

PREVENTION AND TREATMENT BY CHINESE HERBAL MEDICINE

Stroke and Post-Stroke Syndrome

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WESTERN MEDICINE

Western Views of Stroke and its Causes

Cerebrovascular accident, commonly referred to as stroke, accounts for most cases of neurological disability in the West. In general terms, the condition is directly related to a disturbance of blood flow in the brain. Since actions like moving or speaking are governed by specific areas in the brain, a direct injury or deprivation of blood flow to these areas will cause lasting damage, which typically manifests as paralysis, slurred speech patterns, or a variety of other stroke symptoms. Most commonly, cerebral blood vessels become clogged by atherosclerotic plaques or blot clots. Another scenario is the occurrence of cerebral haemorrhaging due to prolonged hypertensive stress on arteriosclerotic vessels.

Generally, cerebrovascular situations develop in patients who already suffer from atherosclerotic disease, hypertension, or a combination of both. A prior history in one or both of these conditions is pertinent to diagnostically differentiate cerebrovascular disease from brain tumours and other neurological diseases. Specific types of cerebrovascular disease are:

1. *Cerebral insufficiency* caused by transient disturbance of blood flow or, in rare instances, by encephalopathy. The standard medical term 'transient ischaemic attack' refers to either a brief reduction in blood flow, or a temporary plaque accumulation which is washed away too quickly to cause any permanent damage. Patients typically experience stroke-like symptoms which last anywhere from several minutes to several hours until they suddenly disappear completely. No loss of consciousness is involved. The concrete range of symptoms (dizziness, blindness, slurred speech, etc.) depends on the area of the brain afflicted. These 'small strokes' are regarded as serious indicators of an impending stroke by modern and traditional physicians alike.

2. *Cerebral infarction* caused by embolism or thrombosis of the intra- or extracranial arteries. If pathological body materials, such as platelet clusters, fibrin, cholesterol, or clots produced by open heart surgery or during heart attacks, accumulate in the cerebral arteries, they will eventually obstruct the vessels by forming thrombo-

ses or emboli. As a result, certain areas of the brain are shut off from adequate blood supply. When a thrombosis cannot be immediately resolved by medical intervention or the body's own restorative mechanisms, a full blown ischaemic syndrome ensues. Ischaemic situations in the brain can also be caused by a variety of physiological circulatory insufficiencies that are due to hypotension, polycythemia (increased blood viscosity), or other reasons. This especially applies to patients who are arteriosclerotic and who already have partly obstructed vessels. The primary method of diagnosis is angiography, a process which differentiates cerebral thrombosis/embolism from other types of vertigo and identifies potentially operable lesions. Standard therapy, in addition to standard hypertension and atherosclerosis treatments, is vascular surgery accompanied by the administration of anticoagulants or platelet inhibitors over a period of two to twelve months.

3. *Cerebral haemorrhage* caused by hypertension. This condition involves direct bleeding into brain tissue, a process which is generally induced by the rupture of an arteriosclerotic vessel long exposed to arterial hypertension. Patients first experience abrupt headaches, followed by steadily increasing neurological deficits. Cerebral haemorrhage is considered to be the most severe type of stroke, and US statistics indicate that more than 50% of patients die within several days. The diagnosis of brain haemorrhage often poses a problem, since symptoms are basically the same as in patients with ischaemic stroke. Critical information is often obtained by tapping into the craniosacral fluid which tends to be bloody in haemorrhage patients. Standard Western treatment for cerebral haemorrhaging requires a precise diagnosis, since therapeutic principles (stop bleeding) are diametrically opposed to measures taken in the case of cerebral thrombosis (anti-coagulate). Anticoagulants are contraindicated in this condition.

4. *Secondary bleeding* into the subarachnoid space is a sub category of cerebral haemorrhaging. Quite different from the regular stroke, however, this condition is mostly due to head trauma or congenital aneurysm. Since symptoms and treatment methods are somewhat similar to other cerebrovascular accidents, however, this problem is usually discussed along with them. There are gener-

ally no warning signs before the rupture, then severe headache and sudden loss of consciousness occur.

Immediate treatment of all cerebrovascular accidents includes airway maintenance, oxygenation, and the administration of IV fluids. On average, 35% of patients die in hospital, with mortality rates going up as the patient's age increases. According to standard medical assessment, a complete recovery is considered uncommon. However, the medical community generally agrees that the sooner recovery begins, the greater are the chances for a complete recovery. There also seems to be agreement that a certain amount of recuperation seems to take place naturally within the first six months after the accident; after that pathological changes are considered to be more or less permanent. Since the numbers obtained in the rescue and recovery of stroke patients are far from satisfactory, modern medicine emphasises preventive measures such as the treatment of atherosclerosis and hypertension, and proper instruction as to how to identify signs of an impending stroke.

CHINESE MEDICINE

Ancient Chinese Views of Stroke

In the Chinese medical tradition, deliberations about the origins and treatment of stroke related conditions span over more than two millennia. Since the condition has traditionally been considered to be one of the "four major problems in internal medicine" (*neike si dabing*), stroke chapters occupy a prominent place in virtually all of the works that make up the defining body of traditional Chinese medicine.

Beginning with the *Huangdi Neijing* (Inner Canon of the Yellow Emperor), a variety of stroke symptoms were described in great detail, but there was at that time no single label or category which established a concise Chinese term for the condition. There was, however, the important recognition that the pathological processes

causing the problem are taking place in the head: "If both Qi and blood rush upwards," the anonymous author writes, "they will cause a complete black-out (*da jue*); if the Qi flow can be reversed, the patient lives, if not, s/he dies." Elsewhere in this densely styled work,

stroke is linked to a deficiency of the channels and collaterals, allowing pernicious winds of external origin to penetrate and rampage through the body. Although the *Neijing* offers a fairly precise description of stroke related symptoms and ponders the cause of the disease in great detail, however, the classic offers no information concerning concrete treatment methods.

