

Herbal Monograph for Xiao Chai Hu Tang, Part Two

PHARMACOLOGICAL EFFECTS

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Editor's Note: *This is the second article in a four-part series on xiao chai hu tang. [Part one](#), with a complete list of references, appeared in the July 2007 issue.*

Pharmacological Effects

1. Hepatoprotective: Administration of *xiao chai hu tang* was associated with preventive and beneficial effects against various types of drug- or chemical-induced liver damage. In one study, intraperitoneal injection of the formula in rats effectively controlled galactose-induced liver disorder in 65 percent to 70 percent of subjects by lowering the SGOT and SGPT.² Other studies have indicated that the formula is also effective against liver cirrhosis induced by carbon tetrachloride.³ Yet another study reported that *xiao chai hu tang* was effective in treating liver inflammation and fibrosis.⁴ One proposed mechanism of this hepatoprotective effect is the augmentation of natural killer (NK) cell activity in the liver.⁵ Another proposed mechanism is a dose-dependent increase in the production of granulocyte colony-stimulating factor (G-CSF) on peripheral blood mononuclear cells.⁶
2. Chologogic: Administration of *xiao chai hu tang* was associated with a marked effect of increasing the secretion of bile acid from the gallbladder and its excretion into the intestines in animals.⁷
3. Immunostimulant: Administration of *xiao chai hu tang* has a marked effect on the immune system. In one study of mice, 100 mg/kg of the herb was associated with stimulating natural killer (NK) cells' activities, while 200 mg/kg was associated with inhibition of NK cell activity.⁸
4. Anti-inflammatory: Intraperitoneal injection of the formula in rats at 200 mg/kg was associated with a marked anti-inflammatory effect for up to four hours.⁹ The anti-inflammatory effect was also present in rats whose adrenal glands had been surgically removed.¹⁰
5. Effect on temperature regulation: Administration of *xiao chai hu tang* was associated with effectiveness in reducing body temperature in rabbits with artificially induced fever,¹¹ but it had little effect in rabbits with normal body temperature.¹²
6. Gastrointestinal: Administration of *xiao chai hu tang* was associated with inhibiting gastric acid production in rats. However, it had a stimulating effect on the intestines to increase peristalsis.¹³
7. Effect on hypercholesterolemia and hyperlipidemia: Administration of *xiao chai hu tang* and *da chai hu tang* was associated with beneficial effects in treating rats with cholesterol-induced hypercholesterolemia and aging-induced hyperlipidemia. Both formulas reduced total cholesterol in the liver and triglycerides in the liver and blood.¹⁴
8. Anti-allergic: Administration of *xiao chai hu tang* had a dose-dependent effect to significantly inhibit histamine release to treat allergies. The proposed mechanism of this effect was attributed to the ability of *xiao chai hu tang* to inhibit IgE receptor-associated protein phosphorylation in the histamine release pathway.¹⁵
9. Anti-ulcer: *Xiao hai hu tang* was effective in treating gastric ulcers in rats. *Xiao chai hu tang*

had a comparable effect to sucralfate in protecting the gastric mucosa, and had effects similar to cimetidine or atropine in inhibiting gastric acid secretions.¹⁶ *Xiao chai hu tang* also showed an anti-ulcer effect against both water-immersion stress-induced gastric lesions and ethanol-induced gastric injury in a dose-dependent manner.¹⁷

10. Anti-tumor: Administration of *xiao chai hu tang* was associated with anti-tumor activity, presumably because it stimulates host-mediated factors such as the phagocytic function of the reticuloendothelial system and C3 cleavage producibility, and is closely related to TNF production. It is unclear whether *xiao chai hu tang* has a direct anti-tumor effect.¹⁸
11. Anti-tumor and anti-metastatic: Administration of *xiao chai hu tang* in mice with malignant melanoma was associated with slowing tumor development and the transition to malignancy, decreasing incidence of distant metastasis to brain and kidney, and at the malignant stage, prolonging life span.¹⁹ The mechanism of this action was attributed to the ability of *xiao chai hu tang* to inhibit the growth of malignant melanoma cells by up-regulating Fas-mediated apoptosis and arresting the cell cycle through down-regulation of cyclin dependent kinases.²⁰ *Xiao chai hu tang* also inhibited lung carcinoma growth and metastasis, with special reference to macrophage activation.²¹
12. Radioprotective: Administration of *xiao chai hu tang* and/or methylprednisolone was associated with protective effects against radiation-induced damage to lung tissues. The efficacy of radioprotective effect from the mildest to the most potent were *xiao chai hu tang*, methylprednisolone and the combination of both (more effective than either alone).²²
13. Bioavailability: Oral administration of *xiao chai hu tang* before or after meals did not result in any significant difference in the maximum plasma concentration or the plasma concentration-time curve. The study concluded that timing of administration (before or after meals) did not affect the blood concentration (bioavailability) of *xiao chai hu tang*.²³

