

BAKED LICORICE FORMULA ZHI GAN CAO TANG

ORIGINS: Zhang Zhongjing (150-219 CE) and first published in *Qian Ji Yi*, a supplement to Zhang's *Jin Gui Yao Lue*.

Baked Licorice Formula (*Zhi Gan Cao Tang*), also known as “Restore the Pulse Decoction” (*Fu Mai Tang*), is from the Eastern Han dynasty, attributed to Zhang Zhongjing and first published in the *Qian Ji Yi*, a supplement to Zhang's *Jin Gui Yao Lue* (*Essential Prescriptions from the Golden Cabinet*).

GENERAL SIGNS/SYMPTOMS

The classical pattern addressed by **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is “qi and yin deficiency taxing the heart.” This can arise from exhaustion due to overwork, or long-term stress that depletes the reserves of the central nervous system. Qi and yin deficiency taxing the heart manifests as a “knotted pulse” (*jié mài*), a slow pulse that misses beats at irregular intervals; or an “intermittent pulse” (*dài mài*), a moderate pulse that misses beats at regular intervals. Zhang Zhongjing considered sweating, palpitations, and chest oppression common symptoms of this pattern.

Currently, **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is commonly used for treating cardiovascular diseases such as: angina pectoris, arrhythmia, atrial flutter, atrial fibrillation, cardiac insufficiency, cardiomyopathy, coronary heart disease, hypertensive heart disease, myocarditis, pulmonary heart disease, rheumatic heart disease, etcetera. Primary symptoms include an irregular pulse along with palpitations and often anxiety. Other key signs and symptoms for **Baked Licorice Formula** (*Zhi Gan Cao Tang*) include: shortness of breath, irritability, weakness, and insomnia. Secondary signs and symptoms include: spontaneous sweating or night sweating, constipation, dry mouth, dry throat, and dry skin. The tongue will be pale and shiny. The abdomen upon palpation will show epigastric focal distention, epigastric pulsations, rectus abdominis tension/hypertonicity, and a soft lower abdomen. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is also used to treat lung atrophy and lung consumption. Symptoms are cough with little to no sputum, frothy or blood-tinged sputum, shortness of breath, spontaneous sweating, difficulty breathing, and a thin, rapid pulse.

ACTIONS

1. Nourishes heart blood and enriches heart yin

2. Supplements heart qi

3. Warms heart yang

4. Harmonizes ying and wei

5. Rescues and restores the pulse

INGREDIENTS

PINYIN	LATIN	ENGLISH	PERCENT OF FORMULA
<i>Sheng Di Huang</i>	<i>Rehmanniae Radix</i>	Rehmannia, unprocessed	28.0%
<i>Hong Da Zao</i>	<i>Jujubae Fructus</i>	Jujube Date, red	13.0%
<i>Zhi Gan Cao</i>	<i>Glycyrrhizae Radix Preparata</i>	Chinese Licorice Root, honey-baked	12.0%
<i>Gui Zhi</i>	<i>Cinnamomi Ramulus</i>	Cassia Twig, Chinese Cinnamon	10.0%
<i>Mai Men Dong</i>	<i>Ophiopogonis Radix</i>	Ophiopogon Tuber	8.0%
<i>Sheng Jiang</i>	<i>Zingiberis Rhizoma Recens</i>	Ginger, fresh	8.0%
<i>Zhi He Shou Wu</i>	<i>Polygoni Multiflori Radix</i>	Prepared Polygonum Root	7.0%
<i>Shu Di Huang</i>	<i>Rehmanniae Radix Preparata</i>	Rehmannia, cured	6.0%
<i>Bai He</i>	<i>Lilii Bulbus</i>	Lily Bulb	4.0%
<i>Ren Shen</i>	<i>Ginseng Radix</i>	Asian Ginseng Root	4.0%

GENERAL INDICATIONS / MODERN APPLICATIONS

- Angina
- Anxiety
- Arrhythmia
- Atrial Fibrillation
- Body Fluid, damage to, from illness
- Bradycardia
- Cardiac insufficiency
- Cardiomyopathy
- Constipation
- Coronary heart disease
- Cough, dry and weak
- Depression
- Dry mouth and throat
- Dyspnea
- Edema
- Emaciation
- Fainting and disorientation
- Fatigue
- Hypertensive heart disease
- Hyperthyroidism
- Hypotension
- Insomnia
- Irritability
- Lung atrophy
- Myocardial infarction, sequella of
- Myocarditis, sequella of
- Neurasthenia
- Night sweats
- Palpitations
- Pulmonary heart disease
- Rheumatic heart disease
- Sputum, frothy
- Sudden Turmoil Disorder, recovery from
- Sweating, spontaneous or nocturnal
- Tachycardia
- Weight loss, unintended

FORMULA ACTIONS

- Nourishes heart blood and enriches heart yin
- Supplements heart qi
- Warms heart yang
- Harmonizes *ying* and *wei*
- Rescues and restores the pulse

TONGUE

Pale and shiny.

