



Possible Substitutions for Fang Ji, Mu Tong and Xi Xin

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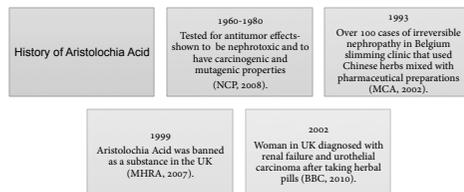
INTRODUCTION

For many years several Aristolochia species have been used in herbal medicine throughout the world as anti-inflammatory agents for the treatment of various conditions e.g. arthritis, gout, or rheumatism (NTP, 2008). However, numerous countries have prohibited the use of Aristolochia species in herbal medicine because of the toxicity of the Aristolochic Acids (AA) component that occurs naturally in plants in the Aristolochiaceae family, primarily of the genera *Aristolochia* and *Asarum*. Numerous herbs containing AA have been shown to be nephrotoxic, mutagenic (NTP, 2008), and carcinogenic (IARC, 2002).

Particularly Chinese herbal medicine has received much attention regarding the use of herbs containing Aristolochic acids. Since the early 90's cases of nephrotoxicity and carcinogenicity have been reported in Belgium, France and the UK following an inadvertent exposure to Aristolochia species in unlicensed herbal medicines (NTP, 2008).

Being traded using the common Chinese Pin Yin name, the use of some herbal ingredients have led to confusion in the past. In some cases herbs are banned not necessarily because they are toxic but due to the possibility of wrong identification (Maciocia, 2011).

In 1999 the UK prohibited the sale, supply and importation of herbs containing AA which included herbs that were at risk of getting confused with Aristolochic species due to poor quality assurance (MHRA, 2007).



AIMS

Herbs containing Aristolochic Acids are banned in the United Kingdom. This being the case makes it very difficult to use certain formulas which led us to investigate possible substitutions of Mu Tong, Fang Ji and Xi Xin, herbs that are frequently used in Chinese herbal practice. We set out to:

- Look at the background of herbs containing Aristolochic Acids and find out how this affects the practice of Chinese herbal medicine in the UK.
- Determine whether or not there are standardised substitutions in current literature and investigate how Chinese herbal practitioners substitute these banned herbs in their day-to-day practice in the United Kingdom.
- Develop a more thorough understanding of the properties and actions of Mu Tong, Fang Ji and Xi Xin in order to decide what other herbs to use in their place in a given situation.
- We hope that by gathering these information, practitioners of Chinese herbal medicine (prospective and practicing) will be better informed about issues concerning UK regulations of herbs containing AA, and use this project as a reference for substitutions to use instead of Mu Tong, Fang Ji and Xi Xin in their own practice.



BACKGROUND

The three most commonly used herbs in Chinese medicine containing AA are Fang Ji, Mu Tong and Xi Xin. There are a several different species of Fang Ji and Mu Tong, however, it is important to note that there are multiple traditional sources of these herbs whilst only a few of their species actually contain Aristolochic acids - namely Guang Fang Ji and Guan Mu Tong.

Fang Ji *Radix Stephaniae tetrandrae* and Mu Tong *Caulis Akebiae trifoliatae* are prohibited to use not because the whole plant is toxic but because of the risk of wrong identification of the herb. For example, while Han Fang Ji *Radix Stephaniae tetrandrae* does not contain AA and is not toxic, Guang Fang Ji *Radix Aristolochiae fangchi* is potentially toxic (Maciocia, 2011). The same accounts for Mu Tong species.

Thus, for safety reasons due to the potential risk of misidentification and mislabelling of the plants as well as poor quality control of AA containing herbs and herbal products, all species of Mu Tong and Fang Ji including the non-AA species are banned in the UK (RCHM, 2008). Affected herbs include Ku Mu Tong *Akebia quinata*, Bai Mu Tong *Akebia trifoliata*, Chuang Mu Tong *Clematis montana* and Xiao Mu Tong *Clematis armandii*, Han Fang Ji *Stephania tetrandra*, Mu Fang Ji *Cocculus orbiculatus*, Chui Mu Fang Ji *Cocculus pendulus* and Mu Fang Ji *Cocculus Trilobus*.

