

Warming Method in Shang Han Lun

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Warming method is one of the eight therapeutic methods introduced in Shang Han Lun (Treatise on Cold Damage 伤寒论) written by Zhang Ji (Zhang Zhong-jing) in the Eastern Han Dynasty (3th century). This method has the efficacies to eliminate pathogenic cold and recover yang-qi by means of warming interior and expelling cold, restoring yang and rescuing the patient from collapse. In Shang Han Lun, warming method was mostly used for treating interior cold syndromes of Taiyin Disease and Shaoyin Disease. In this paper, we have chosen 4 representative formulae of this category to be introduced to the readers: Li Zhong Wan (Middle-Regulating Pill 理中丸), Si Ni Tang (Cold-Extremities Decoction 四逆汤), Wuzhuyu Tang (Evodia Decoction 吴茱萸汤) and Danggui Si Ni Tang (Angelica Cold-Extremities Decoction 当归四逆汤).

1. Li Zhong Wan (Middle -Regulating Pill 理中丸)

In Shang Han Lun, there are 2 clauses (Clauses 386, 396) on Li Zhong Wan, and another clause on in Chapter 9 of Jin Kui Yao Lue (Synopsis of the Golden Chamber 金匮要略), the sister book of Shang Han Lun, although in Jin Kui Yao Lue Li Zhong Wan was given another name - Renshen Tang (Ginseng Decoction 人参汤).

This formula consists of the following ingredients:

Renshen (Radix Ginseng) 3 *Liang* /9g

Ganjiang (Rhizoma Zingiberis) 3 *Liang* / 9g

Zhigancao (Radix Glycyrrhizae) 3 *Liang* /9g

Baizhu (Rhizoma Atractylodis Macrocephalae) 3 *Liang* /9g

Original preparation and administration:

Method for making pills: Pound the above 4 herbs and sieve them into a powder, and make pills with honey, its size is as large as the yolk of a chicken's egg. Melt 1 pill in several *Ge* (1 *Ge* = 20 ml) of boiling water as a dose, crush the pill and take it warm, 3-4 times a day, and twice at night. If there is not a feeling of warmth in the abdomen, increase the dosage to 3-4 pills or more. However, the pill is not as efficacious as the decoction form.

Method for making a decoction: Boil the above 4 herbs (same dosage as listed above) in 8 *Sheng* (1 *Sheng* = 200 ml) of water in a pot over a fire until 3 *Sheng* remains Remove dregs and get a decoction. Drink 1 *Sheng* (200 ml) of the decoction warm each time, 3 times a day.

There are a number of modifications to the formula according to clinical symptoms. If there is a pounding sensation around the umbilicus due to abnormal movement of the kidney-qi,

remove Baizhu and add Guizhi (Ramulus Cinnamomi) 4 *Liang*/12g. If there is severe vomiting, remove Baizhu and add Shengjiang (Rhizoma Zingiberis Recens) 3 *Liang*/9g; but if there is severe diarrhoea, keep Baizhu. If accompanied by palpitation, add Fuling (Poria) 2 *Liang*/6g. If accompanied by thirst with a desire for water, increase the dosage of Baizhu to 4.5 *Liang*/13.5g. For abdominal pain, increase the dosage of Renshen to 4.5 *Liang*/13.5g. For severe internal cold, increase the dosage of Ganjiang to 4.5 *Liang*/13.5g. For abdominal fullness, remove Baizhu and add Zhifuzi (Radix Aconiti Lateralis Praeparatae) 1 pc/3g.

After taking the above decoction, ask the patient to wait for a while, and then drink 1 *Sheng* of hot gruel, keeping warm, do not remove the clothes and bedclothes.

The actions of this formula are to warm the middle-*jiao* (the spleen and stomach) and dissipate cold-dampness from taiyin.

In this formula, Ganjiang acts as a principal herb. It is acrid in taste and hot in nature, and has effects of warming the middle-*jiao* and dissipating cold. Renshen acts as the assistant herb. It is slightly bitter in flavour and slightly warm in nature, and is good at strengthening the spleen-*qi*. Baizhu serves as the adjuvant herb. With its sweet and bitter flavor and warm nature, it eliminates dampness and strengthens the spleen. Zhigancao is sweet and mild in property. It harmonizes the spleen and stomach and tempers the effects of other herbs in the formula, playing a role of guiding herb.