PULSE

Knotted, or intermittent. May also be thin and forceless. In the lung atrophy pattern, pulse may be thin and rapid.

CONTRAINDICATIONS /**CAUTIONS**

Use with caution in cases with deficiency heat or severe diarrhea.

DOSAGE

Two tablets, three times per day.

FORMULA DISCUSSION

Baked Licorice Formula (*Zhi Gan Cao Tang*) is the primary formula for treating cardiac weakness due to “deficiency taxation and insufficiency.” According to Zhang Zhongjing, there is a deficiency of yin fluids, blood, and yang in the heart making it challenging for the heart to pump blood with regular rhythm and govern the *shen* (spirit). Fluids, blood, and yang qi are all insufficient in this pattern. Classically, the most common manifestations are palpitations and an irregular pulse. Very commonly there will be **Cinnamon Twig Formula** (*Gui Zhi Tang*) type deficiency sweating and *shen* disturbance. In modern times, **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is used to treat cardiac disorders and *shen* disturbances in patterns where there is generalized weakness and insufficient blood and/or fluids.

Typically, this “taxation and insufficiency” of the heart arises when a patient with qi and blood deficiency contracts an external pathogen. Often there is congenital constitutional weakness, but the pattern can also develop from deep exhaustion after prolonged stress or overwork. Sweating is a common manifestation of this pattern because the qi and blood have become so depleted that they can no longer maintain the proper relationship between *ying* and *wei* qi and the heart can no longer control the sweat. If there is a cardiac issue or *shen* disturbance and the pulse is irregular and weak or thin, **Baked Licorice Formula** (*Zhi Gan Cao Tang*) will be able to help.

A second category of disease pattern addressed by **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is “lung atrophy”. This is a pattern of advanced lung yin deficiency where there is a weak, rapid pulse and cough with shortness of breath. Typical yin deficiency signs and symptoms are likely to accompany this pattern, such as dryness and abnormal sweating (both spontaneous and nocturnal). The damage to the body fluids may also present as constipation.

SYNERGY OF INGREDIENTS

Baked Licorice Formula (*Zhi Gan Cao Tang*) is a modern version of **Cinnamon Twig Formula** (*Gui Zhi Tang*) that Zhang Zhongjing formulated to treat cardiac weakness with sweating, chest oppression, *shen* disturbance, palpitations, and an irregular pulse. Because this pattern was seen by Zhang to be caused by an exogenous cold invasion in a person who was already deficient in *wei* qi and *ying* fluids, he built the formula upon **Cinnamon Twig Formula** (*Gui Zhi Tang*), and then augmented it to support the heart. **Cinnamon Twig Formula** (*Gui Zhi Tang*) consists of five substances: cinnamon twig (*gui zhi*), white peony (*bai shao*), fresh ginger (*sheng jiang*), red jujube date (*da zao/hong zao*), and honey-baked licorice root (*zhi gan cao*). All of these except white peony (*bai shao*) are included in **Baked Licorice Formula** (*Zhi Gan Cao Tang*) to harmonize *ying* and *wei* levels.

Wei qi is derived from yang qi; *ying* fluids are derived from blood. Therefore, if a *ying* and *wei* deficiency becomes more severe, it will involve the yang qi and blood. In the **Baked Licorice Formula** (*Zhi Gan Cao Tang*) pattern, the problem lies deeper than just a dysregulation of the surface because the heart is affected and requires support. White peony (*bai shao*) is a liver blood herb and does not nourish the heart or replenish fluids and so it is replaced by Zhang with rehmannia (*sheng di huang*), ophiopogon (*mai men dong*), asini (*e jiao*) and cannabis seed (*ma ren*). [See below for why asini (*e jiao*) and cannabis seed (*ma ren*) are not a part of the present formula and the substances used to replace it.] Zhang also adds a bit of ginseng (*ren shen*) to the **Cinnamon Twig Formula** (*Gui Zhi Tang*) base.