“The RCHM issued a ban on the use of Mu Tong and Fang Ji due to risk of misidentification and mislabeling of AA containing herbs”

Xi Xin *Asari Herba* is derived only from Aristolochia plants (*Asarum* species) and contains only insignificant amounts of Aristolochic acid (Wiebrecht, 2011). Interestingly Xi Xin is currently not a banned herb in the UK, however, the RCHM has issued a voluntary ban on the use of Xi Xin (RCHM, 2008).

Restricted Substances
MU TONG (<i>Aristolochia manshuriensis</i>) This ban also applies to <i>Akebia quinata</i> , <i>Akebia trifoliata</i> , <i>Clematis montana</i> and <i>Clematis armandii</i> .
FANG JI (<i>Aristolochia fangji</i>) This ban also applies to <i>Stephania tetrandra</i> , <i>Cocculus laurifolius</i> , <i>Cocculus orbiculatus</i> and <i>Cocculus Trilobus</i>
XI XIN (<i>Asarum herba</i>) This is a voluntary ban issued by the RCHM due to the presence of Aristolochic Acid in <i>Asarum</i> species.

How does this affect the practice of Chinese herbal medicine?

Here in the UK we are unable to use a number of herbs. This being the case makes it particularly difficult to prescribe certain herbal formulations especially Shang Han Lun formulas as the majority of them contain at least one of the banned herbs.

However, there is a lack of information on this subject in current literature as substitution was not a concern until quite recently. As noted by Maciocia (2011) it is impossible to suggest a single substitution in cases where herbs have more than one action. Under such circumstances it needs two or more herbs to replicate the actions of the herb being substituted.

Taking all these different aspects into consideration, prospective and practicing practitioners of Chinese herbal medicine are confronted with a dilemma that needs addressing. From personal conversations it was found that what one uses as a substitute is dependent on the individual formula used as well as the individual concerned and hence this is a very complex issue.

Those highly qualified practitioners interviewed for this project seem to base their decisions regarding possible substitutions for herbs mostly on their own personal extensive clinical experience and not existing lists. This is because standardised substitution lists just don't take into consideration the application of the formula, the number of herbs in the original formula, the associated role of the herb to be substituted (if there is such a need) and the actions, taste, and nature of the potential substitute.

SUGGESTED SUBSTITUTIONS

There are several suggested substitutions for Fang Ji, Mu Tong and Xi Xin in current literature:

Fang Ji

- Maciocia (2011) lists Fu Ling *Poria* with Huang Bai *Cortex phellodendri* as substitutions to resolve Damp Heat in the lower jiao, as well as Yi Yi Ren *Semen Coicis* with Cang Zhu *Rhizoma Atractylodis* to resolve Dampness and obstructions from the channels in Painful Obstruction (Bi) Syndrome.
- Lloyd (2004) lists Hai Tong Pi *Erithrina Cortex* as a substitute for Han Fang Ji *Stephania tetrandrae Radix*.

Mu Tong

- Yang (2010) lists Zhi Zi *Gardeniae Fructus* as a single substitution or Tong Cao *Tetrapanax Medulla* with Huang Lian *Picrorhizae rhizoma* or Tong Cao with Long Dan Cao *Gentiana radix* as further possible substitutions.
- Maciocia (2011) recommends Tong Cao *Medulla Tetrapanax* to remove obstructions from the channels, or Fu Ling *Poria* to resolve Damp Heat.
- Lloyd (2004) lists Qu Mai *Dianthi herba* as a replacement for Mu Tong.

Xi Xin

- Lloyd (2004) suggests Gui Zhi *Cinnamomi Ramulus* with Qiang Huo *Notopterygium incisum* for unblocking the channels, Bai Qian with Zi Su Ye (*Perilla frutescens* for clearing the Lungs and dispelling Cold, Damp and Phlegm, and Gao Ben *Ligusticum sinense* with Bai Zhi *Angelica dahurica* for toothaches and headaches.

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SUGGESTED HERBS AND THEIR CHARACTERISTICS

When we look at the suggested herbs by current literature and CHM practitioners individually in terms of their category, properties, channels entered, functions and clinical indications. The majority of the herbs show an overlapping in their characteristics with Fang Ji, Mu Tong and Xi Xin, however, as the following tables show, none of the listed herbs that may be used as substitutes comply exactly with the characteristics of Fang Ji, Mu Tong and Xi Xin. It should be noted that these lists serve as a general overview and suitable substitutions must be chosen according to the individual formula and the individual concerned.