In Clause 277 of Shang Han Lun, Zhang Zhong-jing said that “Diarrhoea without thirst is the symptom of taiyin disease. It is caused by coldness in the zang-organ (the spleen). Si Ni Tang (Cold-Extremities Decoction) or its like can be adopted to warm the coldness (自利不渴者，属太阴，以其脏有寒故也。当温之，宜服四逆辈). Most of TCM scholars believe that here ‘its like’ should be Li Zhong Wan.

Today, we use Li Zhong Tang (Middle-Regulating Decoction) for the treatments of acute or chronic gastritis, peptic ulcer, gastro-intestinal neurosis, chronic diarrhoea, chronic enteritis or non-specific colitis if the patient’s condition is one of the above Li Zhong Wan syndromes, It also used for AIDS patient’s support when the patient’s condition is considered as cold in the middle-*jiao*.

The Pharmaceutical Department and Microbiology Department of Shanghai TCM University made a simulated syndrome of spleen-deficiency in mice by feeding them Dahuang (Radix et Rhizoma Rhei). As a result, the mice showed symptoms of spleen-deficiency marked by diarrhoea, lower function of immune system and less ability against coldness; and then treated the mice with Li Zhong Tang (Middle-Regulating Decoction plus Fuzi (Radix Aconiti Praeparatae). After using the treatment, the symptoms of spleen-deficiency in mice were relieved¹.

2. Si Ni Tang (Cold-Extremities Decoction 四逆汤)

This formula was recorded in many clauses of Shang Han Lun: Clauses 29, 91, 92, 225, 277, 323, 324, 353, 354, 372, 377, 388, and 389.

This formula consists of the following ingredients:

Zhifuzi (Radix Aconiti Praeparatae) 1 piece / 6g

Ganjiang (Rhizoma Zingiberis) 1.5 *Liang*/4.5g

Zhigancao (Radix Glycyrrhizae Praeparatae) 2 *Liang*/ 6 g

Original preparation and administration:

Boil the above 3 herbs in 3 *Sheng* (600 ml) of water in a pot over a fire until 1 *Sheng* and 2 *Ge* (240 ml) remains. Remove dregs and divide the decoction into 2 portions, taking one portion orally each time when it is warm, 2 times a day. For a strong patient, the dosage of Zhifuzi should be increased to 1 large piece /9g, and Ganjiang to 3 *Liang* /9g.

However, as Zhifuzi is toxic, it should be boiled for one hour prior to adding the other two herbs; and then continue to boil them for 30 minutes or more. Drink the decoction when it is warm, half in the morning, and another half in the evening.

The actions of this formula are to warm the heart, spleen and kidney, and restore yang qi to save the patient from collapse.

In the formula, Zhifuzi, as the principal herb, is pungent and hot in the extreme. It acts on the meridians of the heart, kidney and spleen, to warm the yang-qi and recover the depleted yang and rescue the patient from collapse. Ganjiang acts as an assistant herb in the formula. It helps warming yang qi of the middle-*jiao* and eliminating interior cold. The effects on warming yang qi can be synergistic by the combination of Zhifuzi and Ganjiang. Zhigancao strengthens the spleen and replenishes qi, acting as an adjuvant and guiding herb. It not only assists Zhifuzi (to recover depleted yang and promote blood circulation, but also assists Ganjiang in to warm and restore yang qi of the middle-*jiao*. Additionally, Zhigancao can also reduce the toxic effect of Zhifuzi and tame the extremely pungent property of Zhifuzi and Ganjiang in the formula.

Though Zhifuzi contains *Wutoujian* (aconine) which is highly toxic, it is still extensively used by many TCM doctors in China and other countries except the UK. However, it must be boiled for more than 2 hours until no numbness of the mouth and tongue is felt, because the long time boiling can change its *Wutoujian* (aconine) into *Wutoucijian* (sub-aconine) which contains just 1-2 % of *Wutoujian*'s toxin with the same efficacy. Additionally, it is worth knowing that the antidote to aconite poisoning is atropine injection, although other supporting therapies are also needed. In an emergency, send the patient to the hospital.

Clinically, Si Ni Tang is used in China for the treatments of distinct declination of bodily strength caused by chronic disorders or hypopituitarism, hypothyroidism and hypoadrenocorticism marked by symptoms of yang-deficiency. It is all applied, together with

western medicines, to patients with yang depletion syndrome such as shock, heart failure, and cardiac infarction in China².

Current pharmacodynamic researches have indicated that this formula has functions of exciting the central nervous system, promoting metabolism, improving weak conditions, and preventing shock³.

