

Strategies for Recovery from Injury

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Preface

At the Institute for Traditional Medicine clinic called IEP, we encounter many patients with chronic and severe pain due to injury. Such patients are specifically invited, as this is one of the few medical specialties for which we offer a treatment program at our unique facility. With the exception of instances where these services are aimed at pain due to a recent surgery (such as for cancer patients; surgery being a type of injury), the pain that patients attending the clinic suffer from often has been present for months or years, even decades. Patients are referred to the clinic from hospitals and natural health care clinics when they believe that the path forward in dealing with the sequela of the injury is uncertain or not promising. In most cases, despite a favorable response to acupuncture at IEP, the pain syndrome remains present even after prolonged treatment at high frequency (e.g., twice per week acupuncture). While more substantial therapeutics would likely make additional progress, and especially through herb therapies to be described in this presentation, limitations are encountered that some patients do not overcome, such as inability or unwillingness to undertake essential physical therapy and hesitant compliance with high dose herb protocols.

What is evident in each of the chronic pain cases presented is that the initial response to injury was therapeutically inadequate, with the result that the pain condition has soon become “frozen” in place, as I describe it. While subsequent alleviation of the prolonged pain condition remains possible, in most instances there is a somewhat arduous path toward resolution, one that might have been avoided or simplified had earlier response to damage been adequate. Thus, this presentation about treatment strategy for injury is especially focused on the situations where a practitioner is able to treat patients in the earlier stage of injury and then to continue to treat the condition, hopefully toward resolution or at least to stabilizing at a modest level of impairment. Specifically, I will outline a series of three basic steps that have been identified by modern TCM practitioners working in China. The approach presented here is derived from the Chinese-English Encyclopedia of Traditional Chinese Medicine, the 14th volume devoted to orthopedics and traumatology, published in 1990 and based on practices of the 1970s to 1980s. At that time, traditional style of treatment was prevalent, while modern understanding of the physical processes involved in injury damage and its response to drug treatment were just becoming established. The management of long standing pain syndromes, which were not discussed in the Encyclopedia, will be mentioned in the current presentation.

Effective Response to Injury: Modern Medicine Model

There is a western model for prompt treatment of injuries to be considered first: this is a modern medicine method apart from any Chinese medicine influence. It is observed most readily in the treatment of top athletes. For example, during the course of a competitive game such as football, soccer, or basketball, injuries frequently occur in the public setting. Immediately, one or more specialists attend to the athlete so as to rapidly determine what has occurred, and to recommend such actions as a player shaking off the disturbance and continuing on, or hobbling off the field under his/her own power or supported by another person, or taken off by stretcher, and, in the most serious incidents, taken to a hospital. Except for the first case, treatment begins promptly to limit further damage to the affected parts, such as applying ice, or giving a steroid shot, or stabilizing with tape or splint. A course of physical therapy (applied movements and special exercises undertaken by the injured person) begins within a day or two so as to prevent freezing up of joints and to promote the healing process, often by utilizing a directed pressure on or near the affected area to stimulate healing. Drug therapies most often are utilized to restrict the inflammatory response, freeing up circulation in the affected area for more rapid healing. Finally, once the traumatic situation has been well stabilized, there is a highly active recovery mode, restoring full mobility, strength, and flexibility. The extent of recovery

is frequently a public matter, as the player's status, especially as affects whether he or she can get into the next competition, is publicized. In many cases, the entire process from injury to return to full or nearly full functioning is just a few weeks; a usual benchmark is 6 weeks; some serious injuries can take double that time. Occasionally, a player is knocked out of an entire season, and in rare instances, out of a career, but all efforts are applied to minimize the impediment and restore functionality.

By contrast, many people who suffer injuries in other circumstances, such as work related incidents, motor vehicle accidents, falling at home or during a hike, participating in amateur sports, and overdoing a physical activity such as lifting heavy objects, either don't follow these kinds of procedures, or do so erratically, partially, and without adequate monitoring of progress. While an athlete has at stake his/her favorite and professional activity, often with dependence of fellow team members upon the injured player's quick return to full function, the average person may have a mixed sense of the impact of injury. Thus, the injury might be thought of as something that will take care of itself; it can be painful and disruptive, but perhaps it provides an excuse for missing days from a not so rewarding job, or gets the person out of doing some activities that were not enthusiastically pursued in the first place (I would help you move, but I've got a bad back, sorry). Many non-athletes do not have the resources of knowledgeable injury-repair physicians, at least during the initial injury phase, and don't think to pursue finding them. Even for work related injuries and motor vehicle accidents that have good cost coverage, there may be questions about what type of physician to utilize (e.g., chiropractor, trauma care specialist, acupuncturist) and to what extent services are needed. The medical system can deter appropriate treatment simply because of long waiting time to get an appointment, large out of pocket expense, and providing advice that is good, but not readily adapted to a person's daily life.

An injury not properly treated within a couple of months can easily become a chronic condition that never fully resolves; injury pain and stiffness can then affect other aspects of life. The chronic pain sufferer may eventually turn to disability payments that, by their nature, tend to keep the person away from continuing highly effective treatment, since improved capability, work, and income can remove the financial benefits.

Acupuncture to the Rescue

There are many instances in which acupuncturists report amazing successes for patients with chronic pain. A typical example: the patient had lower back pain for years, nothing that was tried helped much, and the doctor recommended surgery, which the patient wished to avoid. Turning to acupuncture, after a small number of treatments (one to six is the figure I hear most), the back pain was resolved, and the doctor who recommended surgery is astounded. A few such cases can make the acupuncturist feel that all chronic pain patients can resolve their condition likewise. Yet, this ability to alleviate older injuries is not universal; at least, it has not been observed at our clinic with many difficult cases. While hoping for the best in terms of quick response to acupuncture for chronic pain, practitioners need to capably provide treatment for early injury.

There are instances where a patient of an acupuncturist who has been undergoing treatment for a non-injury condition then suffers an injury, cancels upcoming appointments, and decides to return when better. Such a missed opportunity for help is something that proper education can help avoid. Acupuncturists should understand the nature of injury, its course of development, and the methods of treatment so as to provide the necessary service and make it clear to patients that injury is a reason for getting treatment right away, not after it gets better. In the discussion below, "injury" will be presented as a general category. There are many subdivisions: some injuries present acute bleeding, others broken bones, others burns; surgical procedures can be defined as injuries, but they are typically sparing of the disruptive damage that occurs with a motor vehicle accident or a stab wound. The Chinese approach is depicted as traditional Chinese medicine (TCM). Nearly all the information provided here comes from the post-revolutionary period, which retains but modifies the earlier practices found in the broad Chinese medicine professional community.