Han Fang Ji (Bensky et al, 2004)

Herb	Han Fang Ji	Fu Ling	Huang Bai	Yi Yi Ren	Cang Zu	Ze Xie	Yin Chen Hao
Category	Drain Dampness	Drain Dampness	Clear Heat	Drain Dampness	Transform Dampness	Drain Dampness	Drain Dampness
Properties	Bitter, acrid, cold	Sweet, bland, neutral	Bitter, cold	Sweet, bland, slightly cold	Acrid, bitter, warm	Sweet, bland, cold	Bitter, Slightly cold
Channels entered	Bladder, Spleen, Kidney	Heart, Spleen, Kidney, Lung	Kidney, Bladder	Lungs, Spleen, Stomach, Kidney	Spleen, Stomach	Kidney, Bladder	Liver, Spleen, Gallbladder, Stomach
Functions	Clears damp heat, facilitates the fluid pathways, treats painful obstructions	Tonifies the Spleen, eliminates dampness, promote urination, calms the Heart spirit	Directs Fire downwards, clears damp heat in the lower burner	Tonifies the Spleen and arguments the Lungs, drains dampness from the bones, sinews and muscles, treats painful obstruction	Dries dampness, induces sweating, strengthens the Sp/ St, treats atrophy disorder from damp heat in the lower burner	Clears ministerial fire, regulate the fluid pathways	Clears Damp Heat from Liver and Gallbladder, regulates the function of the Gallbladder
Clinical indication	Oedema, abdominal distention, swollen/hot/painful joints	Urinary difficulty, oedema, diarrhoea, epigastric/abdominal distention, loss of appetite	Thick yellow vaginal discharge, diarrhoea, dysentery, red/swollen/painful knee, legs or feet, burning/painful urination	Oedema, diarrhoea, painful urination, painful/heavy legs, wind damp painful obstruction, Lung or intestinal abscess	Reduced appetite, diarrhoea, epigastric distention, nausea, vomiting, fever, profuse sweating, vaginal discharge.	Urinary difficulties, oedema, diarrhoea, vaginal discharge	Jaundice, urinary dysfunction, Damp sores, Wind rashes

Mu Tong (Bensky et al, 2004)

Herb	Mu Tong	Tong Cao	Long Dan Cao	Zhi Zi	Deng Xin Cao	Di Fu Zi
Category	Drain Dampness	Drain Dampness	Clear Heat and dry Dampness	Clear Heat and dry dampness	Drain Dampness	Damp draining
Properties	Bitter, slightly cold	Sweet, bitter, slightly cold	Bitter, cold	Bitter, cold	Sweet, bland, slightly cold	Sweet, bitter, cold
Channels entered	Bladder, Heart, Small Intestine	Lung, Stomach	Gallbladder, Liver, Stomach	Heart, Lung, Stomach, Liver, Triple Heater	Heart, Lung, Small Intestine	Kidney, Bladder
Functions	Promote urination, directs fire and damp heat downwards and out through the urine, facilitate the lactation, unblocks blood stasis	Facilitates the metabolism of the Lungs, promotes lactation by raising the	Drains fire from excess in the Liver and Gallbladder eliminates lower burner damp heat	Resolves constrained heat, directs damp heat downwards/out through urine, cools blood, breaks up accumulation	Clears Heat in the Heart and Lungs and directs it downwards, unblocks fluid pathway, drain Heat through the urine	Alleviates itching, removes Damp Heat, clears Wind Heat affecting the eyes and head
Clinical Indication	Painful urinary dysfunction, oedema, insufficient lactation, amenorrhoea, joint pain and stiffness	Painful urinary dysfunction, insufficient/absent lactation.	Jaundice, vaginal discharge with itching, headaches, fullness in the head.	Febrile disease, jaundice, dark/painful scanty urine, bleeding due to heat.	Urinary difficulty, children's sleep disorders, sore throat.	Painful urinary dysfunction, skin disorder due to damp heat such as eczema.