In *Jingui Yaolüe* (Essentials of the Golden Cabinet), the influential clinical handbook written about 400 years after the compilation of the *Neijing* and about 1800 years before our time, the Han physician Zhang Zhongjing first coined the standard term "*zhong feng*" (struck by wind). He also designed concrete remedies for the cru-

cial stroke emergency treatment, i.e. *Feng Yin Tang* (Entice the Wind Decoction) and *Da Cheng Qi Tang* (Major Order the Qi Decoction). Due to their effect of draining excessive energy from the upper part of the body, both formulas are still being used in modern day China to treat people with acute cerebrovascular conditions. By purging the *Yangming* (Stomach) channel, *Da Cheng Qi Tang* (Major Order the Qi Decoction) facilitates a lower exit for pathogens such as heat and phlegm that have accumulated in the upper part of the body. *Feng Yin Tang* (Entice the Wind Decoction), featuring an arrow of eight mineral drugs, pulls noxious influences (e.g. heat, phlegm) downward by virtue of the subduing quality of the "heavy stones," and by the action of *Da Huang* (*Rhizoma Rhei*) which keeps open the *Yangming* channel and thereby drains downward.

Zhang Zhongjing also elaborated on the "wind" theory introduced in the Inner Canon by postulating four different stages of wind affliction. According to the general severity of the symptoms and particularly the level of patients' consciousness, he differentiated between collateral stroke (*feng zhong luo*), channel stroke (*feng zhong jing*), bowel stroke (*feng zhong fu*), and organ stroke (*feng zhong zang*). However, he never personally suggested treating this peculiar form of wind - which was obviously different from the surface type of "wind stroke" introduced as *Gui Zhi Tang* (Cinnamon Twig Decoction) symptom complex in his *Shang Han Lun* (Treatise on Shang Han Diseases) - with diaphoretic, wind expelling herbs.

Later generations of Chinese clinicians, however, possibly confused by the extremely broad application of the term "wind" in the Inner Canon and the work of Zhang Zhongjing, or maybe befuddled by the symptom similarity in patients with stroke-induced hemiplegia and Bell's palsy, began to include typical wind expellants such as *Ma Huang* (*Herba Ephedrae*), *Fang Feng* (*Radix Ledebouriiellae Sesloidis*), *Qiang Huo* (*Rhizoma et Radix Notopterygii*), and *Du Huo* (*Radix Duhuo*) in their stroke

formulas. By the end of the 7th century, *Xiao Xu Ming Tang* (Minor Prolong Life Decoction), a variation of *Ma Huang Tang* (*Ephedra Decoction*) and *Gui Zhi Tang* (*Cinnamon Twig Decoction*), was often cited as the representative life saver in cases of "wind stroke." Prof.

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Deng Zhongjia, editor of the most recent standard PRC formula textbook and one of China's foremost authorities in the field, asserts that clinical experience soon revealed that this kind of approach may be effectively used to treat Bell's palsy, rheumatism, and other types of external wind syndromes, but that it may actually deteriorate a patient's condition when sudden loss of consciousness is involved. As an analysis of historical case studies reveals, this once popular formula began indeed to disappear from clinical records around the 14th century. Textbooks of Chinese medicine published in America, such as "Formulas and Strategies" (Bensky and Barolet) and "Commonly Used Chinese Herb For-

mulas with Illustrations" (Hsu and Hsu), still list *Xiao Xu Ming Tang* (Minor Prolong Life Decoction) as a primary formula for cerebrovascular accidents, which might lead the American practitioner to prescribe such herbs for stroke patients contrary to current opinion in China, where there is extensive experience.

Recognising that the regular wind treatment for this particular type of "wind stroke" sometimes endangered lives rather than saving them, Song and Yuan physicians who lived around or just prior to the 14th century proposed the theory of an "internal wind" which is fundamentally different in nature from the regular external type of wind. Although it was still acknowledged that external factors such as stress or weather changes may play a role in the acute outbreak of the condition, the medical consensus of the times leaned more and more toward the assumption that it is internal causes which account for the rise of the deathly wind. The landmark writings of Liu Wansu, Zhu Danxi, and Li Dongyuan all postulate the existence of an internal wind, yet they focus on different internal conditions which may be responsible for its production.

Liu Wansu, the 12th century *Neijing* specialist, proposed that this particular wind is caused by excessive Heart fire which, in turn, has its origin in insufficient Kidney yin. He based his reasoning on the ancient observation that excessive "fire", such as blistering summer heat, can bring about devastating winds in the natural world. Li Dongyuan, the author of *Piwei Lun* (Treatise on the Spleen and Stomach) and designer of popular digestive formulas such as *Bu Zhong Yi Qi Tang* (Tonify the Middle and Augment the Qi Decoction), thought that a general Qi deficiency was to blame. In reference to the typical stroke patient who seems sturdily built but low in energy, he called this condition "excess of physical form accompanied by exhaustion of Qi" (*xing sheng Qi shuai*). And Zhu Danxi, the third medical authority of the era, suggested that this particular type of internal wind originates from a general damp/phlegm syndrome transforming into heat and wind.