Ginseng (*ren shen*) with red jujube date (*da zao/hong zao*), honey-baked licorice root (*zhi gan cao*), and cinnamon twig (*gui zhi*) supplement the qi, support the heart, and

revitalize yang. Of these four substances, cinnamon twig (*gui zhi*) and honey-baked licorice root (*zhi gan cao*) enter the heart *zang* and guide the formula's effects to assist the heart. Cinnamon twig (*gui zhi*) assists the heart yang and also warms and unblocks the chest. It can revitalize the heart yang, while honey-baked licorice root (*zhi gan cao*) is moistening and strongly supplements both heart and spleen qi. Ginseng (*ren shen*), though not entering the heart directly, is nevertheless used to "benefit the heart qi." It strengthens the heart qi to help it govern the *shen* and, with red jujube date (*da zao/hong zao*), strengthens the middle burner to support qi and blood production. Fresh ginger (*sheng jiang*) warms the middle burner, compensates for the cloying properties of the two rehmannias, and combines synergistically with red jujube date (*hong da zao*) to regulate the *ying* and *wei* levels. It is important to attend to the *ying* and *wei* levels here because, even though we are dealing with a deeper level of pathogenic penetration, the *ying* and *wei* levels are still in disharmony and protection against external invasion still requires reinforcement.

Rehmannia (*sheng di huang*) and ophiopogon (*mai men dong*) both enter the heart and nourish yin and fluids. The high percentage of rehmannia (*sheng di huang*) in this formula reflects the precedence given to nourishing yin and generating fluids in the strategy. Rehmannia (*sheng di huang*) combined with honey-baked licorice root (*zhi gan cao*) is said to "fill the vessels with qi and fluids," which helps restore the pulse to normal rhythms. Ophiopogon (*mai men dong*) on its own is said to restore fluid in the vessels. It also "governs heart qi insufficiency" when there are palpitations. Remember that qi travels on fluids. *Wei* qi is carried on the thin (*jin*) fluids; *ying* qi travels with the blood, and *yuan* qi resides in the *jing*. So when the yin fluids and blood of the heart are insufficient, the qi of the heart is weakened, and normal rhythm cannot be maintained. That is why the emphasis of this formula is on generating fluids and nourishing yin.

Zhang's original formulation contained asini (*e jiao*) and cannabis seed (*ma ren*). This modern adaptation is made with substitutes for these two ingredients. The first, asini (*e jiao*), is an animal product and as such is often removed from formulas used by practitioners who wish to keep their products free of animal substances. The second, cannabis seed (*ma ren*), is typically omitted in order to avoid any controversy or impediment to shipping or prescribing. Additionally, sometime after Zhang's lifetime, cannabis seed (*ma ren*) came to be contraindicated in long-term use because it was believed to lead to unsecured qi (qi loss) and possibly even damage blood vessels.ⁱ

In the version under present discussion, the cannabis seed (*ma ren*) is replaced with prepared polygonum root (*zhi he shou wu*). The function of cannabis seed (*ma ren*) in the original **Baked Licorice Formula** (*Zhi Gan Cao Tang*) is primarily to generate yin fluid in the blood. It accomplishes this by regulating and moistening the bowel, which is a major *fu* organ for governing the water through reabsorption, because the water that is absorbed through the large intestine reaches the bloodstream sooner. Prepared polygonum root (*zhi he shou wu*) nourishes yin and blood and moistens the bowel. In contrast to cannabis seed (*ma ren*), prepared polygonum root (*zhi he shou wu*) actually secures the essence and is safe for long-term use. The fluid-generating properties of cannabis seed (*ma ren*), are more than adequately addressed by rehmannia (*sheng di huang*) and ophiopogon (*mai men dong*). The role of asini (*e jiao*) in Zhang's original formulation was essentially to accomplish the same supplementation in the upper burner that cannabis seed (*ma ren*) handled in the lower and middle burners. But where the emphasis of cannabis seed (*ma ren*) was fluid over blood, the actions of asini (*e jiao*) favor blood over fluid. In the present formulation, this role is played by combining rehmannia (*sheng di huang*) with prepared rehmannia (*shu di huang*). Both of these enter the heart. Rehmannia (*sheng di huang*) is very effective at generating fluids. Prepared rehmannia (*shu di huang*) is considered the strongest herb for nourishing blood and is an essential substance in stabilizing the *shen* when an exhausted heart cannot sufficiently contain and govern it.

