

Chai Hu (Radix Bupleuri)



柴胡

Pinyin Name: *Chai Hu*

Literal Name: “kindling of the barbarians”

Original Source: *Shen Nong Ben Cao Jing* (Divine Husbandman’s Classic of the Materia Medica) in the second century

English Name: bupleurum, hare’s ear, Chinese thorowax root, red thorowax root

Botanical Name: *Bupleurum chinense* DC. (*Bei Chai Hu*); *Bupleurum scorzoneraefolium* Willd. (*Nan Chai Hu*)

Pharmaceutical Name: Radix Bupleuri

Properties: bitter, acrid, cool

Channels Entered: Liver, Gallbladder

CHINESE THERAPEUTIC ACTIONS

1. Harmonizes the Exterior and the Interior

Shaoyang syndrome: *Chai Hu* (Radix Bupleuri), with its ascending and dispersing functions, is the key herb in treating *shaoyang* syndrome, a disorder in which the pathogenic factor is trapped halfway between the exterior and the interior. Due to the complexity of this condition, patients will exhibit both exterior and interior symptoms and signs, such as alternate spells of chills and fever, fullness and distention of the chest and hypochondriac region, a bitter taste in the mouth, dry throat, poor appetite, nausea and vertigo, irritability, and a wiry pulse. *Chai Hu* harmonizes *shaoyang* conditions, meaning that it will guide the trapped pathogenic factors outwards.

- *Shaoyang* syndrome: use *Chai Hu* with *Huang Qin* (Radix Scutellariae). *Chai Hu* eliminates the pathogenic factor from the exterior and *Huang Qin* clears heat from the interior. The combination of these two herbs eliminates pathogenic factors from both the exterior and the interior, and harmonizes half-exterior half-interior conditions. **Exemplar Formula:** *Xiao Chai Hu Tang* (Minor Bupleurum Decoction).
- *Shaoyang* and *yangming* syndromes together: use this herb with *Huang Qin* (Radix Scutellariae), *Bai Shao* (Radix Paeoniae Alba), *Zhi Zi* (Fructus Gardeniae) and *Da Huang* (Radix et Rhizoma Rhei). **Exemplar Formula:** *Da Chai Hu Tang* (Major Bupleurum Decoction).
- Lingering exterior conditions with the pathogenic factor entering the *shaoyang* stage, with fever: combine *Chai Hu* with *Ge Gen* (Radix Puerariae) and *Huang Qin* (Radix Scutellariae). **Exemplar Formula:** *Chai Ge Jie Ji Tang* (Bupleurum and Pueraria Combination).

Malaria is considered a *shaoyang* disorder, as patients often have alternating spells of chills and fever. *Chai Hu* is used for its ability to dispel the pathogenic factor and harmonize the interior and exterior.

- Malaria: use *Chai Hu* with *Qing Hao* (Herba Artemisiae Annuae), *Bing Lang* (Semen Arecae), *Chang Shan* (Radix Dichroae) and *Cao Guo* (Fructus Tsaoko).

2. Spreads the Liver and Relieves Liver Qi Stagnation

Liver qi stagnation: Acrid and aromatic, *Chai Hu* has ascending and dispersing characteristics. It is commonly used to unblock Liver qi stagnation and spread Liver qi. Clinical manifestations of Liver qi stagnation include emotional distress, fullness and distention of the chest and hypochondrium, irritability, headache, eye disorders, breast swelling and pain, irregular menstruation, amenorrhea or menstrual cramps, and jaundice.

- Liver qi stagnation with stress and emotional distress: combine *Chai Hu* with *Bai Shao* (Radix Paeoniae Alba), *Dang Gui* (Radix Angelicae Sinensis), and *Bo He* (Herba Menthae). **Exemplar Formula:** *Xiao Yao San* (Rambling Powder).
- Liver qi stagnation causing hypochondriac fullness and pain: use this herb with *Bai Shao* (Radix Paeoniae Alba), *Chuan Xiong* (Rhizoma Ligustici Chuanxiong) and *Zhi Ke* (Fructus Aurantii). **Exemplar Formula:** *Chai Hu Shu Gan Tang* (Bupleurum Powder to Spread the Liver).
- Liver qi stagnation with cold extremities: add *Xiang Fu* (Rhizoma Cyperi), *Zhi Shi* (Fructus Aurantii Immaturus) and *Bai Shao* (Radix Paeoniae Alba). **Exemplar Formula:** *Si Ni San* (Frigid Extremities Powder).
- Migraine headache: combine *Chai Hu* with *Chuan Xiong* (Rhizoma Ligustici Chuanxiong), *Xiang Fu*

Chai Hu (Radix Bupleuri)

(Rhizoma Cyperi) and *Bai Shao* (Radix Paeoniae Alba) to treat migraine headache caused by *shaoyang* fire attacking the head.