Pioneering physicians of the Ming and Qing dynasties continued to pursue the internal wind (fire, phlegm, Qi) approach, and finally even abandoned the term "wind" altogether to avoid confusion with its external counterpart. Zhang Jingyue, the foremost medical scholar of the Ming, took a strong stance by entitling his stroke chapter "Non-Wind Syndromes" (*fei feng*). Ye Tianshi, pioneer of the *Wen Bing* (warm-febrile diseases) school and the most influential physician of the Qing, standardised the term "Liver yang flare up" (*ganyang shangkang*) for the diagnosis of acute stroke conditions. By reasoning that cerebrovascular accidents are a typical case of "water being unable to contain wood," he solidified the idea that the condition is intimately linked to the general exhaustion of the source of prenatal essence, the Kidney/Liver system complex. When the exhaustion of structural Liver blood and Kidney essence reaches a climactic point, he reckoned, the functional and upwardly mobile components of these organs - particularly the force referred to as Liver yang - abruptly flare out of control and, in the original sense of the *Neijing*, cause "Qi and blood to rush to the head."

Modern Chinese Views of Stroke

Although debates on the aetiology and treatment of cerebrovascular accident continue in modern times, most contemporary doctors act according to therapeutic principles derived from the internal wind theory. The standard formula textbook¹ produced by the PRC's Ministry of Health in 1989 features a chapter which is exclusively devoted to the method of "extinguishing internal wind" (*pingxiao neifeng*). A further indication of how the internal wind theory has almost completely replaced notions of external wind involvement is the fact that *Xiao Xu Ming Tang* (Minor Prolong Life Decoction), the primary stroke remedy of the 8th century, is mentioned nowhere in the 424 formula compendium. In a recently published article² the veteran Shanghai physician Dr. Jin Mingyuan laments that this tendency may just be another extreme, since in his opinion the formula is still unsurpassed in its effect on rheumatic neuralgia, Bell's palsy, chicken pox, carbuncles, and many other conditions that involve the "striking of real wind" (*zhen zhongfeng*). The fear of confusing the "sort-of-wind" (*lei zhongfeng*) with the "real wind" should be no reason to abandon this valuable formula altogether. A detailed analysis of relevant PRC case studies reveals that some of the older doctors occasionally still like to add Ma Huang (Herba Ephedrae) or some other diaphoretic herb to their stroke remedies, but amounts are usually minute (0.3-3g) and are aimed at restoring circulation rather than expelling external wind.

The meridian opening effect of a low dose of Ma Huang (Herba Ephedrae) may be an explanation why *Xiao Xu Ming Tang* (Minor Prolong Life Decoction) is still presented as an option in the stroke manuals of Japanese Kanpo medicine. Japanese physicians feel strongly tied to the medical tradition of the Great Tang when their own cultural and medical history began to flourish. In general, Japanese Kanpo practitioners use much lower dosages than their Chinese colleagues. Gui Zhi (Ramulus Cinnamomi Cassiae), Bai Shao (Radix Paeoniae Lactiflorae), and Ma Huang (Herba Ephedrae) in this formula may produce useful vasodilating effects in those suffering from simple cerebrovascular spasms, though Chinese physicians now have other herbs to choose from to obtain such effects, e.g. Ge Gen (Radix Puerariae).

Nonetheless, the prolific TCM stroke data also contains evidence that external wind involvement has not been completely dismissed by contemporary Chinese physicians, but has rather been reduced to the status of least likely contingency in the complex aetiology of stroke related disorders. In a large scale clinical trial³ conducted in 1986, Dr. Shao Shengkuan divided 440 cases of cerebral thrombosis into four major groups according to Chinese differentiation. The smallest group of patients was classified as "meridian emptiness permitting pernicious wind to enter," and treated by prescribing a modified version of *Da Qin Jiao Tang* (Major Gentiana Qin Jiao Decoction). The modified version used contained the diaphoretics Qin Jiao (Radix Gentianae Macrophyllae), Qiang Huo (Rhizoma et Radix Notopterygii), and Fang Feng (Radix Ledebouriae Sesloidis). *Da Qin Jiao Tang* (Major Gentiana Qin Jiao Decoction) is usually known as a standard remedy for

Bell's palsy.

Even though modern TCM theoreticians agree about the predominant role of internal wind in cerebrovascular accidents, different theories about the precise origin of this 'sort-of-wind' still exist. However, rather than considering the diagnosis and treatment a matter of opinion, modern TCM physicians are unanimous that there are different types of internal wind which must be differentiated and dealt with accordingly in clinical practice. The most pertinent categories of differentiations are still the ones established by the Song and Yuan dynasty pioneers of the internal wind theory: heat, phlegm, and Qi deficiency. Nowadays, they are no longer looked upon as conflicting theories, but as complementary ones. Most large scale studies involving cerebrovascular accidents in China operate with these three categories. Different clinicians may prescribe different formulas and herbs, but the basic treatment principles are very much the same. The following discussion will outline the evolution and the clinical features of these categories in greater detail.

TREATMENT METHODS FOR STROKE

1. Yin Deficiency and Liver Yang Flare Up

Although Liu Wansu, Zhang Jingyue, and Ye Tianshi had talked about the idea of internal essence (yin) exhaustion giving rise to wind, it was not until the beginning of this century that a formula was designed which proved to be effective on a wide-scale basis. Zhang Xichun, perhaps the most eminent physician of the modern era, took a particular interest in the treatment of stroke. Zhang primarily practised in early 20th century Shanghai, and it may be that the rising commercial centre with all the side effects of modern metropolitan lifestyle produced more potential stroke candidates than elsewhere in historical China. His published case studies reveal many patients suffering from stress related hypertension and transient ischaemic attacks. After more than twenty years of well documented research, Zhang arrived at a universal formula for this type of patient - *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction), which has since emerged as the standard formula for transient ischaemic attacks and, depending on the state of the patient's blood pressure, the immediate aftermath of a full-blown cerebrovascular accident.