Xi Xin (Bensky et al, 2004)

Herb	Xi Xin	Gui Zhi	Qiang Huo	Zi Su Yu	Bai Qian	Gao Ben	Bai Zhi
Category	Release the exterior	Release the exterior	Release the exterior	Release the exterior	Transform phlegm, stop coughing	Release the exterior	Release the exterior
Properties	Acrid, warm	Acrid, sweet, warm	Acrid, bitter, aromatic, warm	Acrid, aromatic, warm	Acrid, sweet, slightly warm	Acrid, warm	Acrid, warm
Channels entered	Lung, Heart, Kidney	Heart, Lung, Bladder	Bladder, Kidney	Lung, Spleen	Lung	Bladder, Governing vessel	Lung, Spleen, Stomach
Functions	Dispels cold from both Taiyang and Shaoyin, opens the orifices, relieves pain, reaches to the head/ Lungs/ bones and joints to dispel wind, cold, damp, phlegm	Releases the muscle layers, unblocks yang Qi, warms the middle burner	Expels wind cold, and superficial dampness, it reaches the vertex and the upper body, unblocks channel obstructions	Expels wind cold, releases the exterior, moves Qi, expands the middle and upper burners	Directs the Lung Qi downwards	Expels wind cold, release the exterior, alleviates headaches, expels wind/ cold dampness, relieves painful obstructions	Release the exterior, opens the orifices, dries dampness, expels wind cold, reduces swelling.
Clinical Indications	Headaches, body aches from wind cold invasion, wind/ cold/ damp painful obstructions, abdominal pain, toothaches, cough, nasal congestion	Headaches, chills, fever, painful joints, epigastric/ abdominal pain, irregular menstruation	Chills, fever, headaches, body aches, joint pains, feeling of heaviness	Chills, fever, headaches, cough, tight chest, nausea, vomiting, abdominal pain, seafood poisoning	Cough, sputum in the throat	Vertex headache, toothaches, painful joints	Chills, fever, headaches, nasal congestion, toothache, epigastric pain, sores, ulcers



What Chinese herbal medicine practitioners say ...

Practitioner A commented when Fang Ji is used for an Arthralgia syndrome, one may choose another herb to clear Wind Damp. If its emphasis is on the damp aspect, simply increase the amount of another damp removing herb already used in the formula. If Mu Tong is used to alleviate Heat Fire with accumulation of Damp, one may use a different heat clearing herb or increase the amount of herbs already in the formula. If Xi Xin is used to expel Wind Cold, use another Wind Cold expelling herb or increase the amount of other Wind Cold dispelling herbs already used. Alternatively, one may leave it out if the patient does not have much of a Cold invasion, as the formula might already contain enough herbs to clear Wind Cold.

Practitioner A gave an example of the Jinggui Yaolue formula- Fang Ji Fu Ling Tang. This formula is designed to remove water accumulation and used for resolving pitting oedema in the legs. He suggests the combination of Ze Xie and Yin Chen Hao to replace the properties of Fang Ji

Practitioner B suggested to substitute Mu Tong with Tong Cao and Deng Xin Cao when treating skin diseases, should one want to drain Heat from the Heart and Small Intestine when the Heat is at the Blood level. In order to drain Damp Heat, he also suggested to replace Mu Tong with Bian Xu or Di Fu Zi.

While Practitioner A listed Bai Zhi as the most frequent substitution for Xi Xin, Practitioner D commented that there is simply no substitute for Xi Xin.

DISCUSSION – IN THE CONTEXTS OF FORMULAS

When we look at these suggested herbs in the context of a particular formula, it gives us a better understanding of why and how some of the suggested herbs are chosen as possible substitutes. The following examples will show how these substitutes may work.

Fang Ji Fu Ling Tang *Stephania and Poria Decoction* (Scheid et al, 2009)

Han Fang Ji	9g	Drain Damp	Promote urination to eliminate water damp
Huang Qi	6g	Qi tonifying	Tonify Spleen
Gui Zhi	9g	Exterior expelling	Unblock Yang, transform Qi
Fu Ling	18g	Drain Damp	Drain Damp, promote the urination, reduce swelling
Gan Cao	6g	Qi tonifying	Harmonise the all ingredients

Fang Ji Fu Ling Tang had some widespread use prior to the AA issue and thus the substitute would depend on its application of which there are many (Practitioner A, 2015). Originally, this formula was applied to oedema of the limbs (pitting edema, due to the water being at the skin layer) and it is still commonly used for treating oedema in the extremities due to Spleen deficiency. If used for this original purpose, then Fang Ji is primarily acting as an herb to help remove water accumulation (Scheid et al, 2008). Bearing this in mind, Fu Ling (already existing) may be combined with Ze Xie to replace Han Fang Ji in order to drain Damp, help to eliminate Dampness through urination and to reduce swelling of the limbs.