- Eye disorders: use it with *Huang Qin* (Radix Scutellariae), *Zhi Zi* (Fructus Gardeniae), *Fang Feng* (Radix Saposhnikoviae) and *Jue Ming Zi* (Semen Cassiae) to treat eye disorders due to Liver fire rising, characterized by eye redness, swelling and pain.
- Irregular menstruation with pain and cramps: use *Chai Hu* with *Dang Gui* (Radix Angelicae Sinensis), *Bai Shao* (Radix Paeoniae Alba), *Xiang Fu* (Rhizoma Cyperi) and *Mu Dan Pi* (Cortex Moutan) to nourish blood and regulate menstruation.
- Jaundice: add *Yin Chen Hao* (Herba Artemisiae Scopariae), *Da Huang* (Radix et Rhizoma Rhei), and *Zhi Zi* (Fructus Gardeniae) to clear damp-heat attacking both Liver and Gallbladder (leading to stasis of bile).

3. Lifts Yang Qi

Prolapsed organs: Because of its ascending nature, *Chai Hu* is commonly used to treat prolapse of internal organs caused by yang or qi deficiency. Clinical applications include prolapse of the rectum and uterus with shortness of breath, fatigue, hypermenorrhea, polyuria and other symptoms of yang and qi deficiency.

- Prolapse of internal organs: use *Chai Hu* with *Sheng Ma* (Rhizoma Cimicifugae) and *Huang Qi* (Radix Astragali) to raise yang and tonify qi. **Exemplar Formula:** *Bu Zhong Yi Qi Tang* (Tonify the Middle and Augment the Qi Decoction).

DOSAGE

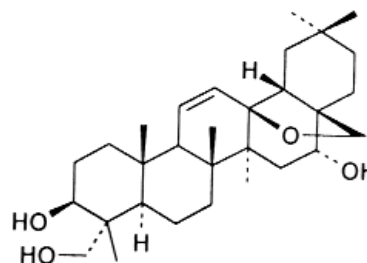
3 to 10 grams. The maximum dosage of *Chai Hu* is 60 grams. Treatment of organ prolapse relies on only a small dosage (3 grams) to raise yang qi. Treatment of malaria, however, requires a larger dose (10 to 15 grams). Unprocessed *Chai Hu* has a stronger effect to ascend and disperse, and is commonly used to release the exterior and reduce fever. The vinegar-fried herb more effectively regulates Liver qi, and is commonly used to relieve hypochondriac pain, abdominal pain, and menstrual cramps.

CAUTIONS / CONTRAINDICATIONS

- *Chai Hu* has ascending and dispersing functions, so prolonged use or overdose may consume yin. Therefore, this herb should be used with caution in yin-deficient patients, those with yin-deficient fire, Liver yang rising, or Liver wind rising.
- *Chai Hu* should not be used for an individual having only an exterior syndrome but no interior symptoms or condition. Use of *Chai Hu* under these circumstances may lead the pathogenic factor inward, making the disease more difficult to treat.

CHEMICAL COMPOSITION

Triterpenoids (saikosaponin A, B, C, D, E; saikogenin F, G, E; saikoside), essential oils 0.06-0.16% (r-heptalactone, r-decalactone), carbohydrates, flavone, coumarin, organic acid.^{1,2}



Saikosaponin

PHARMACOLOGICAL EFFECTS

- **Analgesic and antipyretic:** According to laboratory studies, essential oil, saikosaponin, and decoction of *Chai Hu* all have demonstrated marked analgesic and antipyretic effects. The analgesic effect was partially blocked with oral ingestion of atropine at 25 mg/kg or subcutaneous injection of naloxone at 0.26 mg/kg.³
- **Sedative:** *Chai Hu* and saikosaponin have both demonstrated a sedative effect. Oral ingestion of saikosaponin at 200 to 800 mg/kg has a marked sedative effect in mice. At 500 mg/kg, saikosaponin prolonged sleeping time induced by barbiturates.⁴
- **Anti-inflammatory:** *Chai Hu* reduces inflammation by decreasing capillary permeability caused by histamine and 5-hydroxy-tryptamine.⁵
- **Hepatoprotective:** *Chai Hu* has demonstrated hepatoprotective activity in laboratory animals, especially against carbon tetrachloride-induced liver damage.⁶
- **Cholagogic:** *Chai Hu* has a marked cholagogic effect, achieved by increased production and excretion of bile.⁷
- **Antihyperlipidemic:** Saikosaponin A and D have demonstrated marked effectiveness in reducing triglycerides and moderate influence in reducing cholesterol.⁸
- **Immunostimulant:** *Chai Hu* stimulates both humoral and cellular immunity in mice.⁹
- **Antibiotic:** *Chai Hu* has demonstrated an inhibitory effect against β -hemolytic streptococcus, *Vibrio cholerae*, *Mycobacterium tuberculosis*, leptospira, some influenza viruses, poliomyelitis viruses, and hepatitis viruses.¹⁰