Clinical Studies and Research

1. Cholecystitis and cholelithiasis: One hundred patients with cholecystitis and cholelithiasis were treated with a combination of *xiao chai hu tang* and *xiao cheng qi tang* (minor order the *qi* decoction), with an 85 percent success rate of passing the stones.²⁴
2. Cholecystitis: One study reported 98.9 percent effectiveness using *xiao chai hu tang* to treat cholecystitis. Of 285 patients (134 males, 151 females; average of 40.1 years of age; 2.7 years average duration of illness), 61 had acute cholecystitis and 224 had chronic cholecystitis. The treatment protocol was to administer the herbs in decoction one time daily for 15 days per course of treatment. The study reported complete recovery in 273 patients, improvement in nine patients and no effect in three patients.²⁵
3. Pancreatitis: Fifty patients with acute pancreatitis showed marked improvement when treated with acupuncture, modified *xiao chai hu tang*, and atropine. The average duration of treatment was 6.8 days, with most patients showing improvement after about three days.²⁶
4. Chronic hepatitis: In a double-blind, multicenter clinical study involving 222 patients with chronic active hepatitis, use of *xiao chai hu tang* was associated with a decrease of HBeAg and an increase of anti-HBe antibodies. No remarkable side effects were noticed.²⁷ In another study, two groups of patients with chronic hepatitis were treated with modified *xiao chai hu tang* with good results. In one group of 41 patients with chronic infectious hepatitis, 26 patients had significant improvement and 13 patients had moderate improvement. In another group of 21 patients with chronic active hepatitis, 10 patients had significant improvement and eight patients had moderate improvement. The formula used contained *chai hu* (*Radix bupleuri*), 12g; *huang qin* (*Radix scutellariae*), 12g; *tai zi shen* (*Radix pseudostellariae*), 15g; *ban xia* (*Rhizoma pinelliae*), 10g; *gan cao* (*Radix et rhizoma glycyrrhizae*), 6g; and dry-fried *zhi zi* (*Fructus gardeniae*), 10g.²⁸ In another study, administration of *xiao chai hu tang* for two to three months was associated with marked symptomatic relief and improvement of liver function among 45 chronic hepatitis patients who did not respond to prednisone.²⁹

5. Viral hepatitis: Use of *xiao chai hu tang* has been shown in many studies to effectively treat hepatitis. In one study, 307 patients with viral hepatitis were treated with 87.75 percent effectiveness using *xiao chai hu tang* plus *zhi zi* (Fructus gardeniae) and *hua shi* (Talcum) as the base formula.³⁰ For 50 patients with chronic hepatitis B, one study reported 86 percent effectiveness using *xiao chai hu tang* plus *zhu ling* (Polyporus), *huang qi* (Radix astragali), and *zao xiu* (Rhizoma paridis) as the main herbal treatment.³¹
6. Hepatitis C: One study investigated the mechanism of action on the therapeutic effect of *xiao chai hu tang* to suppress liver cancer development. The study found that in hepatitis C patients, use of *xiao chai hu tang* could adjust the decreased IL-10 production and the increased IL-4 and IL-5 production of mononuclear cells, indicating that this moderate regulation of the cytokine production system may be useful in the prevention of disease progression.³²
7. Hepatic fibrosis and carcinoma: *Xiao chai hu tang* demonstrated chemopreventive and anti-carcinogenic effects against the development of hepatocellular carcinoma in cirrhotic patients. Evidence showed that *xiao chai hu tang* suppressed oxidative stress in hepatocytes and hepatic stellate cells, inhibited chemical hepatocarcinogenesis in animals, and acted as a biological response modifier by suppressing the proliferation of hepatoma cells by inducing apoptosis and arresting the cell cycle. Baicalin, baicalein and saikosaponin-a are believed to be three of the main active compounds in *xiao chai hu tang*.³³ In another study, administration of *xiao chai hu tang* inhibited collagen production and an increase in retinoid-level-inhibited activation of Ito cells, leading to inhibition and prevention of liver fibrosis.³⁴
8. Hepatocellular carcinomas: In a prospective, randomized, non-blind controlled study, 260 patients with liver cirrhosis were randomly assigned to two groups. Patients in the trial group were given 7.5 g/day of *xiao chai hu tang* orally in addition to the conventional drugs given to the control patients. After monitoring the patients for 60 months, the study reported that the incidence of hepatocellular carcinomas was lower and the survival rate was higher for the trial group compared with the control group. The researchers concluded that *xiao chai hu tang* helped to prevent the development of hepatocellular carcinomas in patients with cirrhosis, particularly in patients without HBs antigen.³⁵
9. Fever in cancer: Thirty-two cancer patients with high fever had good results using modified *xiao chai hu tang*. The treatment protocol was to use *xiao chai hu tang* plus *bai hua she she cao* (Herba hedyotis) and *ban zhi lian* (Herba scutellariae barbatae) as the base formula. *Yu ping feng san* (Jade Windscreen Powder) and *bie jia* (Carapax trionycis) were added for *qi* and *yin* deficiencies; *yin chen* (Herba artemisiae scopariae) and *yi yi ren* (Semen coicis) for damp-heat; and *shi gao* (Gypsum fibrosum) and *zhi mu* (Rhizoma anemarrhenae) for persistent high fever due to heat and toxins. Of 32 patients, 17 had marked improvement, 13 had moderate improvement, and two had no improvement.³⁶
10. Fever: Eighty-six patients with high fever (36 due to respiratory tract infection, 20 due to infection of the bile duct, nine due to urinary tract infection, four due to postpartum infection, two due to toxemia, three due to hepatitis, two due to encephalitis, two due to influenza, two due to parotitis, three due to bacterial dysentery, and three due to unknown causes) were treated successfully. The study reported reduction of body temperature in 29 patients after one to two doses, 36 patients after three to four doses, and 21 patients after four doses.³⁷ According to another study, 128 patients with high fever were treated with *xiao chai hu tang* plus *ban lan gen* (Radix isatidis), *mian ma guan zhong* (Rhizoma dryopteridis crassirhizomatis), *bai wei* (Radix et rhizoma cynanchi atrati) and others. *Ge gen* (Radix puerariae lobatae) was added for body aches and pains; and *mu dan pi* (Cortex moutan) and *di huang* (Radix rehmanniae) were added for red tongue body. Within five doses of herbs, the study reported normal temperature (37.2 C/98.96 F or below) without recurrence of fever in 119 of 128 patients.³⁸
11. Nephritis: Forty patients with acute and chronic nephritis were treated with electroacupuncture and *xiao chai hu tang* with significant improvement. There were significant reductions of protein and cells in the urine.³⁹ Another study reported that the