The evolution of this formula is particularly interesting, because it sheds light on the identity of traditional Chinese medicine in the modern era, and at the same time illustrates the typical thought processes leading to the creation of a traditional formula. Most ancient formulas just exist as classical entities, and it is often impossible to reconstruct the precise reasoning involved in their creation, or the many trials and errors, the numerous revisions, and the fine tuning preceding their final design. As a traditional doctor living in an international port, Zhang Xichun was a master of the classics, yet at the same time he was extremely interested in Western medicine which was just making inroads to China via the city's mission hospitals and universities. His medical

journal which was later turned into the influential book, *Yixue Zhongzhong Canxi Lu* (Chinese at Heart But Open to the West: An Integrated Approach to Traditional and Modern Medicine) 1923, first documents the encounter of these two medical systems, a topic which is nowadays just as hotly debated as it was then.

Adhering to the theories laid out by the inner wind school, he anchored his formula around herbs which fortify the essence of Liver and Kidney. *Jian Ling Tang* (Downward Momentum Decoction), his first experimental formula designed to move cerebral blood downward like water pours from an overturned flask, heavily used Shan Yao (Radix Dioscoreae Oppositae) and Sheng Di Huang (Radix Rehmanniae Glutinosae). Other versions employ Shan Zhu Yu (Fructus Corni Officialis), Sheng Di Huang (Radix Rehmanniae Glutinosae), and Gou Qi Zi (Fructus Lycii Chinensis). In his final version, he settled on Gui Ban (Plastrum Testudinis), Xuan Shen (Radix Scrophulariae Ningpoensis), Bai Shao (Radix Paeoniae Lactiflorae) and Tian Men Dong (Tuber Asparagi Cochinchinensis). Inspired by the Western validation of the Inner Canon claim that stroke symptoms are caused by "blood rushing to the head," he reasoned that the leading portion of the herbal 'arrow' had to be aimed at bringing the blood down from the brain. For this purpose, he heavily used Dai Zhe Shi (Haematitum), the ferrous mineral which is said to exert a downbearing effect on upper burner heat pathogens, and Niu Xi (Radix Achyranthis Bidentatae), a herb which has traditionally been used to direct the effect of a formula to the lower part of the body by virtue of "enticing the blood downward." The anti-hypertensive effect of Niu Xi (Radix Achyranthis Bidentatae) had been realised as early as the 7th century, when Sun Simiao mentioned in his *Qianjin Yaofang* (Thousand Ducat Formulas) that it can cure "pain in the brain." Zhang tried to further enhance this descending effect on the hyperactive Liver by adding Long Gu (Os Draconis) and Mu Li (Concha Ostreae), i.e. more downbearing minerals which were obviously inspired by *Feng Yin Tang* (Entice the Wind Decoction), the mineral rich *Jingui* stroke remedy designed by his famous namesake.

Animated by Western diagnostics which posit a direct relationship between high blood pressure - a concept heretofore unknown to Chinese doctors - and cerebrovascular accident, Zhang specifically designed this formula for hypertensive patients. In his emblematic spirit of "being Chinese at heart," however, he did not go so far as to suggest that the blood pressure cuff should be a prerequisite for the proper use of his formula. Instead, he required the presence of a bounding pulse, something he recognised as the Chinese way to identify pre-stroke hypertension. Apart from this tell-tale pulse, he defined the typical symptom complex for *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) in the following way: i. frequent dizziness; ii. sensation of ascending Qi in the Stomach region; iii. general restlessness, heat sensations in the chest, or vivid dreams of restlessly wandering about.

In his revealing diary style Zhang gives us uncommon insights into the evolution of the formula. He describes how the various prototypes of the formula initially achieved good results (rapid abating of pre-stroke warn-

ing symptoms and transient ischaemic attacks), but that in some patients, symptoms tended to reoccur in an even more severe manner. Well versed in traditional reasoning, he figured that Liver wood as the “tough and upwardly mobile general” among the organ networks resents being suppressed so abruptly. One cannot just force this proud organ into submission, he thought, otherwise the pressure will rebuild instantly and erupt with even greater force. Therefore, he began to include small amounts of Yin Chen Hao (Herba Artemisiae Capillaris) [recent Chinese studies assert that Zhang used Bin Hao/Zhu Mao Hao (Artemisia Scoparia) - a local substitute for Qing Hao], Chuan Lian Zi (Fructus Meliae Toosendan) and Yi Tang (Saccharum Granorum) which all assist the upward movement of Liver Qi. After thus assisting the rising action of the Liver which is really supposed to be subdued by the main thrust of the formula, he observed no more post-treatment flare-ups and included these three herbs permanently in the formula’s design.

Since then, *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) has become one of the most widely used remedies to prevent cerebrovascular accidents in hypertensive patients with severe headaches, transient ischaemic attacks, or other pre-stroke symptoms. It occupies a prominent place in the chapter on internal wind formulas presented by the most recent pharmacology textbook which is used by all TCM institutions in mainland China. However, rather than advocating the formula as the ideal all-round treatment for hypertensive situations, modern analysts emphasise Zhang’s original point that it is specifically indicated in conditions with yin deficiency fire effulgence (*yinxu huowang*).

As long as yin deficiency fire effulgence can be ascertained, the formula also seems to be effective in the immediate aftermath of a stroke. A research team headed by Dr. Lü Chengxu at Yantai City TCM Hospital in Shandong Province conducted a wide scale study of 350 cases with cerebral thrombosis in 1983⁴. Patients were divided into the three common categories of yin deficiency fire effulgence, wind phlegm clogging the channels, and Qi deficiency accompanied by blood stasis. *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) was used to treat patients belonging to the first category. Although the report provided no details on what the specific effectiveness rate was for this category alone, the overall results of the study were impressive: 161 patients were declared cured (facial paralysis and paralysis of the extremities alleviated, patients can conduct daily activities without help), 116 markedly improved (paralysis almost disappeared, patients can walk with a stick and conduct daily activities without help), 51 improved (paralysis improved, but cannot yet walk by him/herself, needs care), 22 without result. The overall effectiveness rate was assessed at 93.71%.

