

Gě Gēn Tāng (Kudzu Decoction)

葛根湯

葛根汤

Pinyin Name: *Ge Gen Tang*

Literal Name: Kudzu Decoction

Alternate Names: *Ko Ken Tang*, Pueraria Decoction, Pueraria Combination

Original Source: *Shang Han Lun* (Discussion of Cold-Induced Disorders) by Zhang Zhong-Jing in the Eastern Han Dynasty

COMPOSITION

<i>Ge Gen</i> (Radix Puerariae Lobatae)	12g
<i>Ma Huang</i> (Herba Ephedrae)	9g
<i>Gui Zhi</i> (Ramulus Cinnamomi)	6g
<i>Bai Shao</i> (Radix Paeoniae Alba)	6g
<i>Zhi Gan Cao</i> (Radix et Rhizoma Glycyrrhizae Praeparata cum Melle)	6g
<i>Sheng Jiang</i> (Rhizoma Zingiberis Recens), <i>qie</i> (sliced)	9g
<i>Da Zao</i> (Fructus Jujubae), <i>bo</i> (opened)	12 pieces [3 pieces]

DOSAGE / PREPARATION / ADMINISTRATION

The source text states to cook *Ma Huang* (Herba Ephedrae) and *Ge Gen* (Radix Puerariae Lobatae) first with 10 cups [2,000 mL] of water until 8 cups [1,400 mL] of the liquid remain. Remove the foam from the top, add in the other ingredients, and cook until the liquid is reduced to 3 cups [600 mL]. Take 1 cup [200 mL] of the strained decoction while warm to promote mild sweating.

CHINESE THERAPEUTIC ACTIONS

1. Releases the exterior and muscle layer
2. Promotes generation of body fluids

CLINICAL MANIFESTATIONS

Taiyang syndrome with wind-cold invasion: severe muscle stiffness of the neck and back, aversion to cold, with or without fever, aversion to wind, absence of perspiration, and diarrhea.

CLINICAL APPLICATIONS

Fever, common cold, influenza, infectious parotitis, upper respiratory tract infection, allergic rhinitis, chronic rhinitis, neck and shoulder stiffness and pain, periartthritis of shoulder, tendonitis or bursitis of the shoulders, soft tissues injuries, facial paralysis, Bell's palsy, meningitis, encephalitis, tension headache, scleroderma, urticaria, painful gynecomastia in liver cirrhosis, aqueous flare elevation after complicated cataract surgery, and diarrhea.

EXPLANATION

Ge Gen Tang (Kudzu Decoction) treats *taiyang* syndrome with wind-cold invasion. In comparison to the symptoms and conditions applicable to *Ma Huang Tang* (Ephedra

Decoction) and *Gui Zhi Tang* (Cinnamon Twig Decoction), the distinguishing symptom for the use of this formula is the severe stiffness and pain in the neck and back. The severe neck stiffness and pain are caused by cold constriction, and lack of body fluids which fail to nourish the muscle layer. Other signs and symptoms of *taiyang* syndrome with wind-cold invasion include fever, aversion to cold, aversion to wind, and absence of perspiration.

Ge Gen Tang is formulated by adding *Ge Gen* (Radix Puerariae Lobatae) and *Ma Huang* (Herba Ephedrae) to *Gui Zhi Tang* (Cinnamon Twig Decoction). *Ge Gen* (Radix Puerariae Lobatae), however, acts as the chief herb. It promotes generation of body fluids and relieves muscle stiffness. *Ma Huang* (Herba Ephedrae) and *Gui Zhi* (Ramulus Cinnamomi) release wind and cold from the exterior. Also, the sweet and acrid properties of *Gui Zhi* (Ramulus Cinnamomi) help to relieve body aches and pains. *Bai Shao* (Radix Paeoniae Alba), the deputy herb, consolidates the interior (yin and body fluids) of the body. Used together, *Gui Zhi* (Ramulus Cinnamomi) and *Bai Shao* (Radix Paeoniae Alba) harmonize qi at the *wei* (defensive) and *ying* (nutritive) levels. *Zhi Gan Cao* (Radix et Rhizoma Glycyrrhizae Praeparata cum Melle) serves as both an auxiliary and envoy herb. As an auxiliary herb, it relieves aches and pains and promotes the production of body fluids; as an envoy herb, it harmonizes the formula. *Sheng Jiang* (Rhizoma Zingiberis Recens) helps *Gui Zhi* (Ramulus Cinnamomi) to dispel exterior wind-cold. *Da Zao* (Fructus Jujubae) tonifies deficient qi and body fluids.