CLINICAL STUDIES AND RESEARCH

- **Common cold:** According to one study, 666 patients with common colds were treated with a herbal formulation consisting of *Chai Hu*, *Fang Feng* (Radix Saposhnikoviae), *Chen Pi* (Pericarpium Citri Reticulatae), *Bai Shao* (Radix Paeoniae Alba), *Gan Cao* (Radix Glycyrrhizae), and *Sheng*

Chai Hu (Radix Bupleuri)

Jiang (Rhizoma Zingiberis Recens). The patients received 12 grams of the herbal formulation three times daily. The rate of effectiveness was 79%.¹¹

- **Cough:** In one study, 1,005 patients were treated with a preparation of *Chai Hu*. The etiology of cough included common cold, influenza, chronic bronchitis, pneumonia, and lung cancer. The effective rate was 85.5%.¹²
- **Infectious hepatitis:** Eleven patients with infectious hepatitis were treated with *Chai Hu* and *Gan Cao* (Radix Glycyrrhizae), at the dosage of 10 ml three times daily (equivalent to 15 grams of each herb per day). The dosage for children was adjusted accordingly. The overall results were satisfactory.¹³
- **Liver cirrhosis:** The combination of a *Chai Hu* and *Gan Cao* (Radix Glycyrrhizae) preparation has demonstrated preventative influence against liver cirrhosis in laboratory mice.¹⁴
- **Hyperlipidemia:** In one study, 86 patients with hyperlipidemia were treated with an herbal formula (3 grams of *Chai Hu* with *Luo Han Guo* (Fructus Momordicae) added as a flavoring agent) three times daily for 3 weeks per course of treatment. The study reported marked effectiveness in reduction of triglycerides.¹⁵
- **Erythema:** Thirteen patients with erythema were treated with 2 ml of *Chai Hu* injectable (equivalent to 4 grams of herb) twice daily for 10 days. The study reported good results in all patients.¹⁶
- **Globus hystericus:** According to one report, 25 patients with globus hystericus were treated with 2 ml of a *Chai Hu* preparation injected into *Tiantu* (CV 22) daily or every other day. After 4 treatments, 15 patients reported marked improvement, 6 reported moderate improvement, and 4 reported no response.¹⁷

HERB-DRUG INTERACTION

The following cases of herb-drug interaction are based on *Xiao Chai Hu Tang* (Minor Bupleurum Decoction), an herbal formula that contains *Chai Hu* as the main ingredient. Additional information is not available at this time whether *Chai Hu*, as a single herb, is associated with the same risk of not.

- **Tolbutamide:** It was demonstrated in one study that the formula *Xiao Chai Hu Tang* (Minor Bupleurum Decoction) reduced the bioavailability of tolbutamide after oral administration in rats. *Xiao Chai Hu Tang* was found to accelerate the initial absorption rate, reduce the area under the plasma concentration-time curve, and decrease the overall bioavailability of tolbutamide. The mechanism of interaction was not related to hepatic metabolism.¹⁸
- **Ofloxacin:** In an open, random-crossover investigation study with seven volunteers, a single dose of ofloxacin and a one-week dose of *Xiao Chai Hu Tang* (Minor

Bupleurum Decoction) were given concurrently. Using high-performance liquid chromatography to evaluate the bioavailability of ofloxacin, it was determined that there is no significant effect on the rate or extent of bioavailability of ofloxacin when given concurrently with *Xiao Chai Hu Tang*.¹⁹

- **Interferon:** It has been reported that increased risk of acute pneumonitis may be associated with use of interferon, Sho-saiko-to [*Xiao Chai Hu Tang* (Minor Bupleurum Decoction)], 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 Sho-saiko-to, and 4.0% in those given both interferon-alpha and Sho-saiko-to. The herbs have not been shown to injure the lung tissues, but may over stimulate the neutrophils to release granulocytes elastase and oxygen radicals, which subsequently damage lung tissue. The fibroblasts that repair the damaged tissue may increase the risk of pulmonary fibrosis.^{20,21}

TOXICOLOGY

Chai Hu has very low toxicity. The LD₅₀ in mice is 1.19 g/kg via intraperitoneal injection for essential oil of *Chai Hu*, and 1.906 g/kg for saikosaponin.²²

SUPPLEMENT

There are two types of *Chai Hu*:

- **北柴胡 *Bei Chai Hu*** (Radix Bupleurum Chinensis), harvested in northern China, is generally used as the standard source for *Chai Hu*. It has an excellent ability to disperse stagnation and treat Liver qi stagnation accompanied by heat.
- **南柴胡 *Nan Chai Hu*** (Radix Bupleurum Scorzoneraefolium), harvested in southern China, has a milder overall function.