One more substance is added in the present formulation to assure that the actions of both asini (*e jiao*) and cannabis seed (*ma ren*) are fully accounted for (and surpassed). Lily bulb (*bai he*) enters both *zang* organs of the chest. It is sweet so that it nourishes and moistens and slightly bitter so that it enters the heart, from which it drains heat. It also facilitates the passage of stool and urine. Zhang Zhongjing, in his other book, the *Jin Gui Yao Liu* (*Essential Prescriptions from the Golden Cabinet*), characterized the actions of lily bulb (*bai he*) as reaching the *ying* level of the heart and the *wei* level of the lungs and capable of settling *shen* that has been disturbed by exogenous pathogens in a deficient constitution. It is an important substance for nourishing yin and fluids in the chest and draining residual heat.

MODERN APPLICATIONS

Angina pectoris – A study was conducted with the objective to observe the clinical efficacy of modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) in the treatment of stable angina pectoris with a Chinese medicine diag-

nosis of qi and yin deficiency. 30 patients were enrolled in the study. The course of treatment was six weeks. Changes in clinical symptoms before and after treatment were monitored, as well as nitroglycerin frequency and amount, and ischemic electrocardiogram observation. The results showed that modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) can reduce clinical symptoms of patients with stable angina pectoris. It was shown to lower or stop nitroglycerin use. Of the 30 cases, six cases (20%, of patients) discontinued nitroglycerin use, 13 cases (43.33%) showed a reduction, and five cases (16.67%) were unchanged. The results also showed improvement in ischemic electrocardiogram. Electrocardiogram efficiency results are as follows: 13.33% were deemed significantly effective, 46.67% were deemed effective, and 40% had no effect.ⁱⁱ

Arrhythmia – Baked Licorice Formula (*Zhi Gan Cao Tang*) has long been used to treat arrhythmia. The majority of modern research on **Baked Licorice Formula** (*Zhi Gan Cao Tang*) addresses the treatment of arrhythmia. The most common situations, as defined by electrocardiogram (ECG), include premature ventricular contractions, premature atrial contractions, and atrial fibrillation. A meta-analysis showed that clinically, the most common diseases associated with arrhythmia when using **Baked Licorice Formula** (*Zhi Gan Cao Tang*) for treatment include coronary heart disease, viral myocarditis, and rheumatic heart disease.ⁱⁱⁱ

A study was conducted to observe and analyze the clinical therapeutic effect of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) for the treatment of arrhythmia. 100 patients diagnosed with arrhythmia by 24-hour dynamic electrocardiogram were selected and randomly divided into two equal groups. The observation group was given modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and the control group was given a conventional Western medicine treatment using amiodarone, a pharmaceutical drug used to treat and prevent a number of different types of irregular heartbeats. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was modified, with herbs added as follows: for blood stasis, salvia (*dan shen*) and ligusticum (*chuan xiong*); for yin deficiency with edema, aconite (*fu zi*) and atractylodes (*bai zhu*); for dizziness, chrysanthemum (*ju hua*) and ligusticum (*chuan xiong*); for insomnia and palpitations, jujube seed (*suan zao ren*) and fossilized mineral (*long gu*); for qi deficiency, astragalus (*huang qi*); for phlegm and cough, outer tangerine peel (*ju hong*) and tangerine peel (*chen pi*); for excessive sweating, schisandra (*wu wei zi*); for increased nocturia, alisma (*ze xie*). The treatment course was three months. The results

showed 62% were deemed markedly effective, 32% were deemed to be effective, and 6% were deemed to have no significant effect; a total effectiveness rate for the observation group was 94%. For comparison the total effectiveness rate of the control group was 72%. The incidence of adverse reactions was significantly lower in the observation group than that of the control group.^{iv}