Another trial⁵ which focused more specifically on Zhang Xichun’s approach was conducted by Dr. Wang Mingshan. He used *Jian Ling Tang* (Downward Momentum Decoction), the predecessor of *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction), to treat cerebral thrombosis, embolism, haemorrhage, and atherosclerosis alike. Defining the parameters similarly to the Yantai study, he treated 30 thrombosis patients and declared 19 cured, 10 improved, 1 without result; 18 atherosclerosis patients, declaring 8 cured, 8 improved, 2 without result; 5 haemorrhage patients, declaring 2 cured, 1 improved, 2 deceased; 4 embolism patients, declaring 2 cured, 1 improved, 1 deceased.

The following additions were made: for headache or severe dizziness, Shi Jue Ming (Concha Haliotidis), Xia Ku Cao (Spica Prunellae Vulgaris), Ze Xie (Rhizoma Alismatis Plantago-aquaticae), He Shou Wu (Radix Polygoni Multiflori), and Chuan Xiong (Radix Ligustici Wallichii) were added; for inhibited speech or slurred speech pattern, Shi Chang Pu (Rhizoma Acori Graminei), Tian Nan Xing (Rhizoma Arisaematis), Jiang Can (Bombyx Batryticatus), and Ban Xia (Rhizoma Pinelliae Ternatae) were added; for facial paralysis with deviation of the mouth, Bai Fu Zi (Rhizoma Typhonii Gigantei seu Radix Aconiti Coreani), Jiang Can (Bombyx Batryticatus), Quan Xie (Buthus Martensi), Tu Bie Chong (Eupolyphagae seu Opisthoplatiae) and Wu Gong (Scolopendra Subspinipes) were added; for numb or paralysed limbs, Lu Jiao Jiao (Colla Cornu Cervi), Tu Bie Chong (Eupolyphagae seu Opisthoplatiae), Quan Xie (Buthus Martensi), Wu Gong (Scolopendra Subspinipes), Ru Xiang (Gummi Olibanum) and Mo Yao (Myrrha) were added; for the most severe cases, Western medical treatment was added.

The results of this recent trial demonstrate that *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) makes a good base formula for all types of afflictions which require relief of cerebrovascular

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pressure. The results of the single category trial may even suggest that the formula can extend its effectiveness beyond the yin deficiency fire effulgence symptom complex, as long as crucial additions are made. However, the reduced effectiveness rates and the inclusion of Western medicine in cases of

more severe cerebral accidents reveal that *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) and its prototypes may not be the prime choice for haemorrhage and embolism.

The strong points of the formula thus lay in the preventative realm, just as the original author had intended. Numerous studies since 1959 have verified its clinical effect in conditions involving hypertension related headache, insomnia, restlessness, or transient ischaemic attack. *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) has therefore become one of the primary remedies to prevent stroke by reducing

blood pressure. An early study⁶ conducted by Dr. Xia Yan treated 55 hypertensive cases with this formula and obtained "satisfying" results. A study conducted by Dr. Zheng Youshun in 1981⁷ revealed that intravenous administration to laboratory animals lowered blood pressure immediately, and that a variation of the original formula [minus Gui Ban (Plastrum Testudinis), Yi Tang (Saccharum Granorum), Yin Chen Hao (Herba Artemisiae Capillaris), Gan Cao (Radix Glycyrrhizae Uralensis); plus Gou Teng (Ramulus Uncariae Cum Uncis), He Shou Wu (Radix Polygoni Multiflori), Ye Jiao Teng (Caulis Polygoni Multiflori), Xia Ku Cao (Spica Prunellae Vulgaris)] had an even more sustained effect on laboratory animals. In clinical practice, the variation formula was found to be 66% effective for alleviating hypertension in patients with signs of yin deficiency fire effulgence.

Extensive research has also been conducted to isolate those herbs in the formula which are primarily responsible for the anti-hypertensive effect. It was found that Xuan Shen (Radix Scrophulariae Ningpoensis) can bring down blood pressure by itself, and that the lead herb Niu Xi (Radix Achyranthis Bidentatae) has marked anti-hypertensive properties. Modern patent formulas thus often include Niu Xi (Radix Achyranthis Bidentatae) when a decrease in blood pressure is desired.

It should be pointed out, however, that *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) is rarely used in its original form. The design of most modern remedies for hypertension and atherosclerosis, however, take the general treatment principles into account which Zhang Xichun had pioneered with this formula: bring the blood down, subdue the Liver, nourish yin.

Another formula which is often used in Chinese hospitals to subdue exuberant Liver yang in cerebrovascular situations is *Tian Ma Gou Teng Yin* (Gastrodia and Uncaria Decoction), first described in the book *Za Bing Zheng Zhi Xin Yi* (New Significance of Patterns and Treatment in Miscellaneous Diseases) published by an unknown author, probably during the 1960's. It shows traces of Zhang Xichun's original design, but employs different herbs: Tian Ma (Rhizoma Gastrodiae Elatae), Gou Teng (Ramulus Uncariae Cum Uncis), and Shi Jue Ming (Concha Haliotidis) [a heavy substance acting like hematite] subdue the Liver and extinguish internal wind; Niu Xi (Radix Achyranthis Bidentatae) entices the blood downward; Huang Qin (Radix Scutellariae Baicalensis) and Zhi Zi (Fructus Gardeniae Jasminoidis) purge Liver fire; Sang Ji Sheng (Ramus Loranthis seu Visci) and Du Zhong (Cortex Eucommiae Ulmoidis) supplement Liver and Kidney; Yi Mu Cao (Herba Leonuri Heterophylli) vitalises the blood and enhances water metabolism; Ye Jiao Teng (Caulis Polygoni Multiflori) and Fu Shen (Poriae Cocos Pararadicis Sclerotium) pacify the restless Heart. Several of the herbs, such as Du Zhong (Cortex Eucommiae Ulmoidis), Sang Ji Sheng (Ramus Loranthis seu Visci), Huang Qin (Radix Scutellariae Baicalensis), and Yi Mu Cao (Herba Leonuri Heterophylli) also lower blood pressure.