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Diagnosis	Signs and Symptoms	Treatment	Herbs
Taiyang syndrome with wind-cold invasion	<ul style="list-style-type: none"> • Neck stiffness and pain: cold constriction and lack of body fluids • Fever, aversion to cold, aversion to wind, and absence of perspiration: taiyang syndrome with exterior wind-cold 	<ul style="list-style-type: none"> • Releases the exterior and muscle layer • Promotes generation of body fluids 	<ul style="list-style-type: none"> • <i>Ge Gen</i> (Radix Puerariae Lobatae) promotes generation of body fluids and relieves muscle stiffness. • <i>Ma Huang</i> (Herba Ephedrae) and <i>Gui Zhi</i> (Ramulus Cinnamomi) release wind and cold from the exterior. • <i>Gui Zhi</i> (Ramulus Cinnamomi) and <i>Bai Shao</i> (Radix Paeoniae Alba) harmonize <i>wei</i> (defensive) and <i>ying</i> (nutritive) levels. • <i>Zhi Gan Cao</i> (Radix et Rhizoma Glycyrrhizae Praeparata cum Melle) relieves aches and pains and promotes the production of body fluids. • <i>Sheng Jiang</i> (Rhizoma Zingiberis Recens) dispels exterior wind and cold. • <i>Da Zao</i> (Fructus Jujubae) tonifies deficient qi and body fluids.

MODIFICATIONS

- For nausea and vomiting caused by reversed flow of Stomach qi, add *Ban Xia* (Rhizoma Pinelliae) and *Fu Ling* (Poria).
- If there are signs of fever and thirst, add *Zhi Mu* (Rhizoma Anemarrhenae) and *Shi Gao* (Gypsum Fibrosum).
- If accompanied by severe pain of the shoulders, add *Fu Ling* (Poria), *Bai Zhu* (Rhizoma Atractylodis Macrocephalae) and *Fu Zi* (Radix Aconiti Lateralis Praeparata).
- For abdominal pain and diarrhea with burning sensations, add *Huang Qin* (Radix Scutellariae) and *Huang Lian* (Rhizoma Coptidis).
- When there is itching of the skin, add *Jiang Can* (Bombyx Batryticatus).

CAUTIONS / CONTRAINDICATIONS

Please refer to *Ma Huang Tang* (Ephedra Decoction).

PHARMACOLOGICAL EFFECTS

1. **Antibacterial:** According to *in vitro* studies, *Ge Gen Tang* demonstrated an inhibitory effect against *E. coli* and *Staphylococcus aureus*, but only at high concentration.¹
2. **Antiviral:** One study reported marked effectiveness using *Ge Gen Tang* to treat mice with early stage of influenza infection. The dose of the formula was 5.0 mg per mouse three times daily. The mechanism of this action was attributed to significant enhancement of interleukin-12 correlated with the reduction of virus yields in bronchoalveolar lavage fluid in the early phase of infection.²
3. **Antipyretic:** Administration of *Ge Gen Tang* effectively reduced fever in mice infected with influenza virus. The

mechanism of the antipyretic effects was attributed to the suppression of interferon-induced interleukin-1-alpha production.³

4. **Anti-inflammatory:** Oral administration of *Ge Gen Tang* was associated with inhibition of the inflammatory processes in both the early exudative stage and the late proliferative stage. This study stated *Ge Gen Tang* was useful in treating stomatitis, tonsillitis, cold and chronic inflammatory diseases.⁴
5. **Cardiovascular:** In anesthetized dogs and cats, intravenous injection of *Ge Gen Tang* at 0.25-0.5 g/kg was associated with dilation of the blood vessels and increased blood perfusion to the brain. The duration of action was approximately one hour.⁵
6. **Chronotropic and inotropic:** *Ge Gen Tang* has positive chronotropic and inotropic effects via direct stimulation of the beta-adrenoceptor and/or the norepinephrine released from postganglionic nerve terminals in the heart.⁶
7. **Immunostimulant:** Continuous administration of extract of *Ge Gen Tang* in mice was associated with a significant influence to the immune system. Increase in phagocytic activity of the immune cells was observed in mice with suppressed immune system. However, a suppression of the immune response was observed in mice with hyperactive immune system.^{7,8} In another study involving 10 subjects, use of *Ge Gen Tang* daily was associated with an increase of natural killer (NK) cells.⁹
8. **Hepatoprotective:** *Ge Gen* (Radix Puerariae Lobatae), the main ingredient in *Ge Gen Tang*, inhibited the elevation of alanine aminotransferase (ALT) activity at the dose of 90 mcg/mL in rats with immunological liver injury.