As commented by Practitioner A the main alternatives for Han Fang Ji from the list of commonly used herbs to drain Dampness are Ze Xie and Yin Chen Hao (see table: Han Fang Ji). He further commented that whilst Ze Xie is well known for this type of application, a few Chinese herb specialists have noted that they explicitly like the effect of Yin Chen Hao for swelling of the lower legs. A combination of these two herbs would incorporate some of the desired properties of Fang Ji for this particular formula. While Ze Xie is particularly good as a diuretic for swollen limbs, it lacks the bitter taste associated with Fang Ji and its action. This is precipitated by Yin Chen Hao.

Long Dan Xie Gan Tang *Gentiana Longdancao Decoction to drain the Liver* (Scheid et al, 2009)

Long Dan Cao	3-9g	Damp/Heat clearing	Drain Heat from Liver and Gallbladder
Huang Qin	6-12g	Damp/Heat clearing	Drain Damp Heat, eliminate Damp
Zhi Zi	6-12g	Heat/Fire purging	Drain Damp Heat, eliminate Damp
Mu Tong	3-6g	Damp draining	Drain heat from upper jiao, drain Damp
Che Qian Zi	9-15g	Damp draining	Drain heat from upper jiao, drain Damp
Ze Xie	6-12g	Damp draining	Drain heat from upper jiao, drain Damp
Chai Hu	3-9g	Wind Heat dispersing	Disperse Heat
Sheng Di	9-15g	Cooling Blood	Supplement Yin
Dang Gui	3-12g	Blood nourishing	Tonify the Blood
Gan Cao	3-6g	Qi Tonifying	Harmonise the all ingredients

Long Dan Xie Gan Tang is used for purging excessive Fire and Damp- Heat from the Liver and Gallbladder and for eliminating Damp- Heat from the lower jiao. In this formula Mu Tong is serving as an assistant herb with its comparatively smaller dose amongst the other Damp draining herbs such as Che Qian Zi and Ze Xie (Scheid et al, 2008).

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DISCUSSION – IN THE CONTEXTS OF FORMULAS (CONTINUED)

Mu Tong may be taken out entirely or substituted by other Damp draining herbs. Long Dan Cao and Zhi Zi are the chief ingredients in this formula, also eliminating Dampness, and thus one may simply increase its dosages in order to replace Mu Tong. This should serve the purpose when this formula is used for treating hypochondriac pain or headache due to excess Fire in the Liver and Gallbladder.

When treating skin conditions with this formula e.g. herpes zoster or eczema, perhaps as noted by Practitioner B, Tong Cao and Deng Xin Cao (see table: Mu Tong) may be favoured substitutes if the Heat is at the Blood level. Moreover, Di Fu Zi is another option when Damp Heat is the predominant cause of the skin condition. Tong Cao, Deng Xin Cao and Di Fu Zi are all Damp draining herbs whilst Di Fu Zi is a common herb for treating itching on the skin due to Damp Heat (Bensky et al, 2004).

Formulas containing Xi Xin are mostly classic formulas from the SHL, which often include one or more banned or restricted herbs such as Xi Xin, Mu Tong, Fu Zi and/or Ma Huang. We will discuss two frequently used formulae containing Xi Xin in order to explain possible substitutions.

Looking at Ma Huang Fu Zi Xi Xin Tang *Ephedra, Asarum, and Prepared Aconite Decoction*, as the name suggests this formula consists of only three substances - Ma Huang, Fu Zi, and Xi Xin (Scheid et al, 2008). All three herbs are either prohibited or restricted to use here in the UK (RCHM, 2008) and thus, as noted by Practitioner A, this is a formula one should consider to dismiss entirely as it is simply impossible to substitute all herbs.

Chuan Xiong Cha Tiao San *Ligusticum Chuanxiong Powder* (Scheid et al, 2009)

Bo He	240g	Wind/Heat dispersing	Clears head and eyes
Chuan Xiong	120g	Blood moving	Alleviate headaches in Shao Yang, Jue Yin
Bai Zhi	60g	Wind/Cold dispersing	Alleviate headaches in Yang Ming
Qiang Huo	60g	Wind/Cold dispersing	Alleviate headaches Tai yang channels
Xi Xin	30g	Wind/Cold dispersing	Alleviates pain
Jing Jie	120g	Wind/Cold dispersing	Disperse Wind from head
Fang Feng	45g	Wind/Cold dispersing	Disperse Wind from head
Zhi Gan Cao	60g	Qi tonifying	Harmonise the all ingredients