AUTHORS' COMMENTS

Optimal treatment of headache requires use of channel-guiding herbs to deliver the therapeutic effect of the herbs to the affected area. The following is a list of the commonly used channel-guiding herbs:

- **Taiyang channels:** *Qiang Huo* (Rhizoma et Radix Notopterygii)
- **Shaoyang channels:** *Chai Hu* (Radix Bupleuri)
- **Yangming channels:** *Bai Zhi* (Radix Angelicae Dahuricae)
- **Taiyin channels:** *Cang Zhu* (Rhizoma Atractylodis)
- **Shaoyin channels:** *Xi Xin* (Herba Asari)
- **Jueyin channels:** *Wu Zhu Yu* (Fructus Evodiae)

Chai Hu (Radix Bupleuri), *Chuan Xiong* (Rhizoma Ligustici Chuanxiong), *Qiang Huo* (Rhizoma et Radix

Chai Hu (Radix Bupleuri)

Notopterygii), *Bai Zhi* (Radix Angelicae Dahuricae), and *Gao Ben* (Rhizoma Ligustici) all treat headaches. According to Dr. Li Shou-Shan, the differences between these herbs are as follows:

- *Chai Hu* treats temporal headaches.
- *Chuan Xiong* is most effective for headaches related to menstruation.
- *Qiang Huo* is more specific to occipital headaches.
- *Bai Zhi* focuses on frontal headaches.
- *Gao Ben* is best for vertex headaches.

References

1. *Xian Dai Zhong Yao Yao Li Xue* (Contemporary Pharmacology of Chinese Herbs), 1997; 126-127
2. Yan X, Zhou J, Xie G, *Traditional Chinese Medicines Molecular Structures, Natural Sources and Applications*; Ashgate, 1999; 5660
3. *Shen Yang Yi Xue Yuan Xue Bao* (Journal of Shenyang University of Medicine), 1984; 1(3):214
4. *Zhong Yao Yao Li Yu Ying Yong* (Pharmacology and Applications of Chinese Herbs), 1983; 888
5. *Ibid.*
6. *Ibid.*
7. *Zhong Yi Yao Xue Bao* (Report of Chinese Medicine and Herbology), 1988; (1):45
8. *Zhong Yao Xue* (Chinese Herbology), 1998; 103:106
9. *Shang Hai Yi Ke Da Xue Xue Bao* (Journal of Shanghai University of Medicine), 1986; 13(1):20
10. *Zhong Yao Xue* (Chinese Herbology), 1998; 103:106
11. *Zhong Yi Za Zhi* (Journal of Chinese Medicine), 1985; 12:13
12. *Zhong Yao Xue* (Chinese Herbology), 1998; 105
13. *Xin Yi Yao Xue Za Zhi* (New Journal of Medicine and Herbology), 1974; 2:18
14. *Ibid.*, 2:28
15. *Zhong Yi Za Zhi* (Journal of Chinese Medicine), 1988; 2:62
16. *Pi Fu Bing Fang Zhi Yan Jiu Tong Xun* (Research Journal on Prevention and Treatment of Dermatological Disorders), 1979; 2:110
17. *Zhe Jiang Zhong Yi Xue Yuan Xue Bao* (Journal of Zhejiang University of Chinese Medicine), 1987; 6:52
18. *American Journal of Chinese Medicine*. 27(3-4):355-63, 1999
19. *International Journal of Clinical Pharmacology and Therapeutics*. 32(2):57-61, 1994 Feb.
20. Nakagawa A et al. Five cases of drug-induced pneumonitis due to Sho-saiko-to or interferon-alpha or both. *Nihon Kyobu Shikkan Gakkai Zasshi*. 1995 Dec;33(12):1361-1366
21. Murakami K et al. A possible mechanism of interstitial pneumonia during interferon therapy with sho-saiko-to. *Nihon Kyobu Shikkan Gakkai Zasshi*. 1995 Apr;33(4):389-94
22. *Yao Xue Tong Bao* (Report of Herbology), 1979; 14(6):252