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The antihepatotoxic activity was attributed primarily to soyasaponin I and kudzusaponin, the representative saponins.¹⁰

CLINICAL STUDIES AND RESEARCH

- Fever:** One hundred and ten children with fever were effectively treated with modified *Ge Gen Tang*. The study reported reduction of body temperature in 66 cases (60%) after 1 dose, 43 cases (39%) after 2 doses, and 1 case (0.9%) after 3 doses. Minor modifications to the original formula were made based on the clinical manifestations of the patients.¹¹
- Upper respiratory tract infection:** In one study, *Ge Gen Tang* demonstrated a rate of effectiveness of approximately 80% in releasing the pathogenic factor from the exterior. The main improvements were seen in runny nose, sneezing, and aversion to cold.¹²
- Meningitis:** Thirteen patients with infectious meningitis were treated with *Ge Gen Tang* with complete recovery in all cases. Resolution of symptoms and signs range from 40 hours to 15 days. No complications were reported.¹³ It has also been reported that this formula is also effective in treating encephalitis, though treatment must begin within the first two days.¹⁴
- Neck and shoulder pain:** Seventy patients with neck and shoulder disorders were treated with a modified *Ge Gen Tang* with complete recovery in 9 cases, significant improvement in 30 cases, moderate improvement in 29 cases, and no improvement in 2 cases. *Ge Gen Tang* was modified by increasing the doses of *Ge Gen* (*Radix Puerariae Lobatae*) and *Gui Zhi* (*Ramulus Cinnamomi*).¹⁵ Another study reported a 94% rate of effectiveness using modified *Ge Gen Tang* to treat 50 patients between 40-60 years of age, with neck and shoulder pain with history of illness ranging from 5 days to 10 years. The duration of treatment ranged from 30-50 days. Of 50 patients, the study reported complete recovery in 16 cases, significant improvement in 25 cases, moderate improvement in 6 cases, and no benefit in 3 cases.¹⁶
- Periarthritis of shoulder:** Forty-eight patients with periarthritis of the shoulder was treated for 10-20 days with complete recovery in 34 cases, significant improvement in 8 cases, and no benefit in 6 cases. The herbal treatment contained *Ge Gen Tang* plus *Xi Xin* (*Radix et Rhizoma Asari*), *Qiang Huo* (*Rhizoma et Radix Notopterygii*), *Fang Feng* (*Radix Saposhnikovia*) and others.¹⁷
- Soft tissues injuries:** One study reported a 96.88% rate of effectiveness using modified *Ge Gen Tang* to treat soft tissues injuries in 32 patients (25 males and 7 females), between 10-55 years of age, and 1 hour to 1½ year history of illness. The herbal treatment consisted of *Ge Gen Tang*, with the dose of *Ge Gen* (*Radix Puerariae Lobatae*) increased to 50g. Of 32 patients, the study reported complete recovery in 19 cases, significant improvement in 12 cases, and no benefit in 1 case.¹⁸
- Facial paralysis:** Use of modified *Ge Gen Tang* was associated with varying degrees of improvement to complete recovery in all 216 patients with facial paralysis. The herbal treatment contained *Ge Gen Tang* plus *Bai Fu Zi* (*Rhizoma Typhonii*), *Jiang Can* (*Bombyx Batryticatus*), *Quan Xie* (*Scorpio*), and others as needed. The herbs were given in decoction daily, for 5 packs of herbs per course of treatment. The duration of treatment ranged from 5-35 packs of herbs.¹⁹ Another study reported 97.67% effectiveness in treating 86 patients with facial paralysis. The herbal treatment contained *Ge Gen Tang* plus *Qian Zheng San* (Lead to Symmetry Powder), with addition of *Fu Ling* (*Poria*) and *Cang Zhu* (*Rhizoma Atractylodis*) for presence of dampness; and addition of *Chai Hu* (*Radix Bupleuri*) and *Huang Qin* (*Radix Scutellariae*) for fever. After 3-5 packs of herbs and induction of perspiration, the herbal treatment was modified by adding *Hong Hua* (*Flos Carthami*), *Dang Gui* (*Radix Angelicae Sinensis*) and *Huang Qi* (*Radix Astragali*); and eliminating *Ma Huang* (*Herba Ephedrae*), *Gui Zhi* (*Ramulus Cinnamomi*), *Qiang Huo* (*Rhizoma et Radix Notopterygii*) and *Ge Gen* (*Radix Puerariae Lobatae*). Upon stabilization and during the recovery phase, the herbal treatment was switched to *Shi Quan Da Bu Tang* (All-Inclusive Great Tonifying Decoction) for consolidation and maintenance. Of 86 patients, the study reported complete recovery in 79 cases, improvement in 5 cases, and no benefit in 2 cases.²⁰
- Bell's palsy:** Seventy-eight patients with Bell's palsy were treated with *Ge Gen Tang* with marked effectiveness. The study reported a 53.8% rate of effectiveness (42 of 78 patients) within 5 doses.²¹
- Tension headache:** Powdered extract of *Ge Gen Tang* at 7.5 g/day, given in three equally-divided doses, was 80% effective in treating tension headache.²²
- Scleroderma:** Use of modified *Ge Gen Tang* in 7 patients with scleroderma was associated with near-recovery in 5 cases and improvement in 2 cases. The herbal treatment contained *Ge Gen* (*Radix Puerariae Lobatae*) 30-60g, *Gui Zhi* (*Ramulus Cinnamomi*) 10-20g, *Ma Huang* (*Herba Ephedrae*) 6-10g, *Sheng Jiang* (*Rhizoma Zingiberis Recens*) 6-10g, *Bai Shao* (*Radix Paeoniae Alba*) 15-30g, *Gan Cao* (*Radix et Rhizoma Glycyrrhizae*) 15-30g, and *Da Zao* (*Fructus Jujubae*) 15-30g. The doses of herbs were adjusted to achieve mild perspiration after administration of the decoction. The duration of treatment was 15 days per course, for 4 courses total.²³
- Painful gynecomastia in liver cirrhosis:** One study reported marked success using *Ge Gen Tang* to treat 4 patients with liver cirrhosis who complained of painful