2. Phlegm

While yin deficiency fire effulgence is mostly observed during the stage of an impending stroke, signs of phlegm are the ones most often pronounced during and immediately after a cerebrovascular accident. The typical stroke victim suddenly becomes unconscious, falls to the ground, and drools from the mouth. Apparently, the *Shanghan lun* author Zhang Zhongjing had already recognised the importance of phlegm removal as an emergency measure in all kinds of life-threatening situations.

Da Cheng Qi Tang (Major Order the Qi Decoction), his classic formula for *Yangming* bowel excess syndrome, is more than just an emergency purgative in ileus conditions. Many contemporary Chinese doctors use it to treat acute cer-

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ebrovascular accidents (including haemorrhaging), in order to swiftly eliminate the accumulated heat and phlegm via the "big exit." The formula strongly enforces the function of the *Yangming* (Stomach and Large Intestine) channels which are in charge of the crucial descending motion. It treats highly acute situations when it is most pertinent to address the excess (heat, phlegm) rather than worrying about the underlying deficiencies which have caused the problem in the first place. The action of "breaking through" or "opening the blockage" (*tong*) is most important in this context, and many modern rescue formulas are thus labelled, for example *Tong Fu Tang* (Open the Bowel Decoction), *Tong Mai Tang* (Open the Channel Decoction) or the like.

There is clinical evidence that the method of removing phlegm by enforcing the downward movement of the digestive channels seems to be effective on a large scale basis. Dr. Zhang Fengjiao, a seasoned *Shanghan lun* specialist from the Chinese mainland, regularly uses a modified version of *Da Cheng Qi Tang* (Major Order the Qi Decoction) with Long Dan Cao (Radix Gentianae Scabrae), Ling Yang Jiao (Cornu Antelopis), Zhi Zi (Fructus Gardeniae Jasminoidis), Huang Qin (Radix Scutellariae Baicalensis), Shi Chang Pu (Rhizoma Acori Graminei), Yuan Zhi (Radix Polygalae Tenuifoliae) and Tian Zhu Huang (Concretio Silicea Bambusae) added, in acute stroke situations⁸.

Prof. Wang Yongyan, China's leading stroke specialist who has conducted several large scale stroke studies since the late 1970's, believes that ischaemic cardiovascular accidents always involve phlegm and stagnant blood. Da Huang (Rhizoma Rhei) fits this purpose very well, since it not only "opens up the bowels," but also has a marked heat clearing and blood vitalising effect. In 1986, Wang and his research team published "A Preliminary Report About Treating 158 Cases of Cerebrovascular Accident with the Resolve Phlegm and Open the Bowel Method⁹". The formula used for all cases was a modified version of *Da Cheng Qi Tang* (Major Order the Qi Decoction) labelled *Hua Tan Tong Fu Yin* (Resolve Phlegm and Open the Bowel Formula). It contained Gua Lou (Fructus Trichosanthis) 30-40g, Tian Nan Xing (Rhizoma Arisaematis) 6-10g, Da Huang (Rhizoma Rhei) 10-15g added later, and Mang Xiao (Mirabilitum) 10-

15g. In particularly severe cases of bowel excess accompanied by heat symptoms, Tian Zhu Huang (Concretio Silicea Bambusae) and the patent formula *Qingkai Ling* (Clearing Heat and Opening the Orifice Magic Remedy¹⁰) were added. Of the 92 males and 66 females participating in the study, 63 were reported cured (40%), 39 markedly improved (25%), 33 improved (21%), 17 without result (10%), and 6 getting worse (4%). The general effectiveness was rated at 86%.

While Wang's patients were all cases suffering from cerebral thrombosis, Dr. Li Wenhao at Jiaojiang City TCM Hospital in Zhejiang Province used a similar approach to exclusively treat cases with cerebral haemorrhage. The formula used was *Tong Fu Tang* (Open the Bowel Formula): Da Huang (Rhizoma Rhei) 10g added later, Mang Xiao (Mirabiltum) 10g administered as powder, Zhi Shi (Fructus Citri seu Ponciri Immaturus) 10g, Tian Nan Xing (Rhizoma Arisaematis) 12g, Di Long (Lumbricus) 12g, Shi Chang Pu (Rhizoma Acori Graminei) 10g, Hou Po (Cortex Magnoliae Officinalis) 6g, Niu Xi (Radix Achyranthis Bidentatae) 20g, and Tian Zhu Huang (Concretio Silicea Bambusae). 24 patients were reported cured (60%), 2 improved (5%), and 14 (35%) died (published in the comprehensive research compendium, *Compendium of Secret Chinese TCM Formulas*, 1990¹¹). Similar to the results obtained in Dr. Wang Mingshan's trial with *Jian Ling Tang* (Downward Momentum Decoction), this study reaffirms that in the realm of Chinese medicine, cerebral haemorrhage is also considered to be a more serious condition than thrombosis, but that general prospects are still better than the average survival rate reported in the Western medical literature.