Three Stages of Injury Treatment with TCM

The Orthopedics and Traumatology volume follows a procedure that is commonly utilized in China to relay many fields of medicine. It begins with a very brief introduction to methods, then quickly launches into specifics for a selected disorder that serves as the model for addressing other disorders. In this case, bone fractures are the basic kind of trauma for discussion (hence the Orthopedics portion of the title), and then other kinds of injuries get less attention, but there is still reference to the same basic approach. The initial discussion is about clavicle fractures, an injury frequently induced by falls.

The Encyclopedia presents three stages and therapeutic concerns addressed by herbs, with emphasis on the initial stage. Here, I remove the bone fracture references and relay the general principles with editing; the adjusted presentation is:

A. Initial Stage Principles for Prescriptions

1. Promoting the flow of qi and invigorating circulation of the blood so as to allay swelling and eliminate blood stasis. This principle is applicable for patients suffering from impediment of qi circulation and obstruction of blood circulation due to local stasis that result in pain and swelling. The commonly prescribed medicines mostly have blood-flow-invigorating and stasis-removing properties, frequently accompanied by those of qi-flow-promotive and meridian passage dredging effects.
2. Activating circulation of the blood, subduing swelling, and clearing away heat and toxic materials. This principle is applicable for patients with local stasis, pain, swelling, red skin, and systemic fever.
3. Promoting the flow of qi, removing stagnancy, and eliminating extravasated blood by purgation. Trauma is often complicated with dysfunction of the internal organs, with therapeutic principles such as activating circulation of blood and promoting flow of qi so as to remove stagnancy for stomach distress or eliminating extravasated blood by purgation for abdominal pains and distension.

B. Intermediate Stage Principles for Prescriptions

Generally, swelling and pain subside within 3-6 weeks after the injury. The stability of damaged parts must be maintained. The therapeutic concerns and approach may be modified for the type of tissue damaged, for example, bone, muscle, or tendon, but involve tissue reconstruction at the site of damage.

C. Natural Cure Stage Principles for Prescriptions

1. Tonifying qi and blood. This principle helps to compensate for reduced physical activity that prevailed during the time of injury recovery.
2. Tonifying the spleen and stomach. This is applied if the injury has had more severe effects on health, either because of long duration, multiple affected sites, or requirement for considerable corrective measures (surgery, extensive difficult physical therapy) that consume vital qi and weaken blood so that the spleen/stomach needs to be strengthened to speed restoration of function.
3. Tonifying liver and kidney. This method is especially applied for older individuals who are slower to heal and may have repair mechanisms slowed and weakened by deficiency of liver and kidney essences.
4. Warming the channels. This method is applied when the channels are invaded by pathogenic wind and experience stagnation of dampness; this kind of syndrome is found also in arthralgia. Some injuries result in persisting inflammation and can even serve as a trigger for chronic arthralgia.

Utilizing this outline as a basic approach, I elaborate these methods for the current situation of using Chinese medicine in the west some thirty years later. And, because nearly all practitioners are familiar with the application of blood vitalizing and stasis relieving herbs for injury, I wish to focus on how some of the other principles of therapy to be merged with that one.

Initial Stage

The earliest response to an injury is most often undertaken with non-TCM methods, either applied at home or in a hospital or a prompt care clinic. This immediate response corresponds, in the Chinese traumatology presentation, to the first steps of stabilizing a fracture, which does not involve acupuncture or herbs. Modern techniques of injury management sometimes have advantages over earlier methods found in TCM thanks to technological developments and improved knowledge of different injury types. Also, modern methods of preventing or treating wound infections and minimizing scar formation can be applied with relative ease and reliability compared to traditional methods aimed at a similar result. There are some reliable patent medicine products of China, such as Yunnan Bai Yao for bleeding and bruising, Ching Wan Hong for burns, and Wu Yang plasters for pain that are suitable at the outset. These, along with “hit pills,” could be incorporated into a home first aid collection as well as being a valuable part of a practitioner’s pharmacy.

Within a very short time, a few days, a visit to or visit by a practitioner of Chinese medicine is possible for those living near a practitioner, at least if it is thought of as an appropriate step, something that ongoing educational materials should convey. Some practitioners specifically promote their practice as being for sports injuries and other such damage. All practitioners can have basic literature, in print and/or online, that points to prompt intervention for injuries.

An injury always causes a disruption of the vascular system at the site, and this produces a local syndrome of bleeding followed by blood stasis. The blood stasis condition is not just an area of poor blood circulation, as might occur with advanced cardiovascular disease. Where vessels are broken, blood has escaped the vessels; the term found in TCM literature is extravasated (gone outside the vasculature); it is clotted. The area of damage is painful, but the pain, from the TCM perspective, is not directly from the blood stasis itself; rather it is the result of disruption of flow of qi through the area. Obstruction to normal flow of qi can occur for reasons other than blood stasis; thus, for example, there are aches and pains that occur from invasion of wind or the result of meridian obstruction by phlegm-damp. The unique characteristic of injury is the combination of bleeding and blood stasis as the initial damage and obstruction of qi circulation as an immediate consequence, resulting in symptoms of bruising and pain. Some injuries will yield blood escaping the body (or extensive internal bleeding) rather than localized bruising, but once the condition has been stabilized, either by ordinary clotting, clotting promoted by certain agents (including Chinese herbs), or perhaps by surgical intervention, the characteristic remaining situation is blood stasis and resultant qi stagnation. Bruising might be present but not be evident, depending on location: in bone breaks, there may be little purplish evidence seen at the surface initially, and then a spreading dark purplish zone is observed as the blood vessel damage and inflammation spreads the clotted blood toward the surface.

This qi stagnation secondary to injury is not affiliated with a failure of the liver to disperse qi, but is due to the local obstruction from physical trauma. Still, if there is a concurrent or preexisting liver qi depression, resolution of the injury-induced qi stagnation could be impaired and this disorder might require attention via herbal and acupuncture therapies. Further, the local damage could afflict the liver function indirectly, through emotional response to the injury experience and disruption of normal activities that may result in reduced qi smoothing action. Prolonged stagnation at an injury site may interfere with the qi spreading effects of the liver: imagine, as a parallel, a motor moving water, but part of the water flow becomes blocked, so the motor has to strain and becomes damaged as a result; then the ability to move the water has declined.