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gynecomastia. After oral ingestion of *Ge Gen Tang*, relief of pain was reported in 3 patients in one week, and 1 patient in 4 weeks. The palpable induration diminished or disappeared, but the size of gynecomastia did not change significantly on mammography. Serum levels of estrogen, progesterone, testosterone, and other sex hormones were not affected by the herbs. The study suggested that *Ge Gen Tang* could be used for painful gynecomastia that is occasionally seen in cirrhotic patients.²⁴

- 12. Cataract surgery:** Use of *Ge Gen Tang* and *Huang Lian Jie Du Tang* (Coptis Decoction to Relieve Toxicity) was found to help reduce aqueous flare elevation after complicated cataract surgery. The treatment protocol was to administer powdered extract of *Ge Gen Tang* (7.5 g/day) and *Huang Lian Jie Du Tang* (Coptis Decoction to Relieve Toxicity) (7.5 g/day) for 3 days before surgery, the day of surgery, and for 7 days after surgery. In comparison to the control group that did not receive any herbs, oral administration of these two formulas was effective in decreasing aqueous flare elevation after small-incision cataract surgery.²⁵ Another study also reported that *Ge Gen Tang* reduced aqueous flare elevation after surgery for complicated cataract. The treatment protocol was to administer the herbs in granules, 7.5g daily for 3 days before surgery, the day of surgery, and for 7 days after surgery. Diclofenac eyedrops were also used in all patients.²⁶