Since human beings are mostly composed of water, fluid metabolism and phlegm related treatment methods play an extremely important role in Chinese medicine. There are many approaches to resolving phlegm, and purging it via the *Yangming* channel is only the most rapid one (emetic removal of phlegm is not recommended because the upward surge of Qi associated with emetic action may possibly compound the upward surge of Qi and blood leading to stroke). Some of the other methods, such as eliminating the phlegm by drying it with pungent herbs like Ban Xia (Rhizoma Pinelliae Ternatae) or Tian Nan Xing (Rhizoma Arisaematis), or moving it with Qi invigorators like Chen Pi (Pericarpium Citri Reticulatae) and Zhi Shi (Fructus Citri seu Ponciri Immaturus), or leeching it out via the urinary tract with diuretic yet Spleen enforcing materials like Fu Ling (Sclerotium Poriae Cocos), are also frequently employed in the aftermath of a cerebrovascular accident. Representative formulas in this context are *Dao Tan Tang* (Guide Out Phlegm Decoction), an enforced version of the all-round phlegm resolver *Er Chen Tang* (Two-Cured Decoction) with Zhi Shi (Fructus Citri seu Ponciri Immaturus) and Tian Nan Xing (Rhizoma Arisaematis) added, and *Di Tan Tang* (Scour Phlegm Decoction), a more complex variation of this most standard of phlegm resolving designs.

In the three-category, 350 patient trial conducted by Dr. Lu Chengxu, the formula used for phlegm related stroke was a modified version of *Dao Tan Tang* (Guide Out Phlegm Decoction): Ban Xia (Rhizoma Pinelliae

Ternatae) 10g, Fu Ling (Sclerotium Poriae Cocos) 15g, Chen Pi (Pericarpium Citri Reticulatae) 12g, Zhi Shi (Fructus Citri seu Ponciri Immaturus) 10g, Tian Nan Xing (Rhizoma Arisaematis) 10g, Shi Chang Pu (Rhizoma Acori Graminei) 12g, Gua Lou (Fructus Trichosanthis) 30g, Gou Teng (Ramulus Uncariae Cum Uncis) 30g, Di Long (Lumbricus) 15g, Jiang Can (Bombyx Batryticatus) 10g, and Gan Cao (Radix Glycyrrhizae Uralensis) 6g. In Dr. Shao's case study, it was the original version of *Di Tan Tang* (Scour Phlegm Decoction): Zhi Ke (Fructus Citri seu Ponciri) 10g, Chen Pi (Pericarpium Citri Reticulatae) 10g, Ban Xia (Rhizoma Pinelliae Ternatae) 10g, Fu Shen (Poriae Cocos Pararadicis Sclerotium) 12g, Tian Nan Xing (Rhizoma Arisaematis) 10g, Dang Shen (Radix Codonopsis Pilosulae) 12g, Zhi Shi (Fructus Citri seu Ponciri Immaturus) 12g, Shi Chang Pu (Rhizoma Acori Graminei) 10g, Sheng Jiang (Rhizoma Zingiberis Officinalis Recens) 3g, and Gan Cao (Radix Glycyrrhizae Uralensis) 3g.

As some additions to these formulas indicate, Chinese doctors like to include aromatic herbs such as Shi Chang Pu (Rhizoma Acori Graminei) for cases of acute stroke. This measure is specifically directed at resolving "phlegm clogging the orifice of the Heart" (*tan mi xinqiao*). The ancient Chinese image of the Heart, preserved by the pictogram still in use, depicts an entity with a hollow core (similar to the lotus flower which has become its major symbol). Buddhist figures are typically seated on a lotus flower, because that is where the Buddha is said to reside in the human body - in the Heart. According to Buddhist scriptures, human consciousness ("the Heart") grows pure from the dust of human existence, just like the lotus flower blossoms beautifully from a festering cesspool. In the context of Chinese medicine it is important to note that the flame of consciousness resides in the hollow core of the Heart, which again resembles the indentation of the lotus leaf. It is the light of this flame radiating outwards, according to Eastern philosophy, which illuminates the things around us and creates reality, rather than reality existing per se. If this crucial orifice is blocked by impure substances such as phlegm or stagnating blood, the flame fails to illuminate, everything turns dark, and "reality" ceases to exist. In other words, the person becomes unconscious.

In all cases of disorders involving loss of consciousness, whether a heart attack, an epileptic seizure or a stroke, the method of unclogging the orifice of the Heart plays an important role. The 8th century *Waitai Miyao* (Arcane Essentials from the Imperial Library), the next major formula compendium after the creation of the *Shanghan lun*, recommends *Zi Xue Dan* (Purple Snow Special Pill) for this purpose. Since then, the formula has become a kind of standard emergency life saver stocked in Chinese homes, a status it has retained up to the present day. Similar to the heavy mineral approach pioneered in the Golden Cabinet, it includes Shi Gao (Gypsum), Han Shui Shi (Calcitum), Ci Shi (Magnetitum), and Huang Jin (Gold) to pull upper burner excess downward; this action is fortified by Ling Yang Jiao (Cornu Antelopis) and Xi Jiao (Cornu Rhinoceri), materials which not only clear heat and wind, but are also said to open the orifice of the Heart by virtue of their slightly fragrant nature. Ding Xiang (Flos Caryophylli),

Mu Xiang (Radix Saussureae seu Vladimira), and the precious She Xiang (Secretio Moschus moschiferi) are more fragrant materials aimed at the rapid unclogging of the Heart orifice.