Coronary Heart Disease – Modern research of Baked Licorice Formula (*Zhi Gan Cao Tang*) specifically addresses the treatment of arrhythmia caused by coronary heart disease (CHD). In one study, **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was used for the treatment of 48 cases of arrhythmia in coronary heart disease. Modifications were made with the following herbs added based on pattern differentiation: for heart yang deficiency with agitation and fatigue, codonopsis (*dang shen*), American ginseng (*xi yang shen*), and aconite (*zhi fu zi*); for water insulting heart with edema, poria (*fu ling*), lepidium seed (*ting li zi*); for qi stagnation with chest distress, melon stalk (*gua di*) and chives (*xie bai*); for yin deficient heat, anemarrhena rhizome (*zhi mu*) and phellodendron bark (*huang bai*); for insomnia, jujube seed (*suan zao ren*) and polygala (*yuan zhi*). The treatment course was 20 days. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was shown to improve coronary ischemia, improve myocardial hypoxia tolerance, and have an anti-arrhythmia effect. The treatment results showed out of the 48 cases, 28 cases were deemed cured, 16 cases showed good effect, and four cases had no effect; a total effectiveness rate of 91.6%.^v

Hypertension with Atrial Fibrillation – Another study was conducted to investigate the clinical effects of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) in the treatment of hypertension with persistent atrial fibrillation. 88 patients were randomly divided into two groups. The experimental group was prescribed **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and the control group was treated with valsartan, a drug primarily used to address hypertension and congestive heart failure. The left atrial functions before and after treatment were compared as well as the relapse rate. There was no significant difference in left atrial function between the two groups. However, the relapse rate for the experimental group was 2.5%, which is significantly lower than that of the control group at 20%. These results showed **Baked Licorice Formula** (*Zhi Gan Cao Tang*) to be clinically effective for the treatment of hypertension with persistent atrial fibrillation.^{vi}

Hyperthyroidism – Modified Baked Licorice Formula (*Zhi Gan Cao Tang*) was used for the treatment of hy-

perthyroidism. 80 patients were divided into a treatment group given modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and a control group that was prescribed conventional drugs. Additions and subtractions to the formula were made on the basis of individual presentation. The treatment course was eight weeks. The results showed that of the 40 cases in the treatment group 20 cases were deemed markedly effective, 15 cases were deemed effective, and five cases were ineffective, a total effectiveness rate of 87.5%. For comparison the control group had a total effectiveness rate of 65%.^{vii}

Hypotension – A study treating 52 cases of hypotension using **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was conducted. All cases had a blood pressure that was lower than 90/60mmHg. Other common symptoms included dizziness, fatigue, chest tightness, shortness of breath, and syncope. There was no organic disease cause for the low blood pressure. The treatment course was 15 days with up to four treatment courses. The results showed that of the 52 cases, 35 were deemed cured with a raise in blood pressure, both systolic and diastolic, by at least 20mmHg, 16 cases were shown to be effective with a raise in blood pressure, both systolic and diastolic, by 10-20mmHg, and one case had no effect; A total effectiveness rate of 98.08%.

Palpitations – **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was used in a clinical study to test the efficacy of the formula for palpitations. 132 patients with palpitations were divided into a control group that was treated with the conventional Western medication metoprolol and a treatment group that was treated with **Baked Licorice Formula** (*Zhi Gan Cao Tang*). The results showed effectiveness in the treatment group was significantly higher than that of the control group. In the treatment group, 59.09% were deemed to have marked effectiveness with clinical symptoms significantly reduced and arrhythmia reduced by >95%; 27.27% were deemed to have good effectiveness with improved clinical symptoms and arrhythmia reduced by 30-95%; and 13.64% had no effect with no significant changes; a total effectiveness rate of 86.36%. For comparison the total effectiveness rate of the control group was 60.61%^{viii}

Premature Ventricular Contractions – Modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was used in a study to treat frequent ventricular premature beats. 60 patients were randomly divided into an observation group that was prescribed modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and a control group that was given metoprolol. The results showed that modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was effective

for the treatment of premature ventricular contractions. The total effectiveness rate for the treatment group was 83.33%.^{ix} For comparison the total effectiveness rate for the control group was 73.33%. Additionally, there were no serious adverse reactions in the study.^x

Senile Arrhythmia – A study was conducted to observe the clinical efficacy of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) for the treatment of elderly patients with chronic arrhythmia. 60 patients were randomly divided into two equal groups. The observation group was treated with **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and the control group was treated with amiodarone. The treatment course was four weeks. The total effectiveness rate of the observation group was 80%. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) can significantly improve clinical symptoms in patients. Both groups were able to improve the heart rate. Most notable were the changes in increasing cardiac function and cardiac ejection fraction which were significantly better in the observation group versus the control group.^{xi}

