔梗 (Radix Platycodonis) 10g
 - *Jiang Huang* 姜黄 (Rhizoma Curcumae Longae) 10g
 - *Chan Tui* 蝉蜕 (Periostracum Cicadae) 6g
 - *Jiang Can* 僵蚕 (Bombyx Batryticatus) 10g
 - *Da Huang* 熟大黄 (Radix et Rhizoma Rhei), cooked 6g
 - *Yu Xing Cao* 鱼腥草 (Herba Houttuyniae) 30g
 - *Jin Yin Hua* 金银花 (Flos Lonicerae Japonicae) 15g
 - *Lian Qiao* 连翘 (Fructus Forsythiae) 15g
 - *Shi Gao* 石膏 (Gypsum Fibrosum) 20g

Closed Interior and Abandoned Exterior 内闭外脱

- S/sx: high fever, delirium, restlessness, irritability, burning sensations in the chest and abdomen, cold hands and feet, hurried breathing, ECMO needed.

Closed Interior and Abandoned Exterior 内闭外脱

- 四逆加人参汤、安宫牛黄丸 (*Si Ni Jia Ren Shen Tang* (Frigid Extremities Decoction plus Ginseng), *An Gong Niu Huang Wan* (Calm the Palace Pill with Cattle Gallstone))
- *An Gong Niu Huang Wan* (Calm the Palace Pill with Cattle Gallstone) plus *Ren Shen* (Radix et Rhizoma Ginseng) 15g, *Fu Zi* (Radix Aconiti Lateralis Praeparata) 15g, *Gan Cao* (Radix et Rhizoma Glycyrrhizae) 10g, *Shi Chang Pu* (Rhizoma Acori Tatarinowii) 10g
- If needed, intravenous infusion of Shenfu 参附 Injection, Shengmai 生脉 Injection

Insufficiency of qi and yin, Deficiency of Lung and Spleen. 气阴不足，肺脾两虚

- S/sx: dry cough, feeling of chest oppression, shortness of breath, dyspnea upon movement

Insufficiency of qi and yin, Deficiency of Lung and Spleen. 气阴不足，肺脾两虚

- *Sha Shen* 沙参 (Radix Glehniae seu Adenophorae) 15g
- *Mai Dong* 麦冬 (Radix Ophiopogonis) 15g
- *Yu Zhu* 玉竹 (Rhizoma Polygonati Odorati) 10g
- *Tian Hua Fen* 天花粉 (Radix Trichosanthis) 15g
- *Xi Yang Shen* 西洋参 (Radix Panacis Quinquefolii) 10g
- *Wu Wei Zi* 五味子 (Fructus Schisandrae Chinensis) 10g
- *Si Gua Luo* 丝瓜络 (Retinervus Luffae Fructus) 15g
- *Bai Bian Dou* 扁豆 (Semen Lablab Album) 10g
- *Sang Ye* 桑叶 (Folium Mori) 10g
- *Ju Luo* 橘络 (Vascular Citri Reticulatae) 5g
- *Zi Su Zi* 苏子 (Fructus Perillae) 10g
- *Zhe Bei Mu* 浙贝 (Bulbus Fritillariae Thunbergii) 10g
- *Ku Xing Ren* 杏仁 (Semen Armeniacae Amarum) 10g
- *Gan Cao* 甘草 (Radix et Rhizoma Glycyrrhizae) 6g
- *Di Long* 地龙 (Pheretima) 10g

Guidance for Corona Virus Disease 2019

- Medical Observation Period 医学观察
- Clinical Treatment Period 临床治疗
- Recovery Period 恢复期

Guidance for Corona Virus Disease 2019

- Medical Observation Period 医学观察
- Clinical Treatment Period 临床治疗
 - Cold Dampness Stagnating Lungs 寒湿郁肺证
 - Damp-Heat Accumulated Lung 湿热蕴肺证
 - Damp-Poison Stagnating Lung 湿毒郁肺证
 - Cold Dampness Obstructing Lung 寒湿阻肺证
 - Lung Blocked by Epidemic Toxin 疫毒闭肺证
 - Flaring Heat in Qi and Ying 气营两燔
 - Internal Block and Outward Desertion 内闭外脱
- Recovery Period 恢复期
 - Lung and Spleen Qi Deficiency 肺脾气虚证
 - Deficiency of Qi and Yin 气阴两虚证