The inflammatory response to trauma reduces mobility through stiffness and thereby helps avoid re-injury; inflammation can cause pain to worsen and persist, so inflammation can have protective value but a cost. Where structural body parts apart from vessels are broken, such as a bone fracture or a tendon tear, the afflicted part can’t be safely moved without proper stabilizing. With modern stabilizing methods, the duration of such re-injury risk is shortened, and recovery procedures with movement are usually encouraged to start soon.

Injury-induced inflammation is a condition overlaying the two types of stasis, blood and qi, which is one of heat. Very quickly after an injury occurs, several mechanisms of response are initiated that involve a high level of activity at and around the injury site. The response of inflammation is normative, yielding congestion with cells having the tasks of clearing damage and providing repair-initiating substances. While inflammation and congestion has a distinct protective value for prevention of further injury, for most of the serious injuries, the inflammatory response is more than the level desirable, especially in the modern setting where medical interventions can reduce the need for its potential benefits. The chance of re-injury is readily limited by protective equipment (tapes, casts, slings, etc.) while following procedures to consciously avoid potentially harmful movements. As such, a reduced amount of inflammation is satisfactory for protection; if inflammation is limited, the affected area will have less congestion, easier and somewhat quicker removal of waste materials (such as break down products of dead cells and clotted blood) and easier return of nutrients and healing substances. The extent of the inflammatory activity is of concern here: the responses may be excessive because they are not necessarily scaled to the particular injury situation; injuries are so diverse that a maximal response may be generated by the body's normal response mechanisms to assure coverage for contingencies. Because of this, use of anti-inflammatory techniques, whether applying ice or administering certain drugs, or utilizing TCM methods, alone or in combination, can have a benefit.

The affected site is generally warm to the touch and the skin becomes red in color, though this color manifestation may be obscured by bruising or fluid swelling. Not all inflammation that occurs is considered in TCM to be of hot nature, and that is why some arthritic conditions, for example, are treated with warming herbs, and designated as wind-cold-damp syndromes. But, early stage injury-caused inflammation is of the hot type, reflecting the intense level of activity and the effect of qi and blood stagnation.

Herbal formulas used at this early stage do not necessarily need to include heat-reducing agents, and especially if inflammation is being controlled by drugs. However, there are some kinds of injuries in which the heat characteristic is the type known as toxic heat, for which particular attention is needed. This category of disorder and its associated therapy is not fully elaborated as a treatment method for injuries, though it is included in the Encyclopedia under consideration. To clarify the terminology, this is a case of heat that is associated with a pathological influence referred to as a toxin. A syndrome involving a toxin usually has a specific initiation point and causes a rapid progression of symptoms; further, if it is not treated effectively right away, the original condition can continue to progress to a more serious condition, one which can even be fatal. The classic toxin syndrome is from the bite of a venomous animal, like a snake or scorpion. There is a specific start point, the time of the bite, and though there may be a delay in manifestation of symptoms, once they begin, they tend to progress and require prompt attention. Non-fatal bites will usually resolve, or, at least, the damage done will cease to progress. But, the reasonable worry is that this won't resolve. The Chinese term is "du" and though translated as toxin, may not have anything to do with a poisonous substance (as with a venom) but will involve a destructive condition that has the potential to be out of control and cause increasing damage. Other examples of "du" conditions are some viral infections, bacterial infections that cause abscesses or progressive tissue destruction, and cancer. In the realm of injuries a particularly clear example of the "du" influence is complex regional pain syndrome, where an acute injury turns into a spreading region of pain and hypersensitivity, far out of proportion to the original trauma.

In sum, the characteristic for this toxic heat is having the specific starting point (for this topic, the injury), somewhat rapid progression (failure to display significant resolution in reasonable time), and the potential to lead to ongoing significant health problems (such as debilitating pain). Many of these toxic heat conditions lead to production of fever, inflammation, swelling, redness, and other signs that are deemed of hot nature. An aspect of injury that fits the "toxin" depiction here is the rapid development of inflammation, which has the potential to become excessive and/or to become chronic when inadequately resolved at an early stage.

Therapeutically, there is a TCM concept that the damaged materials and swelling can be resolved more quickly by a purgative method. In particular, rhubarb-based formulas (those with da huang as a major constituent) may enhance the rate of healing, especially when there develops stagnancy in the digestive tract, or when such stagnancy was already an existing condition. Rhubarb is considered an important blood vitalizing agent, and the frequently accompanying ingredient, mang xiao (mirabilitum), serves as a salty agent to resolve swellings; other ingredients in traditional rhubarb formulas, such as hou po (magnolia bark), serve as aromatic agents to penetrate areas of stagnation. To be effective, the formulation need not have a powerful purgative action, but will include herbs, such as mentioned here, that can promote a laxative effect as the dose gets high enough.

While the treatment of inflammation may involve using cold natured herbs, the most effective analgesic herbs tend to be very warm to hot in nature. Such hot herbs do not counter the cooling herbs, but underlying constitutional features of heat or cold may need to be considered when selecting or designing a formula for injury if analgesic herbs, such as aconite (fu zi), are included in significant dosage.

In sum, an injury treatment at the initial stage may begin with the primary therapeutic principle of treating blood stasis, but expand to treating qi stagnation and using analgesics to further aid relief of pain, and clearing heat/toxin, swelling, and central stagnation.

Example Formulation

About 30 years ago, I proposed a formulation (San Qi Formula) for initial stage of injuries that was based on some commonly used “hit pills” (die da; fall and strike remedies) available at the time. Analysis of prepared formulas showed that some ingredients were endangered animal species and/or toxic substances, hence the need for a replacement. The dominant method of therapy is vitalizing blood, and several of the herbs are well-known as ingredients used for such purpose. The first nine ingredients listed here are among those most practitioners are familiar with, as well as da huang and gan cao, which are present in smaller amounts.