combination of *xiao chai hu tang* and *ba wei di huang wan* (Eight-Ingredient Pill with *Rehmannia*) is beneficial in treating patients with chronic nephritis refractory to steroid therapy.⁴⁰

12. Chronic renal insufficiency: Modified *xiao chai hu tang* was used with good results in treating 60 patients with chronic renal insufficiency. The herbal treatment included *xiao chai hu tang* plus *dan shen* (*Radix et rhizoma salviae miltiorrhizae*), *da huang* (*Radix et rhizoma rhei*), *yi mu cao* (*Herba leonuri*), and other herbs as the base formula. *Tai zi shen* (*Radix pseudostellariae*), *di huang* (*Radix rehmanniae*), and *gou qi zi* (*Fructus lycii*) were added for *qi* and *yin* deficiencies with accumulation of dampness and toxins. *Fu zi* (*Radix aconiti lateralis praeparata*) and dry-fried *bai zhu* (*Rhizoma atractylodis macrocephalae*) were added for accumulation of water and dampness due to inability of spleen and kidney to regulate water circulation. The herbs were given for three months per course of treatment. Of 60 patients, the study reported significant improvement in 12 patients, moderate improvement in 24 patients, stabilization in 14 patients, and no benefit in 10 patients. The overall rate of effectiveness was 83.33 percent.⁴¹
13. Cough: *Xiao chai hu tang* plus *xi xin* (*Radix et rhizoma asari*), *gan jiang* (*Rhizoma zingiberis*), *ku xing ren* (*Semen armeniacae amarum*), and others were used to treat 52 patients with chronic cough, with marked improvement in 13 patients, moderate improvement in 35 patients, and no effect in four patients. The overall rate of effectiveness was 92.3 percent.⁴²
14. Bronchial asthma: Use of *xiao chai hu tang* was reported to have a 64.3 percent effectiveness rate in treating chronic bronchial asthma dependent on steroid drugs for treatment. Of 28 patients, four had significant improvement and 14 had moderate improvement.⁴³
15. Reflux esophagitis: Seventy-eight patients (40 males, 38 females) with reflux esophagitis for an average of 14 months (four months to three years) were treated with modified *xiao chai hu tang* once daily for 30 days. The base formula contained *chai hu* (*Radix bupleuri*), 15g; *huang qin* (*Radix scutellariae*), 10g; *dang shen* (*Radix codonopsis*), 10g; *ban xia* (*Rhizoma pinelliae*), 10g; *gan cao* (*Radix et rhizoma glycyrrhizae*), 6g; and *da zao* (*Fructus jujubae*), five pieces. In addition, 30 grams of calcined *wa leng zi* (*Concha arcae*) were added for acid reflux; 20 grams of *dan shen* (*Radix et rhizoma salviae miltiorrhizae*) were added for blood stagnation; and 30 grams each of *wu mei* (*Fructus mume*) and *bai shao* (*Radix paeoniae alba*) were added for burning sensations and pain. The study reported complete recovery in 69 patients, moderate improvement in six patients and no improvement in three patients. The overall success rate was 96.2 percent.⁴⁴
16. Antral gastritis: *Xiao chai hu tang* plus *xuan fu hua* (*Flos inulae*), *tao ren* (*Semen persicae*), and others were used to treat 107 patients with antral gastritis, with 90.70 percent effectiveness. The duration of treatment ranged from one to three courses, with 15 packs of herbs per course of treatment.⁴⁵

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