HERB-DRUG INTERACTION

Acetaminophen: One study evaluated the pharmacokinetics of acetaminophen under co-administration of *Ge Gen Tang* in human volunteers. The pharmacokinetic parameters were calculated from the blood acetaminophen concentration-time curves. No significant differences were noted between the group that received only acetaminophen and the group that received both acetaminophen and *Ge Gen Tang*.²⁷

TOXICOLOGY

Ge Gen Tang is relatively safe, even at a high dosage. No side effects or toxicities were observed following oral administration of this formula at 2.5 g/kg in mice. Furthermore, adverse reactions were not observed following oral administration of this formula to mice at a dosage equivalent to seventeen times the normal adult human dose.²⁸ In humans, administration of this formula in extract at 7.5 g/day was associated with mild nausea, vomiting, fatigue and constipation.²⁹

RELATED FORMULAS

Jīng Fāng Yī Hàò (Neck Formula One)

頸方一號

颈方一号

Pinyin Name: *Jing Fang Yi Hao*

Literal Name: Neck Formula One

Original Source: *Tian Jin Zhong Yi Xue Yuan* (Tianjin University of Chinese Medicine) in 1989

Ge Gen (Radix Puerariae Lobatae)

Bai Shao (Radix Paeoniae Alba)

Gan Cao (Radix et Rhizoma Glycyrrhizae)

Chuan Xiong (Rhizoma Chuanxiong)

Dang Gui (Radix Angelicae Sinensis)

Hong Hua (Flos Carthami)

Wei Ling Xian (Radix et Rhizoma Clematidis)

Qiang Huo (Rhizoma et Radix Notopterygii)

Yan Hu Suo (Rhizoma Corydalis)

This formula treats acute and severe neck and shoulder pain. It contains herbs to activate qi and blood circulation, dispel qi and blood stagnation, open the channels and collaterals, and relieve pain.

Jīng Fāng Èr Hàò (Neck Formula Two)

頸方二號

颈方二号

Pinyin Name: *Jing Fang Er Hao*

Literal Name: Neck Formula Two

Original Source: *Tian Jin Zhong Yi Xue Yuan* (Tianjin University of Chinese Medicine) in 1989

Ge Gen (Radix Puerariae Lobatae)

Bai Shao (Radix Paeoniae Alba)

Gan Cao (Radix et Rhizoma Glycyrrhizae)

Chuan Xiong (Rhizoma Chuanxiong)

Dang Gui (Radix Angelicae Sinensis)

Hong Hua (Flos Carthami)

Lu Lu Tong (Fructus Liquidambaris)

Dan Shen (Radix et Rhizoma Salviae Miltiorrhizae)

Di Gu Pi (Cortex Lycii)

Mu Gua (Fructus Chaenomelis)

Chuan Niu Xi (Radix Cyathulae)

Qiang Huo (Rhizoma et Radix Notopterygii)

Qin Jiao (Radix Gentianae Macrophyllae)

Sang Ji Sheng (Herba Taxilli)

Wu Jia Pi (Cortex Acanthopanax)

Xu Duan (Radix Dipsaci)

Di Huang (Radix Rehmanniae)

Tao Ren (Semen Persicae)

Yan Hu Suo (Rhizoma Corydalis)

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This formula treats chronic neck and shoulder pain. It contains herbs to activate qi and blood circulation, dispel qi and blood stagnation, and open the channels and collaterals. In addition, this formula contains many herbs to nourish Liver and Kidney yin to strengthen the soft tissues and facilitate recovery.

AUTHORS' COMMENTS

Historically, *Ge Gen Tang* has been used for *taiyang* syndrome with wind-cold, and accompanied by stiffness of the neck and shoulders. Today, it is commonly used to treat neck and shoulder stiffness and pain associated with musculoskeletal injuries, with or without *taiyang* syndrome or wind-cold condition. For best results, combine *Ge Gen Tang* with *Shao Yao Gan Cao Tang* (Peony and Licorice Decoction) to treat neck and shoulder stiffness and pain.

Ge Gen Tang can be used at a low dose to complement the effects of *Qi Bao Mei Ran Dan* (Seven-Treasure Special Pill for Beautiful Whiskers) for hair growth. It helps guide the effects of *Qi Bao Mei Ran Dan* upward by relaxing the muscles around the neck, so that the tonic herbs can reach and nourish the scalp area directly.

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