Commentary

Variability of the Dosage, Effects and Toxicity of \textit{Fu Zi} (Aconite) From a Complexity Science Perspective

Chao-ying Luo DVM, Ji-fang Zheng DVM, Jia-sheng Xie DVM, Yong-jiang Luo DVM, Jin-yu Li DVM, Gui-bo Wang MS, Rui-hua Xin MS

ABSTRACT

\textit{Fu Zi} (Aconite) is one of the most commonly used herbs in traditional Chinese medicine (TCM) in China. It should be prescribed with caution, as it is one of the most challenging herbs to correctly use without side effects. Many cases of toxicity have been reported. Many TCM and traditional Chinese veterinary medicine (TCVM) practitioners in China have reported excellent therapeutic effects with \textit{Fu Zi} (Aconite), but the human therapeutic dosage varies from 0.3-600 g/day, a 2000-fold variation. The dosages of most drugs in conventional medicine vary little and are primarily determined by body weight. Therefore, it is difficult to understand the variability in dosage and effects of \textit{Fu Zi} (Aconite) from a conventional medicine paradigm. The variability of the dosages and effects of \textit{Fu Zi} (Aconite) and other Chinese herbal medicines and TCM patterns are non-linear and can be best understood from the perspective of Complexity Science. Complexity Science is a non-linear mathematical model used to study the behavior of complex, dynamic and adaptive systems. According to Complexity Science, a complex system, such as a human or animal, responds in a variety of non-linear ways. A small stimulation may cause a large reaction, while a larger stimulation may only produce a small reaction or no reaction at all, depending on the specific situation. The variations in dosage, effects and toxicity of \textit{Fu Zi} (Aconite) are closely related to the patient’s initial conditions (e.g. interactions of the biological clock, constitution, \textit{Zang-fu} organ interactions, underlying TCVM patterns and other variables) and can only be fully understood using a model like Complexity Science that considers these complex interactions.

Key words: \textit{Fu Zi} (Aconite), Chinese herbal medicine, traditional Chinese medicine, traditional Chinese veterinary medicine, Complexity Science

ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>gram or g</td>
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<tr>
<td>TCM</td>
<td>Traditional Chinese medicine</td>
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<tr>
<td>TCVM</td>
<td>Traditional Chinese veterinary medicine</td>
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</table>

\textit{Fu Zi} (Aconite) is one of the most commonly used herbs in traditional Chinese medicine (TCM) in China for patients of all ages (Figure 1).\textsuperscript{1} \textit{Shang Han Lun} (Treatise on Cold-Induced Febrile Diseases), written by Zhong-jing Zhang in 220 AD, described 113 Chinese herbal medicine formulas. \textit{Fu Zi} (Aconite) was used in 20 of these formulas and in 3 modified versions of these formulas. Over 69 contemporary Chinese doctors have become famous for their ability to correctly use \textit{Fu Zi} (Aconite).\textsuperscript{1} This Chinese herb should be used with caution, as it is one of the most challenging to correctly use to achieve therapeutic effects without toxicity.\textsuperscript{2}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{fu_zi.jpg}
\caption{\textit{Fu Zi} (Aconite)}
\end{figure}

\footnotesize
\textbf{From:} Engineering & Technology Research Center of Traditional Chinese Veterinary Medicine of Gansu Province, Lanzhou Institute of Husbandry & Pharmaceutics Science, Chinese Academy of Agricultural Sciences, Lanzhou, Gansu, PR China 730050

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Many cases of poisoning have been reported. Studies have shown that just 0.2 mg of oral aconitine (an alkaloid extracted from *Fu Zi*) can be toxic to a human and doses ranging from 2-6 milligrams can be fatal.