<i>sanqi</i>	San-chi.....	10%
<i>moyao</i>	Myrrh.....	6%
<i>ruxiang</i>	Frankincense.....	6%
<i>xuejie</i>	Calamus.....	6%
<i>yujin</i>	Curcuma.....	6%
<i>danggui</i>	Tang-kuei.....	6%
<i>chishao</i>	Red peony.....	6%
<i>taoren</i>	Persica.....	6%
<i>honghua</i>	Carthamus.....	6%
<i>guizhi</i>	Cinnamon twig.....	6%
<i>sumu</i>	Sappan wood.....	6%
<i>heilouhu</i>	Kadsura.....	6%
<i>jiangxiang</i>	Acronychia.....	6%
<i>chuanxiong</i>	Cnidium.....	6%
<i>dahuang</i>	Rhubarb.....	5%
<i>zoumatai</i>	Tsou-ma-tai.....	4%
<i>gancao</i>	Licorice.....	3%

This formulation is intended to address blood stasis primarily with aromatic ingredients (apart from san qi, which is included to treat the combined concerns of bleeding and blood stasis). Improvement of qi circulation is expected to occur in response to the resolution of the initial damage. There are two items in this formula that are infrequently used: hei lou hu, *Kadsura coccineae* root, and zou ma tai, *Ardisia gigantifolia* root. They

are utilized traditionally for treatment of injuries. Jiang xiang, *Acronychia paniculata*, is sometimes substituted by *Dalbergia odorifera*, but the latter item has recently been placed on the endangered species list due to its excessive use in non-medicinal applications. The term *dalbergia* has occasionally been utilized as the common name for jiang xiang, even though derived from *Acronychia*, the result of nomenclature shifts.

For the case where there is an apparent toxic heat syndrome, with infection or severe inflammation or increasing pain rather than improvement after a few days, a potentially useful combination is called Red Peony Formula.

<i>chishao</i>	Red peony.....	14%
<i>yanhusuo</i>	Corydalis	12%
<i>pugongying</i>	Taraxacum	12%
<i>jinyinhua</i>	Lonicera.....	12%
<i>lianqiao</i>	Forsythia.....	12%
<i>banlangen</i>	Isatis root	12%
<i>taoren</i>	Persica	10%
<i>honghua</i>	Carthamus.....	10%
<i>gancao</i>	Licorice.....	6%

In this formula, instead of a focus on severe blood stasis, there is a modest component for vitalizing blood and alleviating blood stasis induced pain, with chi shao, yan hu suo, tao ren, and hong hua, and then herbs for treatment of toxic heat, pu gong ying, jin yin hua, lian qiao, and ban lan gen. This formula is suitable for treatment of painful inflammation and swelling, and is especially used if the pain and inflammation is not subsiding as would otherwise be expected. The herbs can be used in addition to or as a follow-up to the initial blood stasis treatment; there are four overlapping herbs with the San Qi formula: chi shao, tao ren, hong hua, and gan cao, and there would not be an excessive amount of these when combining the two formulations.

Intermediate Stage: Stabilizing the Partially Healed Injury

This phase of injury and its healing corresponds roughly to the “Shao Yang” phase of disease, which, as now understood, may be depicted as half superficial and half internal; partly cold in nature and partly hot (that is, parts of the body display heat with excess and parts indicate cold with deficiency), symptoms may alternate in their quality, and the digestive system may become involved. The primary inflammatory response seen at the initial stage of injury is at this point significantly reduced, but circulation is not yet fully restored. Regulating circulation of liver qi enhances the restoration of circulation at the injury zone, tonification of central qi invigorates nourishment for building tissues. When these principles of therapy, characteristic of harmonization methods utilized for Shao Yang stage, are combined with blood vitalizing therapy, the process of healing is enhanced. The literature on stabilizing injuries after partial healing is quite limited, which largely reflects the practical circumstance: that interest of patients and practitioners tends to wane after the initial trauma once there is evidence of improvement. However, this intermediate stage is important in preventing chronic sequelae of injury and ought not to be ignored. The continued therapy at this stage is especially important for individuals who have a coexisting problem of disharmony. In particular, the restoration of good posture, balanced movement, and prior levels of physical activity, can depend on the free flow of healthy qi. If imbalances induced by the injury event are retained, pressure on joints and weakness of muscles and tendons can be the result, and thus pain will persist. With pain there can come other problems, such as limitation of physical activities, poorer sleep, and weight gain or loss.

An example of therapy that I developed that is suitable for this stage is called Improved Xiao Chai Hu Formula. This is a derivative of the well-known Shao Yang prescription of the Shang Han Lun, Xiao Chai Hu Tang. The term “improved” refers not to a better formula, but to a formula more focused on disorders in

which blood stasis has occurred. One of the original intents of the formula was to treat liver injury secondary to hepatic viral infection, but the formula is suitable for traumatic injury in this intermediate phase.

<i>chaihu</i>	Bupleurum	20%
<i>huangqin</i>	Scute.....	12%
<i>danshen</i>	Salvia	12%
<i>yujin</i>	Curcuma.....	12%
<i>banxia</i>	Pinellia	12%
<i>dangshen</i>	Codonopsis.....	12%
<i>gancao</i>	Licorice	7%
<i>dazao</i>	Jujube.....	7%
<i>shengjiang</i>	Ginger	6%

The change from Xiao Chai Hu Tang is simply the additions of dan shen (salvia) and yu jin (curcuma). These two herbs vitalize blood circulation, dan shen also nourishes blood and yu jin also regulates qi circulation. The presumption behind such a formula is that the primary problem of static blood has been mostly resolved, but the flow of qi and blood is not yet normalized. An injury-caused local stagnation that induces reduction of liver qi circulation during the initial phase is addressed and likely resolved during this phase of treatment.

Another formula that I proposed that is suited to the healing phase of diseases and injuries is derived from components of Xiao Chai Hu Tang (for harmonization), of Tao Hong Si Wu Tang (for vitalizing blood), and of Liu Wei Di Huang Wan (for nourishing kidney/liver), applicable most often to middle aged or older persons and others of relatively weak constitution who require tonification as part of the treatment plan:

<i>chaihu</i>	Bupleurum	12%
<i>shudi</i>	Rehmannia	12%
<i>huangqin</i>	Scute.....	9%
<i>danggui</i>	Tang-kuei	7%
<i>baishao</i>	Peony	6%
<i>banxia</i>	Pinellia	6%
<i>renshen</i>	Ginseng	6%
<i>zexie</i>	Alisma.....	6%
<i>fuling</i>	Hoelen.....	6%
<i>shanyao</i>	Dioscorea	6%
<i>shanzhuyu</i>	Cornus.....	3%
<i>mudanpi</i>	Moutan	3%
<i>chuanxiong</i>	Cnidium	3%
<i>taoren</i>	Persica.....	3%
<i>honghua</i>	Carthamus	3%
<i>shengjiang</i>	Ginger	3%
<i>dazao</i>	Jujube.....	3%
<i>gancao</i>	Licorice	3%

The herbs that nourish blood in Si Wu Tang support the liver-regulating function, while the dampness resolving herbs in Liu Wei Di Huang (ze xie, fu ling, and shan yao) support the spleen tonifying function, thus making this an expanded harmonizing prescription compared to Xiao Chai Hu Tang alone.