Sinus Bradycardia – A clinical study was conducted using modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) for the treatment of sinus bradycardia. 43 patients were in the treatment group that was prescribed the herbal formula modified **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and 37 patients were in the control group that was treated with atropine. The results showed that dynamic electrocardiogram was better in the treatment group versus the control group. The total clinical efficacy for the two groups was measured. The total effectiveness rate for the treatment group was 95.35%; the total effectiveness rate for the control group was 72.97%.^{xii}

Slow Arrhythmia – A study to observe the therapeutic effect of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) on the treatment of slow arrhythmia was conducted. 65 out of 110 patients were in the treatment group and were given **Baked Licorice Formula** (*Zhi Gan Cao Tang*). The remaining 45 cases were given atropine and troxerutin. The results showed a total effectiveness rate for the treatment group to be 91.8%; the total effectiveness rate of the control group was 75.6%. The treatment group using **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was significantly superior to the control group for the treatment of slow arrhythmia.^{xiii}

Supraventricular Tachycardia Arrhythmia – A study was conducted to observe the clinical efficacy of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) in the treatment of supraventricular tachycardia arrhythmia. 60 patients were equally divided into two groups: a treatment group using **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and a con-

control group using modern drug therapy. In the treatment group, 60% of the patients showed significant improvement with a total effectiveness rate of 86.7%. There was no significant difference between the treatment group and the control group.^{xiv}

Viral Myocarditis – A study was conducted to observe the effect of **Baked Licorice Formula** (*Zhi Gan Cao Tang*) for the treatment of viral myocarditis. 45 cases were divided into a treatment group consisting of 25 cases and a control group of 20 cases. The treatment group was treated with **Baked Licorice Formula** (*Zhi Gan Cao Tang*). Symptoms, physical signs, electrocardiogram, and cardiac muscle enzymes were observed prior to and after the treatment course. The results showed that **Baked Licorice Formula** (*Zhi Gan Cao Tang*) was effective and safe for the treatment of viral myocarditis with improvement in symptoms and physical signs, electrocardiogram, and cardiac enzymes. In the treatment group, 23 out of the 25 were either deemed cured or were deemed markedly improved (15 cured, eight markedly effective). The results were better in the treatment group compared to the control group.^{xv}

FORMULA COMPARISONS

Baked Licorice Formula (*Zhi Gan Cao Tang*) and **Sheng Mai Formula** (*Sheng Mai San*)

Both **Baked Licorice Formula** (*Zhi Gan Cao Tang*) and **Sheng Mai Formula** (*Sheng Mai San*) focus on the treatment of pulse disorders. **Sheng Mai Formula** (*Sheng Mai San*), also known as “Generate the Pulse Powder,” supplements qi, yin, and body fluids to generate/revitalize the pulse. This formula is commonly used for a variety of cardiovascular diseases much like **Baked Licorice Formula** (*Zhi Gan Cao Tang*). A key way to differentiate between these formulas is by the pulse itself. For **Sheng Mai Formula** (*Sheng Mai San*), the pulse will present generally as deficient: weak, fine, etcetera; whereas **Baked Licorice Formula** (*Zhi Gan Cao Tang*) will have one of the irregular pulses discussed in this monograph.

Baked Licorice Formula (*Zhi Gan Cao Tang*) and **Ginseng and Longan Formula** (*Gui Pi Tang*)

Baked Licorice Formula (*Zhi Gan Cao Tang*) and **Ginseng and Longan Formula** (*Gui Pi Tang*) both tonify qi and blood. **Ginseng and Longan Formula** (*Gui Pi Tang*) focuses on spleen qi and heart blood. This formula will be stronger to supplement qi. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) focuses on the heart and is stronger to nourish blood and has the additional function to nourish yin. Both formulas treat palpitations, insomnia, and anxiety. **Ginseng and Longan Formula** (*Gui Pi*

Tang) also addresses spleen deficient symptoms like lack of appetite, loose stools, forgetfulness, obsessive thoughts, etcetera.