Many TCM and traditional Chinese veterinary medicine (TCVM) practitioners in China have reported excellent therapeutic effects with *Fu Zi* (Aconite), but the human therapeutic dosage varies from 0.3-600 g/day, a 2000-fold variation. The reasons *Fu Zi* (Aconite) can have such a wide range of dosage and therapeutic effects without toxicity, is difficult to explain from the linear cause and effect thinking associated with conventional medicine. Complexity science, however, employs non-linear, holistic thinking that considers the many permutations of inter-relations and can be useful to explain the variability of the dosages, effects and toxicity of Chinese herbal medicines and other biological phenomena.

**Variations in Chinese Herbal Medicine Dosages and Effects**

The dosages of most drugs in conventional medicine vary little and are primarily determined by the body weight of the patient. In contrast, the therapeutic dose of *Fu Zi* (Aconite) varies greatly depending on the TCM practitioner, the TCVM disease pattern diagnosed and the response of the individual patient. In a review of the experience of several famous TCM practitioners, Dr. Zhu suggested 45 g/day, Dr. Jiang 9 g/day and Dr. H. Li 0.3 g/day for similar diseases. Dr. K. Li suggested up to 600 g/day of *Fu Zi* (Aconite) for a patient with congestive heart failure. Despite this variation in suggested dosages, all these doctors achieved excellent therapeutic effects without toxicity.

In another review of Dr. K. Li’s recommended use of *Fu Zi* (Aconite) the dosages used to treat different TCM patterns varied greatly. The minimum dosage Dr. Li used for the treatment of *Yang* Deficiency (*Yang Xu*) was 10 g/day, but he used 15-30 g/day for *Yang* Decline (*Yang Shuai Zheng*), 30 g/day for progressive congestive heart failure due to Rejecting *Yang* (*Ge Yang Zheng*) and Upfloating of Kidney *Yang* (*Dai Yang Zheng*), 40-90 g/day for *Yang* Exhaustion (*Wang Yang Zheng*) causing grave congestive heart failure and 100-200 g/day for critical congestive heart failure. Dr. K. Li simultaneously administered 60 g/day of *Zhi Gan Cao* (Glycyrrhiza) when the dosage of *Fu Zi* (Aconite) was greater than 30 g. The *Fu Zi* (Aconite) decoctions were also prepared very differently for different TCM pattern diagnoses. For example, to treat chronic heart failure *Fu Zi* (Aconite) was decocted slowly over mild heat with 1500 mL of cool water for about 90 minutes and then administered orally twice daily. In contrast, to treat critical and agonal heart failure, *Fu Zi* (Aconite) was decocted rapidly over strong heat and administered orally as it was decocted.

Dr. SF Shi achieved therapeutic effects with high dosages of *Fu Zi* (Aconite) for refractory asthma (asthma not controlled by high dosages of inhaled corticosteroids and long-acting beta-2 agonists). Five dosage ranges of *Fu Zi* (Aconite) were prescribed: 1) 30-40 g, 2) 45-65 g, 3) 70-90 g, 4) 95-120 g and 5) 130-160 g once daily. The initial dosage was based on the patient’s condition and TCM pattern. If the patient had not improved and showed no evidence of toxicity after 1 week, the *Fu Zi* (Aconite) dosage was increased by 15-20 g/day. An increase was continued weekly until the asthma was controlled with no side effects and had not recurred for one month. The final effective dosage of *Fu Zi* (Aconite) was then continued for 3 months, to ensure the therapeutic effect. In addition to *Fu Zi* (Aconite), 15-30 g of *Gan Cao* (Glycyrrhiza) and 10-20 g of *Gan Jiang* (Zingiberis) were added to the decoction to reduce or eliminate toxicity. First the *Fu Zi* (Aconite) was decocted alone, with decoction times varying, based on the dosage as follows: 1) dosages <45 g, were decocted for 60 minutes, 2) 45-70 g dosages, decocted for 90 minutes, 3) 70-100 g dosages, decocted for 120 minutes, 4) 100-120 g dosages, decocted for 150 minutes and 5) 120-160 g dosages, decocted for 180 minutes. After the proper *Fu Zi* (Aconite) decoction period, *Gan Cao* (Glycyrrhiza) and *Gan Jiang* (Zingiberis) were added and the mixture was decocted for 40 more minutes. For *Fu Zi* (Aconite) doses of 120 g or more, the final decoction was mixed with 2 spoons of honey before oral administration.