Han et al simulated hypotension model in rabbits by injecting anaesthetic to the rabbits for studying the functions of each single herb in the Si Ni Tang as well as the compound decoction of Si Ni Tang. They found a single Fuzi has a cordial effect on the heart, but it is weaker than the compound decoction of Si Ni Tang. A single Zhigancao can increase blood pressure but can not strengthen heart's contraction. A single Ganjiang has no effect on blood pressure and heart's functions. But when given the compound decoction of Si Ni Tang to the rabbit, it showed stronger cordial effect on the heart, slowdown sinus rhythm, and preventing arrhythmia caused by a single Zhifuzi. This experimental study has indicated that there might be synthetic efficacy of a compound formula such as Si Ni Tang in TCM².

3. Wuzhuyu Tang (Evodia Decoction 吴茱萸汤)

This formula appears in Clause 243, 309 and 378 in Shang Han Lun and also in 2 clauses in Chapter 17 of Jin Kui Yao Lue.

This formula consists of the following ingredients:

Wuzhuyu (Fructus Evodiae) 1 *Sheng* / 10g (washed)

Renshen (Radix Ginseng) 3 *Liang* / 9 g

Shengjiang (Rhizoma Zingiberis Recens) 6 *Liang* /18 g (cut)

Dazao (Fructus Jujubae) 12 pcs (split) .

Original preparation and administration:

Boil the above 4 herbs in 7 *Sheng* (1,400) of water in a pot over a fire until 2 *Sheng* (400 ml) remains. Remove dregs to get a decoction. Drink 7 *Ge* (140 ml) each time when it is warm, 3 times a day.

The actions of this formula are to warm the middle-jiao (the spleen and stomach) and regulate the stomach, descending counter-flow of the stomach-qi to relieve retching and vomiting.

In this formula, Wuzhuyu acts as the principal herb. It is pungent in taste and hot in nature, It warms the stomach and disperses pathogenic cold, descends the counter-flow of the stomach-qi to relieve retching and vomiting. Shengjiang is pungent in flavor and warm in nature. As that assistant herb to Wuzhuyu, it dispels the stomach old and descends adverse qi to relieve retching and vomiting as well. Renshen and Dazao are sweet in taste and warm in nature. Both can tonify the middle-jiao. All herbs working together in the formula can warm the middle-jiao, regulate the stomach to relieve retching and vomiting.

In Clause 243 of Shang Han Lun, Zhang Zhong-jing said that “When a patient suffers from retching or vomiting after meals, it fits in with the syndrome of cold invasion to yangming (the stomach). Wuzhuyi Tang (Evodia Decoction) should be the chief formula to treat (食谷欲呕，属阳明也，吴茱萸汤主之。)” This clearly describes the main indications of Wuzhuyi Tang.

Clinically, this formula today can be modified and applied to patients with acute or chronic gastritis, peptic ulcer, hepatitis, sickness in pregnancy, migraine, and Meniere’s disease due to coldness in the stomach and spleen manifested as retching or vomiting.

Current pharmacologic studies have indicated that this formula has the effects of promoting blood circulation in the digestive tract, relieving spasm or tension of the smooth muscle, decreasing peristalsis, preventing retching and vomiting, alleviating pain, facilitating digestion, strengthening the functions of the whole body³.

Ueng et al⁴ of the National Research Institute of Chinese Medicine, Taipei, Taiwan has studied the effects of Wu-chu-yu-tang (Wuzhuyu Tang/Evodia Decoction) and its component herbs on drug-metabolizing enzymes. The compound herbal medicine Wu-chu-yu-tang was used for the treatment of migraine and vomiting accompanying a cold. To assess the interactions of herb and drug metabolism, effects of Wu-chu-yu-tang on hepatic and renal cytochrome P450 (CYP), UDP-glucuronosyl transferase (UGT) and glutathione S-transferase (GST) were studied in C57BL/6J mice. Treatment of mice with 5 g/kg per day Wu-chu-yu-tang for 3 days caused 2.5-fold and 2.9-fold increases of liver microsomal 7-ethoxyresorufin O-deethylation (EROD) and 7-methoxyresorufin O-demethylation activities, respectively. However, CYP activities toward 7-ethoxycoumarin, benzphetamine, N-nitrosodimethylamine, erythromycin and nifedipine, and conjugation activities of UGT and GST were not affected. In the kidney, Wu-chu-yu-tang-treatment had no effects on Cyp, UGT and GST activities. Among the four component herbs of Wu-chu-yu-tang, only Evodiae Fructus (Wu-chu-yu) extract increased EROD activity and CYP1a2 protein level. In E. Fructus, rutaecarpine, evodiamine and dehydroevodiamine are the main active alkaloids. At the doses corresponding to their contents in Wu-chu-yu-tang, rutaecarpine-treatment increased hepatic EROD activity, whereas evodiamine and dehydroevodiamine had no effects. These results demonstrated that ingestion of Wu-chu-yu-tang elevated mouse hepatic Cyp1a2 activity and protein level. E. Fructus and rutaecarpine contributed at least in part to the CYP1a2 induction by Wu-chu-yu-tang. Patients should be cautioned about the drug interaction of Wu-chu-yu-tang and CYP1A2 substrates.