The formula Chuan Xiong Cha Tiao San treats headache by releasing exterior Wind Cold. This formula has a total of five Wind Cold dispersing herbs – Bai Zhi, Qiang Huo, Xi Xin, Jing Ji and Fang Feng (Scheid et al, 2008). The dosage of Xi Xin in this formula is relatively small in comparison with the other herbs in the formula and so one may just substitute Xi Xin by increasing the amounts of the already existing ingredients. This would be Bai Zhi or Qiang Huo as both these herbs also belong to the Wind Cold dispersing category.

Practitioner A noted that Bai Zhi is his most frequently chosen substitute for Xi Xin. However, since Bai Zhi is frequently already included in traditional formulae with Xi Xin, one needs to decide whether or not a substitution is necessary. In most cases it is enough to simply increase the dosage of Bai Zhi for example.

What Chinese herbal medicine practitioners say ...

Practitioner A commented that the only case where an ingredient “needs” to be substituted is where the formula is quite small. When the number of ingredients is high it is not so crucial whether one uses this herb or that herb, or substitutes it with another herb or a pair of herbs to fit or simply adjusts the proportions of other ingredients. With small formulas including a herb in question as a key ingredient, e.g. Fang Ji Fu Ling Tang, then it becomes necessary to substitute rather closely.

Practitioner B stated when selecting a herb as a substitute that fits the formulation approach, it might even be a better choice than the original ingredient. This is because the original ingredients were put together for a patient situation (perhaps in ancient times) that is different than the patients we are treating today/ the individual right in front of us.

Practitioner C noted that there is simply no single ingredient that substitutes another herb, but one needs to find different herbs depending on the context. The herbs one uses as a substitute is dependent on the individual formula and the individual concerned and hence no standardised substitution can be suggested.



Guan Mu Tong (Caulis aristolochiae manshuriensis)

“We hope practitioners will kindly share more of their clinical experience and expertise in order to shed light on possible substitutions - this would add a valuable and essential source of information to the practice of Chinese herbal medicine.”

CONCLUSION

As a number of herbal products including Fang Ji, Mu Tong and Xi Xin have been banned to use in the UK, Chinese herbal medicine practitioners are facing the challenge of having to find suitable substitutions for these herbs within particular herbal formulas. However, there is no standardised substitution for these three commonly listed herbs.

Various substitutions and explanations have been detected through searching current literature and by interviewing Chinese herbal medicine practitioners of extensive clinical experience. The overall outcome revealed that what one may use as a substitute for Fang Ji, Mu Tong and Xi Xin is dependent on which formula we use as well as the individual concerned and hence there is no definite solution but a number of options.

Findings suggest that it is essential to closely look at the formula that contains the herb and substitute accordingly, i.e. how the formula is designed to perform particular actions as a whole and what role the individual herb in question plays. Moreover, one needs to understand the synergy of the herbs combined within the formula. The substitute will vary according to the prescription. The focus should be on modifying the formula according to the patient's condition and the actions required in the given formula.

As some CHM practitioners suggested, there are two approaches, either one replaces the herb in question with herbs from the same category taking into consideration their characteristics i.e. channels entered, tastes and actions or one simply increases existing ingredients of equivalent characteristics in the formula in order to obtain the same effect.

Upon reflection this poster project, aiming to contribute to a better understanding regarding substitution, would have perhaps required a more specific questionnaire in order to lead to more specific answers. For future projects on this subject, we thus recommend to draw closer attention to specific formulas that include banned herbs. This will need to encompass the perspective of Chinese herbal medicine practitioners drawing from their extensive clinical experience in their own practice through which it will become clearer how one may replace banned herbs in commonly used formulas such as in Dang Gui Si Ni Tang or Long Dan Xie Gan Tang. We hope practitioners will kindly share more of their clinical experience and expertise in order to shed light on possible substitutions that this would add a valuable and essential source of information to the practice of Chinese herbal medicine.

ACKNOWLEDGEMENT

We would like to express our sincere gratitude to all the Chinese herbal medicine practitioners who have contributed to this poster project. We very much value all the time and effort they have put into helping us explore the subject of banned herbs and their substitution in day-to-day practice. Thank you for sharing your vast knowledge and extensive experience on a number of issues related to this project.

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