*Fu Zi* (Aconite) is not the only Chinese herb to have variable dosages and effects. *Huang Qi* (Astragalus) has a strong diuretic effect at dosages <20 g/day, but this effect is reduced, when the dose is 20-30 g/day. *Huang Qi* (Astragalus) also increases blood pressure at dosages <15 g/day, but it decreases blood pressure when the dosage is >35 g/day. *Gan Cao* (Glycyrrhiza) has a harmonizing effect at dosages <4 g/day, warms the Stomach and calms the mind at dosages of 5-10 g/day and has a similar effect as corticosteroids, if the dosage is >30 g/day. *Huang Lian* (Coptis) invigorates the Stomach at a dosage of 3 g/day, but dramatically lowers blood glucose and prevents arrhythmias at dosages >30 g/day. *Chai Hu* (Bupleureum) is used at dosages of 3 g/day to promote Spleen *Yang*, 9 g/day to relieve Liver Qi Stagnation and >24 g/day to effectively reduce fever. The Chinese herbal medicines *Xiao Cheng Qi Tang* and *Hou Po San Wu Tang* are both composed of varying amounts of 3 herbs: 1) *Da Huang* (Rheum), 2) *Zhi Shi* (Aurantium) and 3) *Hou Po* (Magnolia). Although the herbal components are the same, they are present in different amounts, which result in different effects. In *Xiao Cheng Qi Tang*, the King herb (largest amount) is *Da Huang* (Rheum) and *Zhi Shi* (Aurantium) is the Minister herb (next largest amount). *Hou Po* (Magnolia) is present in half the amount of *Da Huang* (Rheum) and serves as the Adjuvant herb. *Xiao Cheng Qi Tang* purges Heat to relieve constipation and is indicated for mild Excess patterns of the *Yang Ming Fu* organs. In *Hou Po San Wu Tang*, the King herb is *Hou Po* (Magnolia) and although *Zhi Shi* (Aurantium) is still the Minister herb, the amount used is greater than in *Xiao Cheng Qi Tang*. The *Da Huang* (Rheum) is the Adjuvant herb and the
amount is half that of Hou Po (Magnolia). Hou Po San Wu Tang promotes the flow of Qi to relieve constipation and is mainly used to treat constipation due to Qi Stagnation. As illustrated by the above examples, complex interactions occur between individual ingredients of Chinese herbal medicines and depend on the amount of herb in the formula. The variability of their interactions affects their indications for a specific disease pattern.6

Variability of Fu Zi (Aconite) Dosage and Effects From a Complexity Science Perspective

The non-linear characteristic of TCM and TCVM pattern differentiation and the variability of the dosages and effects of Fu Zi (Aconite) and other Chinese herbal medicines can be best understood from the perspective of complexity science.5,8 Complexity Science is a non-linear mathematical model used to study the behavior of complex, dynamic and adaptive systems with individual constituent elements that may interact in a variety of ways.5 In Complexity Science, the whole is always more than the simple predicted interactions between component parts. According to Complexity Science, a complex system, such as a human or animal, responds in a variety of non-linear ways. A small stimulation may cause a large reaction, while a larger stimulation may only produce a small reaction or no reaction at all, depending on the specific situation.

Edward Lorenz, the father of Chaos Theory, first described the Butterfly Effect, which speculates that even the smallest of changes in a system can have large consequences, depending on a system’s initial conditions.8 The classical metaphor for the Butterfly Effect is that the formation of a hurricane is contingent on whether or not a distant butterfly had flapped its wings several weeks before. The biological clock, constitution, disease, TCVM patterns and other variables influence the initial conditions of the human or animal that make them unique and the smallest change in these can have huge effects (Butterfly Effect) (Figure 2). Tolerance or adverse reactions to drugs, allergens, pathogens, Chinese herbal medicines and other entities, are associated with the initial condition of the human or animal at the time of exposure.