Qing Fei Pai Du Tang 清肺排毒汤 (Clear the Lung and Eliminate Toxins Decoction)

- *Ma Huang* (Herba Ephedrae), 9g
- *Zhi Gan Cao* (Radix et Rhizoma Glycyrrhizae Praeparata cum Melle), 6g
- *Ku Xing Ren* (Semen Armeniacae Amarum), 9g
- *Shi Gao* (Gypsum Fibrosum), 15-30g (pre-decoct)
- *Gui Zhi* (Ramulus Cinnamomi), 9g
- *Ze Xie* (Rhizoma Alismatis), 9g
- *Zhu Ling* (Polyporus), 9g
- *Bai Zhu* (Rhizoma Atractylodis Macrocephalae), 9g
- *Fu Ling* (Poria), 15g
- *Chai Hu* (Radix Bupleuri), 16g
- *Huang Qin* (Radix Scutellariae), 6g
- *Jiang Ban Xia* (Rhizoma Pinelliae Praeparatum cum Zingibere et Alumine), 9g
- *Sheng Jiang* (Rhizoma Zingiberis Recens), 9g
- *Zi Wan* (Radix et Rhizoma Asteris), 9g
- *Kuan Dong Hua* (Flos Farfarae), 9g
- *She Gan* (Rhizoma Belamcandae), 9g
- *Xi Xin* (Radix et Rhizoma Asari), 6g
- *Shan Yao* (Rhizoma Dioscoreae), 12g
- *Zhi Shi* (Fructus Aurantii Immaturus), 6g
- *Chen Pi* (Pericarpium Citri Reticulatae), 6g
- *Guang Huo Xiang* (Herba Pogostemonis), 9g

Qing Fei Pai Du Tang 清肺排毒汤

(Clear the Lung and Eliminate Toxins Decoction)

- *Ma Huang Xing Ren Gan Cao Shi Gao Tang* 麻杏甘石汤
(Ephedra, Apricot Kernel, Licorice, Gypsum Decoction)
- *Xiao Chai Hu Tang* 小柴胡汤
(Minor Bupleurum Decoction)
- *She Gan Ma Huang Tang* 射干麻黄汤
(Belamcanda and Ephedra Decoction)
- *Wu Ling San* 五苓散
(Five-Ingredient Powder with Poria)

Qing Fei Pai Du Tang 清肺排毒汤

(Clear the Lung and Eliminate Toxins Decoction)

- Drink the warm decoction twice daily 40 minutes after meals. Follow with half to one bowl of rice porridge.
- Dosage of *Shi Gao* (Gypsum Fibrosum) should be adjusted based on severity of fever.

Qing Fei Pai Du Tang 清肺排毒汤

(Clear the Lung and Eliminate Toxins Decoction)

- 701 patients in 10 provinces:
 - 130 recovered and discharged
 - 51 resolution of s/sx
 - 268 improvement of s/sx
 - 212 stabilization of s/sx
 - 94.3% rate of effectiveness

Ma Huang (Herba Ephedrae)

- *Ephedra sinica*,
Ephedra intermedia,
Ephedra equisetina
 - Ephedrine alkaloids
0.481-2.47% (l-ephedrine, d-pseudoephedrine, l-norephedrine, d-norpseudoephedrine, l-methylephedrine, d-methylpseudoephedrine)
- *Ephedra nevadensis*
aka: momon tea
 - No ephedrine alkaloids



Ma Huang (Herba Ephedrae)

- Relieves wheezing and dyspnea, stops cough
 - *Di Long* (Pheretima)
 - *Ku Xing Ren* (Semen Armeniacae Amarum)
 - *Zi Su Zi* (Fructus Perillae)



Xi Xin (Radix et Rhizoma Asari)

- Dispels exterior wind-cold
 - *Qiang Huo* (Rhizoma et Radix Notopterygii)
 - *Fang Feng* (Radix Saposhnikoviae)
- Warms the lung and resolves phlegm
 - *Gan Jiang* (Rhizoma Zingiberis)
 - *Jie Zi* (Semen Sinapis)