About 3-6 weeks is often sufficient for this intermediate stage, but a longer duration of therapy will be needed for more severe injuries and for older patients.

Completing the Treatment: Natural Cure Stage

Even with proper initial treatment of an injury and good progress toward resolution, there remains a risk of incomplete healing at the injury site, with resumption of inflammation and pain from a variety of influences. The most important and critical method for this phase of injury treatment is physical therapy, especially with strengthening activities and maintenance of flexibility. There is also a role for TCM: the aim is to support the physical efforts by utilizing strengthening and vitalizing herbs and, if possible, utilizing acupuncture to minimize distress and fatigue that may be encountered as a result of undertaking the physical movement at necessary levels for progress to be made. There will be patients who are unwilling or unable to take on the valuable activities and then these TCM therapies become the basis for continued treatment. As the Encyclopedia guides, the essential therapy is tonification, warming qi and yang, and nourishing blood. There will still be an advantage to invigorating circulation of blood, but the tonification component becomes more important. Strong and vigorous individuals may not require this part of the treatment strategy because diet and exercise are already providing what is needed. The particular formulation to use will depend on the types of deficiency detected. In most instances, “warming the meridians” is helpful as an adjunct to tonification because of the intent to overcome stagnation (freezing up) that may have developed as a result of less physical activity and some weeks of stagnated qi and blood circulation.

An example of a formulation for patients with stagnation and deficiency is Recovery Formula.

<i>shudi</i>	Rehmannia	8%
<i>renshen</i>	Ginseng	6%
<i>baishao</i>	Peony	6%
<i>fangfeng</i>	Siler	6%
<i>jianghuang</i>	Turmeric.....	6%
<i>yimucao</i>	Leonurus	6%
<i>duzhong</i>	Eucommia	6%
<i>songjie</i>	Pine node.....	6%
<i>danggui</i>	Tang-kuei	6%
<i>sanqi</i>	San-chi	6%
<i>xiangfuzi</i>	Cyperus	5%
<i>honghua</i>	Carthamus	5%
<i>rougui</i>	Cinnamon bark.....	5%
<i>yinyanghuo</i>	Epimedium.....	5%
<i>wuyao</i>	Lindera	5%
<i>huoxiang</i>	Pogostemon.....	5%
<i>moyao</i>	Myrrh	5%
<i>dingxiang</i>	Clove	3%

In this formulation rou gui and ding xiang warm the meridians; other aromatic herbs, such as wu yao, huoxiang, and xiang fu, assist those two so as to invigorate stomach and spleen, disperse qi stagnation, and penetrate areas of persisting obstruction; shu di, yin yang hu, and du zhong nourish kidney and liver and warm the circulation; other herbs are included to vitalize circulation, such as song jie, san qi, hong hua, and mo yao. Application of heat, rather than ice, is common for this stage, including treatment by moxibustion.

Old Injuries

Ideally, a recent injury has been treated effectively and is largely resolved within a few weeks. An injury can be resolved without its damage being entirely gone: scars, bone calluses, missing appendages, physical distortions, limps, brain dysfunction, etc., can still be there. Yet, the extent of residual signs of injury are minimized with concerted effort. Many people will have heard stories of individuals very severely injured,

told that they will have substantial limitations for life, and yet through vigorous efforts at rehabilitation are able to perform many tasks thought impossible. Their attitudes are: I won't let this get me down, so I will do whatever is necessary to make progress. The potential for remarkable results are enhanced by modern technologies that permit reconstruction of damaged parts and use of advanced prosthetics. For many individuals, especially when the injury is not so severely disfiguring, this vigorous response toward overcoming the impairments, unfortunately, is not undertaken and their injuries become aged.

People with old injuries frequently have manifestation of the disorder at the joints, and more so if the injury's initial site includes one or more joints. Thus, it is not surprising that many of the formulations for old injuries involve herbs that strengthen bones and tendons and alleviate inflammation of the joints. Two good examples are the Drynaria Formula and the Acanthopanax Formula depicted here, respectively:

<i>gusuibu</i>	Drynaria	12%
<i>xuduan</i>	Dipsacus.....	10%
<i>dihuang</i>	Rehmannia	10%
<i>huangqi</i>	Astragalus	9%
<i>jixueteng</i>	Millettia.....	8%
<i>danggui</i>	Tang-kuei	8%
<i>niuxi</i>	Achyranthes	8%
<i>duzhong</i>	Eucommia	8%
<i>lurong</i>	Deer antler.....	8%
<i>chuanxiong</i>	Cnidium	8%
<i>songjie</i>	Pine node.....	6%
<i>duhuo</i>	Tu-huo.....	5%

<i>wujiapi</i>	Acanthopanax...	15%
<i>duzhong</i>	Eucommia.....	10%
<i>niuxi</i>	Achyranthes.....	10%
<i>xuduan</i>	Dipsacus	10%
<i>gusuibu</i>	Drynaria.....	10%
<i>sangjisheng</i>	Loranthus.....	10%
<i>songjie</i>	Pine node	10%
<i>mugua</i>	Chaenomeles	10%
<i>luticao</i>	Pyrola	10%
<i>zhigancao</i>	Licorice.....	5%

These formulas have in common the kidney/liver tonifying herbs du zhong, xu duan, and gu sui bu, which together strengthen bones and tendons and also alleviate arthralgia.