In conventional medicine there is often an organ diagnosis and 1 or more treatments based on the greatest probability of a therapeutic effect (evidence-based medicine). Adverse drug reactions and damage to other organ systems plague conventional medicine and harm individuals. In TCM and TCVM there may be many different patterns associated with a conventional diagnosis. As a patient’s initial condition is different for different pattern diagnoses, each patient naturally has a different response to a TCM or TCVM treatment. Many Chinese herbal medicines and acupuncture points have a bidirectional regulatory effect depending on the initial condition of the patient, so cannot be understood using a simple cause and effect paradigm. Chinese herbal medicines contain different herbs, in different amounts with complex interactions based on the ingredients. Herbal formulas therefore often show characteristics of a whole that is more than the sum of its parts and their actions are best understood from a complexity science paradigm and this information is altering recommended dosages of classic Chinese herbal medicine formulae.9

The toxicity of Fu Zi (Aconite) is closely related to the patient’s initial conditions (e.g. biological clock, constitution, Zang-fu organ strengths and weakness, TCVM pattern diagnoses and other variables). Animal model research has shown that different TCVM pattern diagnoses, play a significant role in determining the toxicity of Fu Zi (Aconite).10-12 When used alone the cardiotonic effect of Fu Zi (Aconite) is minor and short-lived, and there is some toxicity. Used alone, the herbs Gan Jiang (Zingiberis) and Zhi Gan Cao (Glycyrrhiza) have no cardiotonic effect. When these 3 herbs are combined in the herbal formula Si Ni Tang, they produce a strong and long-acting cardiotonic effect with no toxicity. This was demonstrated in a study in which different groups of rats were given an oral decoction of either Si Ni Tang, Fu Zi (Aconite) alone, Fu Zi (Aconite) with Zhi Gan Cao (Glycyrrhiza), or Fu Zi (Aconite) with Gan Jiang (Zingiberis).13

Viewing TCVM from a complexity science perspective is very important to ensure safe and
therapeutic effects of TCVM treatments. Administration of Chinese herbs from a conventional medical diagnosis, ignoring the pattern differentiation, can result in ineffective treatments or harm to the patient. Besides individual variability, another challenge to understanding Chinese herbal medicine mechanisms from a conventional medicine perspective is that most herbal medicines have smaller pharmacological effects in comparison to conventional drugs. Further, the mechanisms of action of Chinese herbal medicine seen in experimental studies may not be the same as their clinical effects.

Conclusions Drawn From Variations in the Dosage and Effects of Fu Zi (Aconite)

As discussed above, the variability of the dosage and effects of Fu Zi (Aconite) is too complex to be understood from the perspective of conventional medicine and best understood for the complexity science perspective. As Alvin Toffler commented in his forward to the book Order Out of Chaos, Man's New Dialogue with Nature, “One of the most highly developed skills in contemporary Western civilization is dissection: the split-up of problems into their smallest possible components. We are good at it. So good, we often forget to put the pieces back together again. This skill is perhaps most finely honed in science. There we not only routinely break problems down into bite-sized chunks and mini-chunks, we then very often isolate each one from its environment by means of a useful trick. We say ceteris paribus--all other things being equal. In this way we can ignore the complex interactions between our problem and the rest of the universe”.