Kuan Dong Hua (Flos Farfarae)

- Moistens the Lung, descends qi, dissolves phlegm, stops cough
 - *Ku Xing Ren* (Semen Armeniacae Amarum)
 - *Zi Wan* (Radix et Rhizoma Asteris)
 - *Zi Su Zi* (Fructus Perillae)



Research

- Pharmacological research of single herbs
- Clinical research of herbal formulas

Research

- Pharmacological research of single herbs
 - *Huang Qi* (Radix Astragali)
 - *Jin Yin Hua* (Flos Lonicerae Japonicae)
 - *Ban Lan Gen* (Radix Isatidis)
 - *Yu Xing Cao* (Herba Houttuyniae)
 - *Xiang Chun Ye* (Folium Toonae Sinensis)
 - *Wu Bei Zi* (Galla Chinensis)

Huang Qi (Radix Astragali)

- Tonifies qi and raises yang
- Tonifies *wei* (defensive) *qi*, consolidates the exterior
- Promotes the discharge of pus and generates flesh
- Regulates water circulation, reduces edema
- Relieves numbness and pain



Huang Qi (Radix Astragali)

- **Immunostimulant:**

- Administration of *Huang Qi* (Radix Astragali) is associated with promotion of T cells.
- The polysaccharides from *Huang Qi* (Radix Astragali) have been shown to activate B cells.

- Qu LL, et al. Astragalus membranaceus injection delayed allograft survival related with CD4+ CD25+ regulatory T cells. Transplant Proc. 2010 Nov;42(9):3793-7.
- Shao BM, et al. A study on the immune receptors for polysaccharides from the roots of Astragalus membranaceus, a Chinese medicinal herb. Biochem Biophys Res Commun. 2004 Aug 6;320(4):1103-11.

Jin Yin Hua (Flos Lonicerae Japonicae)

- Clears heat
- Clears heat and eliminates toxins



Jin Yin Hua (Flos Lonicerae Japonicae)

- Antibacterial
- Antiviral



Jin Yin Hua (Flos Lonicerae Japonicae)

- **Antibacterial:** *Jin Yin Hua* has a broad spectrum of inhibitory actions against *Staphylococcus aureus*, beta-hemolytic streptococcus, *E. coli*, *Bacillus dysenteriae*, *Vibrio cholerae*, *Salmonella typhi*, *Diplococcus pneumoniae*, *Diplococcus meningitidis*, *Pseudomonas aeruginosa*, and *Mycobacterium tuberculosis*. Chlorogenic acid and isochlorogenic acid have the strongest antibiotic effects.

- *Xin Yi Xue* (New Medicine), 1975; 6(3):155.
- *Jiang Xi Xin Yi Yao* (Jiangxi New Medicine and Herbology); 1960;(1):34.

Jin Yin Hua (Flos Lonicerae Japonicae)

- **Antiviral:** Shuangkangsu, a cyclic peroxide from *Jin Yin Hua*, has significant antiviral activities against influenza virus and respiratory syncytial. The homosecoiridoid alkaloids of *Jin Yin Hua* have antiviral activity against the influenza virus H3N2 (A/Hanfang/359/95) and coxsackie virus B3. The glucosylated caffeoylquinic acid isomers from *Jin Yin Hua* shows inhibitory activity against coxsackie virus B3.
- Yu DQ, et al. The structure and absolute configuration of Shuangkangsu: a novel natural cyclic peroxide from *Lonicera japonica* (Thunb.). *J Asian Nat Prod Res.* 2008 Sep-Oct;10(9-10):851-6.
- Yu Y, et al. Homosecoiridoid alkaloids with amino acid units from the flower buds of *Lonicera japonica*. *J Nat Prod.* 2013 Dec 27;76(12):2226-33.
- Yu Y, et al. Glucosylated caffeoylquinic acid derivatives from the flower buds of *Lonicera japonica*. *Acta Pharm Sin B.* 2015 May;5(3):210-4.

Jin Yin Hua (Flos Lonicerae Japonicae)

- *Jin Yin Hua* inhibits SARS-CoV replication at non-toxic concentration.