4. Danggui Si Ni Tang (Angelica Cold –Extremities Decoction 当归四逆汤)

The formula was recorded in Clause 351 of Shang Han Lun, saying that “Cold hands and feet with fine and feeble pulse should be mainly treated by Danggui Sini Tang (手足厥冷，脉细欲绝者，当归四逆汤主之)”. Here, fine and feeble pulse indicates deficiency of blood and blockage of yang-qi in the meridian, and cold hands and feet are caused by stagnation of

yang-qi which fails in circulation and warming them extremities. Danggui Si Ni Tang (Angelica Cold-Extremities Decoction 当归四逆汤) is a right choice for the conditions.

Original preparation and administration:

Danggui (Radix Angelicae Sinensis) 3 *Liang* / 9g
Guizhi (Ramulus Cinnamomi) 3 *Liang* / 9g (remove bark)
Shaoyao (Radix Paeoniae) 3 *Liang* / 9 g
Xixin (Herba Asari) 3 *Liang* / 3g
Zhigancao (Radix Glycyrrhizae Praeparatae) 2 *Liang* 6g
Tongcao (Medulla Tetrapanacis) 2 *Liang* / 6g
Dazao (Fructus Jujubae) 25 pieces (broken)

Original preparation and administration

Boil the above 7 ingredients in 8 *Sheng* (1.600ml) of water in a pot over a fire until 3 *Sheng* (600ml) is left. Remove dregs to get a decoction. Take 1 *Sheng* (2.00ml) of the decoction orally each time, 3 times a day.

The main actions of this formula include nourishing blood and dispersing pathogenic cold, warming, dredging obstruction and activating the meridian to treat cold extremities.

This prescription in fact is a formula modified from Guizhi Tang (Cinnamon Twig Decoction) by removing Shengjiang, doubling the dosage of Dazao and adding Danggui, Xixin (Herba Asari) and Tongcao (Medulla Tetrapanacis) to it. Danggui and Shaoyao (Radix Paeoniae) are used for nourish blood and regulate ying qi, which is the qi that moves the blood. Guizhi and Xixin warm the meridian and disperse pathogenic cold. Zhigancao and Dazao invigorate the middle-qi including the spleen and stomach. Tongcao can dredge blockage and activate the meridian. Xixin (Manchurian Wildginger /Herba Asari) must not be used in the UK as it contains aristolochic acid.

The use of this formula is often modified for treatments of Raynaud's syndrome marked by paroxysmal cold hands when touching cold water or having stress. The results can be quite satisfying.

Wang ⁵ applied this formula to a female patient aged 15 with multiple aorta-arteritis for 2 years marked by cold extremities, headache and edema. The treatment result was reported to be very good after taking this formula for one year.

Some reports indicate that this formula can be used to treat polyneuritis marked by cold hands and feet with numbness ⁶ with good effects.

Peng and Dou ⁷ studied the influence of Danggui Si Ni Tang (Angelica Cold-Extremities Decoction) on isolated uterine in rats. They reported that Danggui Si Ni Tang could significantly inhibit the contraction frequency, the contraction amplitude and levels of activity

of the isolated rat uterine, through an oxytocin mechanism.

Summary

Warming method was one of the 8 methods in Shang Han Lun. It was mainly used for treatment of interior cold syndrome of Taiyin Disease and Shaoyin Disease during febrile diseases. Four representative formulae of this category have been discussed in this article, namely: Li Zhong Wan (Middle-Regulating Pill 理中丸), Si Ni Tang (Cold-Extremities Decoction 四逆汤), Wuzhuyu Tang (Evodia Decoction 吴茱萸汤) and Danggui Si Ni Tang (Angelica Cold-Extremities Decoction 当归四逆汤). Additionally, the current applications and pharmaceutical researches on the above 4 formulas were also discussed.

Finally, it must be noted that according to the regulation of MHRA, the UK medicine regulator, both Zhifuzi (Radix Aconiti Preparata) and Xixin (Manchurian Wildginger /Herba Asari) must not be used in the UK.

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