The Cartesian linear scientific approach has made positive contributions to our understanding of the body and disease and greatly expanded our knowledge of anatomy, physiology, pathology and advanced medicine. The current scientific method has helped explain some of the mechanisms of TCVM treatments in conventional scientific terms, but it has not contributed to the understanding of the interactions and interrelationships of the environment-mind-body system as a whole. To understand TCM and TCVM one must shift scientific perspectives from the Cartesian scientific model to the Complexity Science model and consider these non-linear interrelationships and interactions. A comprehensive understanding through Complexity Science is a more highly evolved way to view health and disease, yet it is still based on an analytical understanding of the organism from the Cartesian scientific approach. Both approaches have their merits and when integrated can be greater than the sum of their parts. A combination of conventional medicine disease and TCVM pattern diagnosis can improve the clinical efficacy of both forms of medicine. The Liu Jing Bian Zheng (differentiation and treatment of the six Jings), Zang-fu Bian Zheng (differentiation and treatment of the Zang-fu organ syndromes), Wei Qi Ying Xue Bian Zheng (Wei Qi Ying and Xue stage disease differentiation and treatment) and San Jiao Bian Zheng (differentiation and treatment of disorders of the three Burners) of TCVM are also based on physiological, anatomical and pathological knowledge and the clinical experience related to them.

TCM and TCVM are still evolving and advancing. From the perspective of Wen Bing (Epidemic Febrile Diseases), it was thought that Shi Wen (epidemic fevers) were lingering and difficult to cure, but then it was found that epidemic fevers such as typhoid fever, leptospirosis and brucellosis could be cured or quickly controlled with specific antibiotic herbs. The use of Fu Zi (Aconite) has been opposed by some people, not only because of reports of toxicity, but also reports that more than 80% of its total alkaloids were lost during processing. Research needed to clarify these reports, can be performed with currently available technology, methods and knowledge of conventional medicine, but the variations in the dosage and effects of Fu Zi (Aconite) must also be considered from the perspective of Complexity Science. The 4 most commonly used Chinese herbal medicines in TCVM containing Fu Zi (Aconite) are listed in Appendix 1 and Tables 1-4 below.

Appendix 1: Four Common Veterinary Chinese Herbal Medicine Containing Fu Zi (Aconite)

Fu Zi Li Zhong Tang (Regulate the Middle Burner Decoction)

- **Background:** Fu Zi (Aconite) is the King herb of this formula. Li Zhong means regulating the Middle Burner, while Tang means decoction.
- **Source:** San Yin Ji Yi Bing Zheng Fang Lan (Treatise on Three Categories of Pathogenic Factors), written by Yan Chen in 1174 A.D.
- **Ingredients:** The original formula was composed of 3 g of each of Fu Zi (Aconite, the skin and umbilicus removed), Gan Jiang (Zingiberis), Ren Shen (Ginseng), Gan Cao (Glycyrrhiza) and Bai Zhu (Atractylodes). The current ingredients are listed in Table 1.
- **Preparation:** The herbs can be ground into a fine powder and put in capsules, made into pills with honey or decocted for oral administration. If decocted, 250 milliliters of water are added and boiled, until 180 milliliters of liquid remains. The herbal extract can also be concentrated into tea pills or granules.
- **Dosage:** Horses and cattle 15-30 g twice daily, dogs 0.5-3 g (0.05g/kg) twice daily, cats 0.1-0.3 g (0.05g/kg) twice daily
- **Actions:** Tonifies Yang and warms the Spleen and Stomach to dispel Cold
- **Indications:** Deficient Cold in the Zhong Jiao (Middle Burner), stomach and abdominal pain, vomiting and diarrhea

Zhen Wu Tang (True Warrior Decoction)

- **Background:** Zhen Wu was the name of an ancient
Chinese god of the North and Water. The name of the formula therefore indicates that it cures disorders of water metabolism. The King herb of this formula is Fu Zi (Aconite), which strengthens primordial Yang to eliminate Yin pathogens. Tang means decoction.

- **Source:** Shang Han Za Bing Lun (Treatise on Cold Induced Disorders and Miscellaneous Diseases), written by Zhong-jing Zhang in 220 A.D.

- **Ingredients:** The original formula was composed of 45 g of each of Fu Ling (Poria), Shao Yao (Paeonia), Sheng Jiang (Zingiberis) and Fu Zi (Aconite, the skin and umbilicus removed), with 30 g of Bai Zhu (Atractylodes). The current ingredients are listed in Table 2.