- Li Y, Ooi LS, Wang H, But PP, Ooi VE. Antiviral activities of medicinal herbs traditionally used in southern mainland China. *Phytother Res* 2004; 18: 718-722.

Ban Lan Gen (Radix Isatidis)

- Clears heat, eliminates toxins, cools blood and benefits the throat



Ban Lan Gen (Radix Isatidis)

- Antibacterial
- Antitoxin
- Antiviral
- Anti-inflammatory



Ban Lan Gen (Radix Isatidis)

- **Antiviral:** *Ban Lan Gen* exerts antiviral effect against influenza A virus, seasonal influenza virus, human or avian influenza virus, novel swine-originating influenza virus, Japanese encephalitis virus, adenovirus, herpes simplex virus, hepatitis B virus, human cytomegalovirus, swine pseudorabies virus, coxsackie virus B₃.
 - Hsuan SL, et al. The cytotoxicity to leukemia cells and antiviral effects of *Isatis indigotica* extracts on pseudorabies virus. *J Ethnopharmacol.* 2009 May 4;123(1):61-7. Epub 2009 Mar 4.
 - Chen C, et al. *Zhongyao Yaolixue*, 2nd Edition. Shanghai Science and Technology Publishing, 2015; 88-90.
 - Yang Z, et al. Antiviral activity of *Isatis indigotica* root-derived clemastanin B against human and avian influenza A and B viruses in vitro. *Int J Mol Med.* 2013 Apr;31(4):867-73.
 - Wang XL, et al. Chemical constituents from root of *Isatis indigotica*. *Zhongguo Zhong Yao Za Zhi.* 2013 Apr;38(8):1172-82.

Ban Lan Gen (Radix Isatidis)

- *Ban Lan Gen* shows direct effect to inhibit the enzyme activity of SARS coronavirus.

- Lin CW, Tsai FJ, Tsai CH, Lai CC, Wan L, Ho TY, et al. AntiSARS coronavirus 3C-like protease effects of *Isatis indigotica* root and plant-derived phenolic compounds. *Antiviral Res* 2005; 68: 36-42.

Yu Xing Cao (Herba Houttuyniae)

- Clears heat, eliminates toxins and drains pus
- Promotes normal urination



Yu Xing Cao (Herba Houttuyniae)

- Antibacterial
- Antiviral
- Anti-inflammatory



Yu Xing Cao (Herba Houttuyniae)

- **Antiviral and virucidal:** *Yu Xing Cao* has antiviral effect against numerous types of viruses: herpes simplex virus (HSV), acyclovir-resistant HSV, H1N1 influenza virus, pseudorabies herpes, influenza virus, and human immunodeficiency virus.
 - Chiang LC, et al. Anti-Herpes simplex virus activity of *Bidens pilosa* and *Houttuynia cordata*. *Am J Chin Med*. 2003;31(3):355-62.
 - Chou SC, et al. The constituents and their bioactivities of *Houttuynia cordata*. *Chem Pharm Bull (Tokyo)*. 2009 Nov; 57(11):1227-30.
 - Ren X, et al. The effect of *Houttuynia cordata* injection on pseudorabies herpesvirus (PrV) infection in vitro. *Pharm Biol*. 2011 Feb;49(2):161-6.
 - Hayashi K, et al. Virucidal effects of the steam distillate from *Houttuynia cordata* and its components on HSV-1, influenza virus, and HIV. *Planta Med*. 1995 Jun;61(3):237-41.

Yu Xing Cao (Herba Houttuyniae)

- The water extract of *Yu Xing Cao* also demonstrates antiviral effect to treat coronavirus in severe acute respiratory syndrome (SARS). *Yu Xing Cao* exhibits significant inhibitory effects on the virus, and increases the proliferation of lymphocytes in a dose-dependent manner.

- Lau KM, et al. Immunomodulatory and anti-SARS activities of Houttuynia cordata. Institute of Chinese Medicine, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, China. J Ethnopharmacol. 2008 Jun 19;118(1):79-85.