Baked Licorice Formula (*Zhi Gan Cao Tang*) and **Heavenly Emperor’s Formula** (*Tian Wang Bu Xin Dan*)

Both formulas can treat palpitations, anxiety, irritability, insomnia, and dry stools. **Heavenly Emperor’s Formula** (*Tian Wang Bu Xin Dan*) nourishes yin and blood, strengthens the heart and kidneys, and calms the *shen*, while also supporting yin fluids. **Baked Licorice Formula** (*Zhi Gan Cao Tang*) has a focus on the heart *zang*; **Heavenly Emperor’s Formula** (*Tian Wang Bu Xin Dan*) focuses on both the heart and kidney *zang*. Heart yang can become hyperactive due to exhausted kidney yin. Kidney water becomes unable to support heart fire, resulting in symptoms like palpitations, anxiety, irritability, etcetera.

By supporting good communication between heart and kidney, a balance between fire and water, the heart is supported and the *shen* is tranquil. Again, looking at the pulse for formula differentiation is important. The pulse for **Heavenly Emperor’s Formula** (*Tian Wang Bu Xin Dan*) will be thin and rapid.

USEFUL COMBINATIONS

A meta-analysis showed that **Baked Licorice Formula** (*Zhi Gan Cao Tang*) commonly has herbs added to the formula. The most common were tonic herbs, followed by heat-clearing, *shen*-calming, blood-moving, and finally, qi-regulating herbs.^{xvi}

To calm <i>shen</i> and further supplement qi and blood	Combine with Ginseng and Longan Formula (<i>Gui Pi Tang</i>).
To calm <i>shen</i> and to further supplement yin and blood	Combine with Zizyphus Formula (<i>Suan Zao Ren Tang</i>)
For blood stasis	Combine with Blood Palace Formula (<i>Xue Fu Zhu Yu Tang</i>)
For yang deficiency	Combine with Essential Yang Formula (<i>Jin Gui Shen Qi Wan</i>)
For yin deficiency	Combine with Rehmannia Six Formula (<i>Liu Wei Di Huang Wan</i>)
For edema	Combine with Poria Five Formula (<i>Wu Ling San</i>)
For arrhythmia with coronary heart disease	Combine with Sheng Mai Formula (<i>Sheng Mai San</i>)
For irregular heartbeat	Combine with Minor Bupleurum Formula (<i>Xiao Chai Hu Tang</i>)
For arrhythmia	Combine with <i>Chai Hu Gui Zhi Gan Jiang Tang</i>
For tachycardia	Combine with Poria and Bamboo Formula (<i>Wen Dan Tang</i>)

ENDNOTES

ⁱThe damage to the blood vessels stems from the way that cannabis seed (*ma ren*) supplements yin fluids. It is very slippery and mobilizing and enters the spleen and stomach, as well as the large intestine. In the short term, this slippery quality can help replenish fluids that moisten the bowel and enter the blood stream. But overuse causes loss of *luan* qi through the anus and an overabundance of non-blood fluid in the vessels.

ⁱⁱJiang Ju Hua, "Clinical Observation on Modified Zhi Gan Cao Tang in Treating Stable Angina Pectoris of Qi and Yin Deficiency," *Heilongjiang University of Chinese Medicine*, 2017.

ⁱⁱⁱGuo Fang Xu, "Study on the Rule of Treatment of Arrhythmia with Zhi Gan Cao Tang," *Beijing University of Chinese Medicine*, 2011.

^{iv}Wu Ding You, "Clinical Analysis of 50 Cases of Arrhythmia Treated by Modified Zhi Gan Cao Tang," *Physicians*, 2017.

^vWang Hong Li, "Treatment of 48 Cases of Arrhythmia Caused by Coronary Heart Disease with Zhi Gan Cao Tang," *Guang Ming Journal of Chinese Medicine*, 2009, Vol 24, No 12.

^{vi}Zheng Wenda, "To Investigate the Clinical Effect of Valsartan and Zhi Gan Cao Tang in the Treatment of Hypertension with Persistent atrial Fibrillation," *Journal of North Pharmacy*, 2016, Vol 13, No 3.

^{vii}Zhu Lin, "Treatment of 40 Cases of Hyperthyroidism with Jia Wei Zhi Gan Cao Tang and Western Medicine," *Taxi*, 2015, Vol 28, No 8.

^{viii}Wang Yong, "Treatment of 52 Cases of Primary Hypotension with Zhi Gan Cao Tang," *Zhejiang Journal of Traditional Chinese Medicine*, 2006, Vol 41, No 10.

^{ix}Hu Zi Guang, et al., "Therapeutic Effect of Zhi Gan Cao Tang in Treating 66 Cases of Palpitations," *Psychological Doctor*, 2017, No 25.

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