- **Preparation:** The herbs can be ground into a fine powder and put in capsules or decocted. If decocted, 1600 mL of water are added to the herbs and boiled until 600 mL of the liquid remains. The herbal extract can be concentrated into tea pills or granules.

- **Dosages:** Horses and cattle 15-30 g twice daily, dogs 0.5-5 g (0.5 g/kg) twice daily, cats 0.1-0.5 g (0.05 g/kg) twice daily

- **Actions:** Warms Yang and promotes diuresis

- **Indications:** This formula is used for edema due to Spleen and Kidney Yang Deficiency. Indications for its use include difficulty passing urine, pain or swelling of the limbs, stomach pain, dysentery, diarrhea, absence of thirst and a white tongue coating.

### Jin Gui Shen Qi Wan or Shen Qi Wan (Kidney Qi Pill)

- **Background:** Jin Gui means that the formula originates from the book Jin Gui Yao Lue (commonly shortened to Jin Gui). Shen refers to the Kidney and Wan means pill. This formula was named for its primary function to tonify Kidney Qi and Yang.

- **Source:** Jin Gui Yao Lue (Medical Treasures of the Golden Chamber), written by Zhong-jing Zhang in 220 A.D.

- **Ingredients:** The original formula was composed of 108 g of Shu Di Huang (Rehmannia), 54 g of each of Shan Yao (Dioscorea) and Shan Zhu Yu (Cornus), 36 g of each of Fu Ling (Poria), Mu Dan Pi (Moutan) and Ze Xie (Alisma), and 27 g of each of Gui Zhi (Cinnamomum) and Fu Zi (Aconite, the skin and umbilicus removed). The current ingredients are listed in Table 3.

- **Preparation (powder or capsule method):** The herbs above are ground into a fine powder and put into capsules.

- **Dosages:** Horses and cattle 15-30 g twice daily, dogs 0.5-5 g (0.1 g/kg) twice daily, cats 0.2-0.5 g (0.1 g/kg) twice daily

- **Actions:** Warms and nourishes Kidney Yang

- **Indications:** This formula is used for Kidney Yang Deficiency. Indications for its use include lumbar coldness, pain or swelling of the limbs, dysuria, polyuria, pollakiuria, lower abdominal pain, impotence, Phlegm cough, diabetes, a swollen and pale tongue and a weak and sunken pulse.

### You Gui Wan (Restore the Right Pill)

- **Background:** You means right and Gui refers to returning or restoring. According to TCM theory, the left Kidney belongs to Water and Yin, while the right Kidney belongs to Fire and Yang. You Gui Wan invigorates Kidney Yang, hence its name.

- **Source:** Jing Yue Quan Shu (Collected Treatises of [Zhang] Jing Yue), written by Jing-yue Zhang in 1624 A.D.

- **Ingredients:** The original formula was composed of 240 g of Shu Di Huang (Rehmannia), 120 g of each

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**Table 1: Ingredients and actions of Fu Zi Li Zhong Tang (Regulate the Middle Burner Decoction)**

<table>
<thead>
<tr>
<th>Pin-Yin Name</th>
<th>English Name</th>
<th>Amount (%)</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fu Zi</td>
<td>Aconite</td>
<td>20</td>
<td>Restores collapsed Yang, supplements Fire and Yang, eliminates Cold to stop pain</td>
</tr>
<tr>
<td>Gan Jiang</td>
<td>Zingiberis</td>
<td>20</td>
<td>Warms the Middle Burner to eliminate Cold, revives Yang, promotes Blood circulation, eliminates Dampness and Phlegm</td>
</tr>
<tr>
<td>Ren Shen</td>
<td>Ginseng</td>
<td>20</td>
<td>Strongly nourishes Kidney Qi, invigorates the Spleen, tonifies the Kidney, promotes production of Body Fluids, calms the nerves</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Used for emergency treatment of collapse</td>
</tr>
<tr>
<td>Gan Cao</td>
<td>Glycyrrhiza</td>
<td>20</td>
<td>Invigorates the Spleen, benefits Qi, alleviates pain, regulates and harmonizes the other herbs</td>
</tr>
<tr>
<td>Bai Zhu</td>
<td>Atractylodes</td>
<td>20</td>
<td>Invigorates the Spleen, benefits Qi, drains Dampness and alleviates water retention, suppresses sweating, prevents abortion</td>
</tr>
</tbody>
</table>
Table 2: Ingredients and actions of Zhen Wu Tang (True Warrior Decoction)