Wu Bei Zi (Galla Chinensis)

- Contains leakage of lung qi, clears deficiency fire
- Binds the intestines
- Consolidates kidney *jing* (essence)
- Restrains sweating
- Stops bleeding
- Eliminates toxins and reduces swelling



Wu Bei Zi (Galla Chinensis)

- **Antiviral:** Administration of moronic acid from *Wu Bei Zi* is associated with antiviral effect against Epstein-Barr virus via the inhibition of the lytic cycle. *Wu Bei Zi* also shows antiviral activities against HIV-1 virus by inhibiting HIV-1 viral replication. The main active compounds include rhuscholide A, betulonic acid, moronic acid, and others.
 - Chang FR, et al. Inhibition of the Epstein-Barr virus lytic cycle by moronic acid. Graduate Institute of Natural Products, Antiviral Res. 2010 Mar;85(3):490-5.
 - Wang RR, et al. Anti-HIV-1 activities of compounds isolated from the medicinal plant *Rhus chinensis*. J Ethnopharmacol. 2008 May 8;117(2):249-56.
 - Gu Q, et al. A new benzofuranone and anti-HIV constituents from the stems of *Rhus chinensis*. Planta Med. 2007 Mar;73(3):279-82.

Wu Bei Zi (Galla Chinensis)

- *Wu Bei Zi* (Galla Chinensis) contains tetra-O-galloyl- β -D-glucose (TGG) and luteolin, were identified to exhibit prominent anti-SARS virus activity.
- These natural molecules bound avidly with the surface spike protein of SARS virus and thus interfered with the entry of the virus to its host cells.
- Yi L, Li Z, Yuan K, Qu X, Chen J, Wang G, et al. Small molecules blocking the entry of severe acute respiratory syndrome coronavirus into host cells. *J Virol* 2004; 78: 11334-11339.

Xiang Chun Ye (Folium Toonae Sinensis)

- *Xiang Chun Ye* clears heat and eliminates toxins to treat Lung heat with cough.
- It also clears heat and eliminates toxins from the skin to treat sores and abscesses.



香椿葉

The Use of an Herbal Formula by Hospital Care Workers During the Severe Acute Respiratory Syndrome Epidemic in Hong Kong to Prevent Severe Acute Respiratory Syndrome Transmission, Relieve Influenza-Related Symptoms, and Improve Quality of Life: A Prospective Cohort Study

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and W.M. KO, M.B.B.S, FRCS⁵

- Lau J, Leung P, Wong E, Fong C, Cheng K, Zhang S, et al. The use of an herbal formula by hospital care workers during the severe acute respiratory syndrome epidemic in Hong Kong to prevent severe acute respiratory. *J Alternat Complement Med* 2005;11:49-55.

Prevention of SARS

- Study: 16,437 hospital care workers, including doctors, nurses and others in Hong Kong
 - 1,063 herb group
 - 15,374 in non-herb group

- Lau J, Leung P, Wong E, Fong C, Cheng K, Zhang S, et al. The use of an herbal formula by hospital care workers during the severe acute respiratory syndrome epidemic in Hong Kong to prevent severe acute respiratory. *J Alternat Complement Med* 2005;11:49-55.

Prevention of SARS

- *Huang Qi* 黃耆 (Radix Astragali)
 - *Bai Zhu* 白朮 (Rhizoma Atractylodis Macrocephalae)
 - *Fang Feng* 防風 (Radix Saposhnikoviae)
 - *Sang Ye* 桑葉 (Folium Mori)
 - *Ju Hua* 菊花 (Flos Chrysanthemi)
 - *Bo He* 薄荷 (Herba Menthae)
 - *Lian Qiao* 連翹 (Fructus Forsythiae)
 - *Jie Geng* 桔梗 (Radix Platycodonis)
 - *Ku Xing Ren* 苦杏仁 (Semen Armeniacae Amarum)
 - *Lu Gen* 蘆根 (Rhizoma Phragmitis)
 - *Gan Cao* 甘草 (Radix et Rhizoma Glycyrrhizae)
 - *Da Qing Ye* 大青葉 (Folium Isatidis)
 - *Huang Qin* 黃芩 (Radix Scutellariae)
- Lau J, Leung P, Wong E, Fong C, Cheng K, Zhang S, et al. The use of an herbal formula by hospital care workers during the severe acute respiratory syndrome epidemic in Hong Kong to prevent severe acute respiratory. *J Alternat Complement Med* 2005;11:49-55.