Examples of Valuable Formulas from China: Yunnan Bai Yao, Ching Wan Hung, Wu Yang Plaster

Yunnan Baiyao (literally, the white herbal medicine from the province of Yunnan) is one of the most famous patent remedies in China. It is used to stop bleeding, whether caused by injury or ailment, and resolve blood stasis, and it has been tried, with reported success, for the treatment of a number of other conditions as well. It is taken internally and/or applied topically. The formula was devised by Qu Huanzhang, a Chinese physician of Yunnan, in 1916. It has been claimed that the original formulation was altered somewhat once regular larger-scale manufacture of the product began around 1956 at the Yunnan Baiyao Factory, which was greatly expanded in 1971. The initial Chinese research on Yunnan Bai Yao effectiveness began in the early 1980s. The heightened interest in this product at the time is illustrated by review articles appearing in a Yunnan Journal of Traditional Chinese Medicine and in the Bulletin of Chinese Materia Medica in 1986, listing dozens

of applications. The factory began preparation of several additional easy-to-use forms at that time. Two forms are commonly utilized in the west:

1. Capsules containing 250 mg of the powder: usually taken in doses of 2 capsules each time, two to four times daily (a sheet of 16 blister-packed capsules is standard). Each strip of capsules is accompanied by a safety pill, said to be useful for syncope secondary to blood loss.
2. Yunnan Baiyao plaster: for easy retention of the herbs against the skin. The plasters are very thin and measure about 2x4 inches. Once applied, they last for about four hours.

Although a secret formulation, I have been able to view the ingredients list, and it is a complex mixture that would be difficult to reproduce. An explanation for its effectiveness is not easily derived from analysis of the large number of known chemical constituents.

In many cases, Yunnan Baiyao is used for only 2-4 days; generally, the formula is not intended to be used regularly for more than about 15 days, though there is no evidence of harm from long term use. In cases of severe injuries, one can switch to using raw tien-chi ginseng (*Panax notoginseng*; san qi) tablets or a formulation based on this herb for continued therapy once the most severe damage has been stabilized. In one report, a Japanese practitioner administered to patients a high dose of 16 capsules per day (4 grams) for 10–20 days, and then reduced the dosage in half, and treated for about 5–10 weeks at that dosage (this was for one case each of osteomyelitis, leukemia, and stomach cancer; other herbs were also given to the patients).

Ching Wan Hung (also written *Jing Wan Hong*) is a Chinese herbal ointment that is considered especially helpful in the treatment of burns. It has been applied to chemical burns, radiation burns, and sunburns, as well as burns caused by fire, electricity, steam, or direct contact with a hot liquid. It is also utilized to treat hemorrhoids, poison oak/ivy dermatitis, and bedsores. The ointment acts to relieve pain, decrease inflammation and infection, and aid in the regeneration of the damaged tissues. It is fast acting, alleviating burn pain almost immediately after application. A generous amount of ointment is rubbed directly into the affected area after it has been thoroughly cleaned. The treated area may be covered with gauze, changed daily, to further reduce possibility of infection and irritation. The package labels, which have varied, gives this list of ingredients (with rounding the total is slightly over 100%):

<i>banbianlian</i>	Lobelia	17.5%
<i>moyao</i>	Myrrh	17.5%
<i>danggui</i>	Tang-kuei	12.0%
<i>bingpian</i>	Borneol.....	12.0%
<i>diyu</i>	Sanguisorba.....	8.5%
<i>mugua</i>	Chaenomeles	8.5%
<i>ruxiang</i>	Frankincense	8.5%
<i>honghua</i>	Carthamus	8.5%
<i>huanglianya</i>	Pistacia.....	8.5%

Other ingredients mentioned in Chinese literature about this product include da huang (rhubarb) and zhi zi (gardenia). The red color of the ointment comes from several of the herbs, hence the designation “hung” (in pinyin, hong = red). An important ingredient is *Pistacia chinensis*, traditionally used to treat ulcerations and rashes, and is a common remedy for dermatitis caused by contact with poison oak and similar allergens. The active components include tannins, such as gallic acid, and simple flavonoids, such as fisetin, fustin, and quercetin. Another important ingredient is *Sanguisorba officinalis*; this herb contains tannins and saponins. It is traditionally used topically to treat insect bites and scalds. Laboratory tests show that sanguisorba decreases the amount of exudation from a burn wound and helps drying out the wound, thus decreasing the chance of infection.

The Wu Yang Medicated Herbal Plaster is a product of the United Bai Yun Shan Pharmaceutical Factory in Guangzhou. This factory produces a wide range of herbal products, and is especially known for its menthol-based formulations, including the plaster:

	Menthol.....	20.0%
	Methyl Salicylate ..	8.3%
<i>zhechong</i>	Eupolyphaga	10.4%
<i>longgu</i>	Dragon bone.....	10.4%
<i>honghua</i>	Carthamus	9.2%
<i>dahuang</i>	Rhubarb.....	8.3%
<i>pugongying</i>	Taraxacum	8.3%
<i>moyao</i>	Myrrh	6.3%
<i>ercha</i>	Catechu	6.3%
<i>xuejie</i>	Calamus gum	4.2%
<i>xuduan</i>	Dipsacus.....	4.2%
<i>gusuibu</i>	Drynaria	4.2%

The plaster (available in standard cut size or in a roll to be cut to the desired length) has a cloth backing and the herbal material is in a thin layer that is slightly sticky, so it adheres to the skin, but is still easy to remove. This formula is based on a recipe used by martial arts practitioners to help recover from injuries incurred during practice sessions. It is indicated for neuralgia, rheumatoid arthritis, spasms, swelling and pain, bruise, sprain, and fracture. A key element in this formula, aside from the penetrating aromatics, is daemonorops resin, known as “dragon’s blood” or calamus gum. It is a red resin commonly used for treatment of injuries, reputed to aid break down of clotted blood and promote regrowth of damaged tissues. Two potent isolates used to make this plaster are key contributors to its activity: menthol and methyl salicylate. Menthol is the main active ingredient of peppermint oil (*Mentha spp.*). It is used internally and externally for treatment of inflammation, spasm, and pain; after topical application, menthol causes a feeling of coolness due to stimulation of cold receptors by inhibiting calcium ion currents of nerve membranes, reducing pain signal transmission. Methyl salicylate is the main active component of wintergreen oil (*Gaultheria procumbens*). This compound is related to salicylic acid that was the original basis of aspirin (acetyl-salicylic acid). The inclusion of dipsacus and drynaria in the formula is aimed at treating fractures and damaged tendons; these are also valued for arthritic pains.

In this section about prepared formulas, it is worth mentioning the modern herbal preparation method of dried decoctions, usually formed into granules. In place of making factory products in the form of pills or home brewed decoctions, one can obtain traditional prescriptions made in this easy-to-use form, as well as have single herb extract granules combined to make other prescriptions. One of the formulas mentioned above, in relation to an intermediate stage formula, and frequently referenced in the Appendix below, is Tao Hong Si Wu Tang. This is a modification of Si Wu Tang (from the Tai Ping Hui Min He Ji Ju Fang) that was first listed in the Yi Zong Jin Jian by Wu Qian, written around 1740:

<i>shudi</i>	Rehmannia	25%
<i>baishao</i>	Peony	25%
<i>danggui</i>	Tang-kuei	20%
<i>chuanxiong</i>	Cnidium	12%
<i>taoren</i>	Persica.....	10%
<i>honghua</i>	Carthamus	8%

This combination can be utilized as a base for injury formulas to be modified by adding single herb granules or it can be deconstructed and a new variant made entirely from single herbs. Granules are convenient for administration and the formula can be modified as the treatment progresses through the three stages.