<table>
<thead>
<tr>
<th>Pin-Yin Name</th>
<th>English Name</th>
<th>Amount (%)</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fu Zi</td>
<td>Aconite</td>
<td>21.43</td>
<td>Restores collapsed Yang, supplements Fire and Yang, eliminates Cold to stop pain</td>
</tr>
<tr>
<td>Bai Zhu</td>
<td>Atractylodes</td>
<td>14.28</td>
<td>Invigorates the Spleen, benefits Qi, drains Dampness and alleviates water retention, prevents abortion</td>
</tr>
<tr>
<td>Fu Ling</td>
<td>Poria</td>
<td>21.43</td>
<td>Drains Dampness, promotes diuresis, invigorates the Spleen, harmonizes Stomach function, calms the nerves</td>
</tr>
<tr>
<td>Sheng Jiang</td>
<td>Zingiberis</td>
<td>21.43</td>
<td>Warms the Middle Burner to eliminate Cold, revives Yang, promotes circulation of Blood, eliminates Dampness and Phlegm</td>
</tr>
<tr>
<td>Shao Yao</td>
<td>Paeonia</td>
<td>21.43</td>
<td>Astringes Yin, nourishes Blood, restrains the Liver, relieves Liver pain</td>
</tr>
</tbody>
</table>

Table 3: Ingredients and actions of Jin Gui Shen Qi Wan (Kidney Qi Pill)

<table>
<thead>
<tr>
<th>Pin-Yin Name</th>
<th>English Name</th>
<th>Amount (%)</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shu Di Huang</td>
<td>Rehmannia</td>
<td>28.57</td>
<td>Enriches the Blood, invigorates Yin, nourishes the Liver, tonifies the Kidney, promotes Jing and generation of Blood</td>
</tr>
<tr>
<td>Shan Yao</td>
<td>Dioscorea</td>
<td>14.29</td>
<td>Nourishes Blood and the Liver, retains Yin through astringence</td>
</tr>
<tr>
<td>Shan Zhu Yu</td>
<td>Cornus</td>
<td>14.29</td>
<td>Nourishes the Liver and Kidney, astringes, promotes Body Fluid production to quench thirst, stops emissions</td>
</tr>
<tr>
<td>Fu Ling</td>
<td>Poria</td>
<td>9.52</td>
<td>Drains Dampness, promotes diuresis, invigorates the Spleen, harmonizes Stomach function, calms the nerves</td>
</tr>
<tr>
<td>Mu Dan Pi</td>
<td>Moutan</td>
<td>9.52</td>
<td>Removes Heat to cool Blood, activates Blood circulation to dissipate Blood stasis</td>
</tr>
<tr>
<td>Ze Xie</td>
<td>Alisma</td>
<td>9.52</td>
<td>Drains Dampness, promotes diuresis, relieves Heat, relieves stranguria</td>
</tr>
<tr>
<td>Gui Zhi</td>
<td>Cinnamomum</td>
<td>7.14</td>
<td>Dispels Cold, relieves pain, promotes Blood circulation, nourishes Yang Qi</td>
</tr>
<tr>
<td>Fu Zi</td>
<td>Aconite</td>
<td>7.14</td>
<td>Restores collapsed Yang, supplements Fire and Yang, eliminates Cold to stop pain</td>
</tr>
</tbody>
</table>

of Shan Yao (Dioscorea), Gou Qi Zi (Lycium), Tu Si Zi (Cuscuta), Lu Jiao Jiao (Cervus) and Du Zhong (Eucommia, roasted and salted), 90 g of each of Shan Zhu Yu (Cornus, stir-fried with wine) and Dang Gui (Angelica), and 60 g of each of Rou Gui (Cinnamomum) and Fu Zi (Aconite, the skin and umbilicus removed). The current ingredients are listed in Table 4.

- **Preparation:** Shu Di Huang (Rehmannia) is soaked, steamed and dried in wine several times until soft and pliable. The other herbs are ground into a fine powder. The powder can be decocted or put into capsules and the extract concentrated into granules or tea pills.

- **Dosages:** Horses and cattle 15-30 g twice daily, dogs 0.5-5 g (0.1 g/kg) twice daily, cats 0.2-0.5 g (0.1g/kg) twice daily15

- **Actions:** Warms and nourishes Kidney Yang, Replenishes Jing and promotes hemostasis

- **Indications:** This formula is used for Kidney Yang Deficiency and decline of the Ming Men Fire, which causes Fire to be unable to produce Earth.
Indications for its use include depression, fear due to Qi Deficiency, chilly and cool limbs, impotence and seminal emissions, soreness and weakness of the waist and knees, enuresis, limb pain or numbness, edema, Deficient Cold of the Spleen and Stomach, anorexia, vomiting, abdominal distension, peri-navel pain, soft stool and frequent diarrhea.

REFERENCES
11. Zhu LP. The toxicity comparison and the mechanism initial research on aconite root treating animal model of yang asthenia and yin asthenia.


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TCVM NOTES

The Seven Types of Injury in Horses

“The seven types of injury refer to injury by Cold, Heat, water, starvation, over-eating, over-fatness and prolonged walking according to a recently translated classical equine text called Yuan Heng Liao Ma Ji, originally published in 1608. Injury by Cold results from intake of the previous night’s cold water during the frigid season or confinement in a cold place. The main manifestation is withered and disheveled hair. Injury by Heat results from prolonged riding on summer days, without regular feeding and drinking. The main manifestations are irritability, or even disturbance of consciousness. Injury by water results from instantly drinking before resting after riding, with consequent retention of water in the stomach and intestines. The main manifestation is this retention of water. Injury by starvation results from the horse being forced to work without rest when hungry, followed by instantly feeding and drinking after work. This manifests as impaction of forage in the stomach and intestines, with difficult or no defecation. Injury by over-fatness results from the intense work of an over-fat horse, for example causing myoglobinuria. Injury by prolonged walking results from excessive walking. Both injuries by over-fatness and prolonged walking can cause myalgia and emaciation.”

Excerpted by Karen Spracklen DVM


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ABSTRACT

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Evaluation of low intensity laser therapy in myofascial pain syndrome.


Limited studies have demonstrated that low intensity laser therapy (LILT) may have a therapeutic effect on the treatment of myofascial pain syndrome (MPS). Sixty (60) patients with MPS and having one active trigger point in the anterior masseter and anterior temporal muscles were selected and assigned randomly to six groups (n=10): Groups I to III were treated with GaAlAs (780 nm) laser, applied in continuous mode and in a meticulous way, twice a week, for four weeks. Energy was set to 25 J/cm2, 60 J/cm2 and 105 J/cm2, respectively. Groups IV to VI were treated with placebo applications, simulating the same parameters as the treated groups. Pain scores were assessed just before, then immediately after the fourth application, immediately after the eighth application, at 15 days and one month following treatment. A significant pain reduction was observed over time (p<0.001). The analgesic effect of the LILT was similar to the placebo groups. Using the parameters described in this experiment, LILT was effective in reducing pain experienced by patients with myofascial pain syndrome. Thus, it was not possible to establish a treatment protocol. Analyzing the analgesic effect of LILT suggests it as a possible treatment of MPS and may help to establish a clinical protocol for this therapeutic modality.