Appendix: Herb Selection and Formulation

Examination of herb formulas for injury, especially in the early sage, demonstrates that there is a very wide range of ingredients utilized and diverse organization of ingredients into formulas. Nonetheless, many of the formulas have certain overlapping ingredients. What is the origin of the herb selections and formula patterns?

There are four principles of herb selection and combining that I think are especially influential. Not included in this set of principles is the concept of formula design based on having an emperor herb, supported by ministers, assistants, and servants, directing toward a particular action, which is used in teaching texts to explain many formulation strategies.

- 1) It is a common procedure in Chinese medical application of its long tradition that well-known traditional prescriptions are utilized as the basis of a therapeutic approach, relying on the original prescription or with slight adjustments to modify proportions or to substitute an herb with another when the nature and action are similar but deemed more suited to the current application (e.g., use chi shao instead of bai shao). The central formula for blood stasis emerging from the tradition is Tao Hong Si Wu Tang, and certain additions are common, such as mu dan pi for alleviating heat.
- 2) Individual herbalists have, from their personal experience and understanding, come to rely on certain herbs that they believe are especially useful, and another herbalist, from his personal experience would rely on different herbs. Thus, some herbalists consider that sheng di (raw rehmannia) is a good choice for vitalizing blood circulation; another may consider it weak for such a purpose, but would consider da huang especially important.
- 3) As in point 2, individual herbalists may have each learned a concept of how herb combining can enhance the action of a formula. Thus for example, one herbalist may consider that to vitalize blood and regulate qi circulation it is best to select herbs that are considered to have both properties, such as chuan xiong, and another herbalist may consider it better to select a strong blood vitalizing item, such as an animal material like tu bei chong (aka zhe chong) or chuan xian jia, and a strong qi regulating herb, such as chai hu or xiang fu to accomplish the goal.
- 4) Formulas are passed down through lineages, either generation to generation within a family for from an herbalist to an especially deserving student. These formulations are retained as secrets, in terms of full list of ingredients, proportions, and preparation methods, but may come to the modern era as a commercial formula, for which at least some ingredients are revealed. To maintain secrecy, the labeled ingredients and proportions are usually deceptive (at least for products coming from Asia). Formulas designed in the west (even if produced in China) or with production managed with control from the destination country, are more likely to have reliable labeling of ingredients. In the Encyclopedia, when 'patent medicine' formulas are recommended, in the section listing ingredients, it states: "ingredients: omitted." A book titled Secret Shao Lin Formulas was published (Blue Poppy) to display examples of injury treatment combinations that differ from those encountered elsewhere.

These four factors apply to herb formula design generally and not just to injury formulas, but they are especially important for this medical area because the injury treatment requires little or no constitutional diagnosis to be applied. Thus, for example, the initial stage of treatment is not highly dependent on the person's medical history and current syndrome pattern in terms of organ systems; an exception has been described for regulating liver qi circulation. For injuries that are treated within a period of just a few weeks, it is usually not necessary to take into account constitutional factors because the individual is not influenced by the herbs' properties in that short time. Then, as one arrives at treatment of the "natural cure" stage or old injuries, the consideration of the patient's other conditions take on a greater importance, though one can still apply a prepared formula for the injury and utilize a second formula for treating the constitutional status.

Utilizing prepared formulations designed by others, rather than the current practitioner addressing an injury by designing a personalized formula, is the standard approach. Many formulations exist, especially for the initial injury stage, each of which will have a certain efficacy. Comparison between formulas is difficult and there are few reasonable means of making an unprejudiced comparison under clinical trial conditions. Thus, selection of formulas depends heavily upon what is readily available and has a good reputation. It is important for herbalists to know, when possible, about the ingredients, their nature, and action, so as to be able to present to patients more than simply that it is an effective product. Because there are many resources for information on commercially available prepared formulas, an examination of the Encyclopedia's recommendation of traditional formulas will be presented to give a sense of what these specialists turn to.

Traditional Formula Examples

In the Encyclopedia, about half of the recommended formulas are from well-established traditional sources, that is, they are formulas from ancient texts; examples of such combinations that are applicable to injury are displayed below along with indications of why these might not be selected in modern practice in their original form in modern circumstances. They nonetheless reveal some of the concepts of formula selection for injuries.

Fu Yuan Huo Xue Tang, a formula for initial stage of injury, was recorded in Yi Xue Fa Ming by Zhu Danxi (1281-1358). Its original use was for abdominal blood stasis and intercostal distress, and has been adopted to treatment of injuries affecting the upper abdomen (hypochondriac region), but also applied to many other injuries. This is the most frequently recommended formula in the Encyclopedia.

<i>dahuang</i>	Rhubarb.....	33%
<i>chaihu</i>	Bupleurum	16%
<i>taoren</i>	Persica.....	10%
<i>tianhuafen</i>	Trichosanthes	10%
<i>danggui</i>	Tang-kuei	10%
<i>honghua</i>	Carthamus	7%
<i>gancao</i>	Licorice	7%
<i>chuanshanjia</i>	Pangolin scale	7%

The high dose of da huang will yield a laxative action, and this is suitable to injuries that cause stasis in the intestines as a result of blood stasis affecting the stomach/spleen; with tao ren, a blood vitalizing agent that moistens the intestines, this is characteristic of a purgative formulation. While this combination is used with the concept of clearing out inflammation, heat, and the products of damaged tissues that have been degraded, it also is viewed as a way to treat local stasis. The combination of dang gui, tao ren, and hong hua is a key portion of Tao Hong Si Wu Tang. The pair of chai hu and tian hua fen (or, as might be used in more recent traditional formulas, gua lou, the fruit of the same herb rather than the root), alleviates stagnation of qi and blood in the chest, thus easing tension from above on the upper abdomen; chai hu with dang gui also regulates liver stagnation that may contribute to pain in the area of the liver. For injuries more broadly, these herbs promote circulation of qi to alleviate pain at the blood stasis site. Chuan shan jia, the scale of the anteater (pangolin) has become unavailable in the west due to endangered species concerns. The animal is raised in large number, but it is difficult to distinguish wild-caught from raised animals, especially when a portion (e.g., the scales) are isolated. Hence, international trade is usually not allowed. While this formula can dramatically invigorate blood circulation and quickly remove stagnation from the abdomen, the strong purgative effect and the use of an endangered species would lead most practitioners to modify the formula.

A prescription for injury with toxic heat component is Qing Xin Yao; this is a modern adaptation of a traditional formula of uncertain origin.

<i>shengdi</i>	Rehmannia	15%
<i>lianqiao</i>	Forsythia	13%
<i>danggui</i>	Tang-kuei	10%
<i>baishao</i>	Peony	10%
<i>mudanpi</i>	Moutan	10%
<i>chuanxiong</i>	Cnidium	8%
<i>huangqin</i>	Scute.....	8%
<i>zhizi</i>	Gardenia.....	8%
<i>taoren</i>	Persica.....	8%
<i>huanglian</i>	Coptis.....	5%
<i>gancao</i>	Licorice	5%

This formula contains a portion of Tao Hong Si Wu Tang with dang gui, bai shao (plus mu dan pi as a another form of peony), chuanxiong, and tao ren, along with herbs to purge fire. The heat clearing portion is a derivative of several ancient prescriptions, such as Huang Lian Jie Du Tang, which includes huang qin, huang lian, and zhi zi. The resulting formula is indicated for swelling due to injury, clearing heat (inflammation), and removing toxic materials. The ingredients for this formula are readily available at this time, but the formula has modest blood vitalizing properties for an early stage of injury, which might be cause for adjustments.

The formula Zhuang Jin Yang Xue Tang, from Shang Ke Bu Yao by Qian Xiuchang (ca, 1800 A.D.) is not frequently mentioned in the Encyclopedia, mainly because it is indicated for soft tissue injury rather than bone fracture, but it is a formula originally designed for such injuries rather than adapted from other uses.

<i>duzhong</i>	Eucommia	18%
<i>niuxi</i>	Achyranthes	12%
<i>xuduan</i>	Dipsacus.....	12%
<i>danggui</i>	Tang-kuei	10%
<i>chuanxiong</i>	Cnidium	10%
<i>baishao</i>	Peony	10%
<i>mudanpi</i>	Moutan.....	10%
<i>shengdi</i>	Rehmannia	10%
<i>honghua</i>	Carthamus	8%

The combination of du zhong and niu xi is characteristic of many formulas for treating weakness and pain of the lower back and legs; with xu duan, the formula especially addresses support of tendons. The remaining herbs are a variant of Tao Hong Si Wu Tang with mu dan pi added to bai shao, and with sheng di, which is deemed to have blood vitalizing properties, replacing shu di (cooked rehmannia, better for nourishing blood). This formulation is especially suitable for strengthening tendons during the repair phase (intermediate stage). With addition of two or three herbs for tonifying the spleen, it would become a harmonizing formulation. None of the ingredients are problematic for modern use. However, the formulation is designed as a single treatment for injury rather than as part of the three stage procedure, and so may best be used by modifications by stage. One might begin with a formula focusing on vitalizing blood, then use this formula in the second and third stage when the injury is partly resolved.

Wang Qingren greatly influenced the development of blood vitalizing therapies, notably with a series of zhu yu (overcoming stasis) prescriptions. Among them is Shen Tong Zhu Yu Tang, presented around 1820 A.D., and it has been adopted for injury treatments. Shen tong implies the pain may occur anywhere in the body and can occur in many places, but its design mainly points injuries or diseases causing pain in the limbs.

<i>chuanniuxi</i>	Cyathula	12%
<i>honghua</i>	Carthamus	12%
<i>taoren</i>	Persica	12%
<i>danggui</i>	Tang-kuei	12%
<i>chuanxiong</i>	Cnidium	8%
<i>gancao</i>	Licorice	8%
<i>moyao</i>	Myrrh	8%
<i>dilong</i>	Earthworm	8%
<i>wulingzhi</i>	Pteropus	8%
<i>qinjiao</i>	Chin-chiu	4%
<i>xiangfu</i>	Cyperus	4%
<i>qianghuo</i>	Chiang-huo.....	4%

Chuan niu xi is a potent blood vitalizing herb, distinguished from huai niu xi (or simply niu xi) that has milder blood vitalizing properties with blood and yin nourishing effects being more important for that herb. Tao ren, hong hua, dang gui and chuan xiong comprise a key portion of Tao Hong Si Wu Tang. Gan cao is added to integrate the multiplicity of actions of the remaining ingredients, which are intended to clear damage to the meridians, with di long opening the channels, mo yao and wu ling zhi treating blood stasis, qin jiao relaxing tension in the tendons and muscles, xiang fu alleviating qi stagnation, and qiang huo clearing invading wind. This complex formula is intended to treat diffuse pain as often occurs in older injuries. The ingredient wu ling zhi is rejected by FDA due to its nature as dung of bat or flying squirrel, considering not fit for human consumption.

Xiao Huo Luo Dan, recorded in the Tai Ping Hui Min He Ji Ju Fang (compiled around 1100 A.D), is a formula originally for stroke or stroke-like syndromes with difficult movement and numbness accompanied by pain. It later became used for chronic pain (such as advanced arthritis) and pain due to injury, especially old injury.

<i>chuan wu</i>	Sichuan aconite ..	21%
<i>fuzi</i>	Aconite.....	21%
<i>dilong</i>	Earthworm	21%
<i>tiannanxing</i>	Arisaema	21%
<i>moyao</i>	Myrrh	8%
<i>ruxiang</i>	Frankincense	8%

The large amount of aconite is intended to treat the “frozen” condition that arises from a chronic injury, and strongly relieves pain, but modern practitioners are rightly concerned about potential toxicity, especially with chuan wu, which is mostly avoided for that reason. The pair of mo yao and ru xiang has become a common component of blood vitalizing formulations especially for more severe blood stasis, so this is retained today in injury formula design. Arisaema alleviates phlegm obstructing the meridians; this herb is especially appropriate to the original plan for this formula to treat conditions such as stroke, which was often thought to be an obstruction of the meridians by phlegm and stagnated blood. While tian nan xing is less used in treatment of injury pain when formulas are designed specifically for that purpose, it is a useful ingredient for chronic pain.