Both the major Song compendium, *Taiping Huimin Heji Jufang* (Imperial Grace Formulary of the Taiping Era) and the landmark work of the fever school, *Wenbing Tiaobian* (Systematic Differentiation of Warm Diseases) developed similar formulas to accommodate various degrees of heat involvement, namely *Zhi Bao Dan* (Greatest Treasure Special Pill) and *An Gong Niu Huang Wan* (Calm the Palace Pill with Cattle Gallstone). Together with *Zi Zue Dan*, they are known as the “three treasures” (*san bao*) which are standard contents in every Chinese barefoot doctor’s emergency kit. The patent form ensures speedy application in situations when there is no time to be lost, and it utilises the rare and costly ingredients to their maximum potential. These remedies can be used in a wide array of disorders, ranging from toxic heat afflictions such as leprosy or high fever, to “orifice disorders” such as stroke. The primary indication for their use is usually loss of consciousness.

Whereas the three treasures are coolingly opening (*liang kai*), there is also the method of warmingly opening (*wen kai*) for stroke victims with sudden loss of consciousness and signs of phlegm, accompanied by cold symptoms (blue lips, cold hands and feet, etc.). This phenomenon had already been mentioned in the Inner Canon as the “great collapse accompanied by cold symptoms” (*da jue*), and Zhang Zhongjing - just as he had employed the emergency cooler *Da Cheng Qi Tang* (Major Order the Qi Decoction) for the hot type of stroke - recommended the emergency warmer *Si Ni Tang* (Frigid Extremities Decoction) for all kinds of conditions where sudden loss of consciousness with cold limbs is involved. Yet again, it was not until more than 800 years later that a standard emergency remedy which particularly dealt with cold phlegm clogging the orifice of the Heart was recorded. The Imperial Grace Formulary, which is the origin of so many other famous formulas such as *Xiao Yao San* (Rambling Powder), recommends *Su He Xiang Wan* (Liquid Styra Pill) for this condition. *Su He Xiang Wan* (Liquid Styra Pill) contains a wide array of highly aromatic herbs which make the formula effective for various types of sudden blockages such as heart attacks or the cold-phlegm type of cerebrovascular accident.

It should be pointed out that the crucial orifice of the Heart can also become blocked by stagnating blood, as is the case in many heart attacks and strokes accompanied by signs of blood stasis. Due to their strong unblocking effect, highly aromatic materials like She Xiang (Secretio Moschus moschiferi) are effectively used for both phlegm and blood clots. They are, however, aimed at restoring consciousness rather than alleviating conditions of chronic blood stasis (see next section). Chinese doctors have long recognised the observation of modern medicine that the sooner a patient regains consciousness, the less severe the aftermath will be. The three treasures against “heat closure” (*re bi*) and *Su He Xiang Wan* against “cold closure” (*han bi*) are thus highly valued by Chinese physicians, since they can dramatically shorten

the span of loss of consciousness.

Not all phlegm treatment in stroke situations, however, is indicated in an emergency context. When Zhu Danxi proposed his phlegm related theory of inner wind during the highly inventive Song/Yuan era, he was obviously thinking of a constitutional phlegm type who was predisposed to be struck by this particular kind of wind. But again, five centuries went by before a standard remedy was designed which would be used on a wide scale basis to prevent stroke in this particular type of patient. Cheng Guopeng, the 18th century creator of the Eight Parameters, invented yet another version of *Er Chen Tang* (Two Cured Decoction) which specifically addresses phlegm related vertigo. While *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction) is often chosen to treat hypertensive headaches, Cheng’s formula - *Ban Xia Bai Zhu Tian Ma Tang* (Pinellia, Atractylodes Macrocephala and Gastrodia Decoction) - is usually the primary choice for atherosclerotic vertigo. Atherosclerotic plaques, after all, are a type of phlegm according to traditional Chinese reasoning.

3. Qi Deficiency and Blood Stasis

Like the early “internal wind” proponents Liu Wansu and Zhu Danxi, the eminent 13th century physician Li Dongyuan helped to pioneer the notion that stroke really has little to do with external wind invasion. Rather than focusing on heat or phlegm as the causative factors of the internal wind, however, he emphasised that the problem is often a result of severe Qi deficiency, a condition he termed “excess form and deficient Qi.” Even though he himself did not elaborate on the exact mechanism by which Qi deficiency can produce wind-like symptoms, later commentators have pointed out that chronic Qi deficiency may cause a general vacuity of the channels which in turn become particularly vulnerable to invasion by “excess forms” such as phlegm. The channels thus become obstructed and wind-like symptoms such as hemiplegia result.

Later clinicians agree that many stroke patients fit the pattern of Qi deficiency (limp extremities, general weakness) and excess form (obese constitution) and regard Li’s theory as one of the theoretical pillars of stroke treatment. However, they apparently did not like to use the formulas the Qi tonification expert recommended. One reason may be that Li, just like the other two pioneers of the “inner wind,” still thought it appropriate to include some diaphoretic herbs in his stroke remedies, a fact which was harshly criticised by later doctors. Particularly Zhang Xichun, the ebullient author of *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction), thought that the three pioneers lacked thoroughness when they so clearly recognised the true nature of the problem, but failed to implement their conviction about a wind-that-is-not-really-a-wind in concrete formula design.

It took another 600 years, therefore, before Li Dongyuan’s basic theory gave rise to a formula which would be widely used to alleviate stroke symptoms in the constitutional type he originally had in mind. The 19th century physician Wang Qingren proposed that Qi deficiency invariably gives rise to blood stasis, much like

a motor that cannot muster up enough horse power to circulate its oil; coagulation will eventually take place and create vital obstacles along the path of circulation. Considering the intimate driver-substance relationship of Qi and blood in the human body, it seems only logical that chronic Qi deficiency will sooner or later result in blood stasis. And once this kind of structural excess has developed, Wang concluded, it must be dealt with on the same level of priority as the underlying condition which originally caused it to occur.

Like many other outstanding figures in the history of Chinese medicine, Wang was a local government official with a keen interest in public health. His training in traditional medicine was rather rudimentary, but he displayed an exceptional devotion to the quest for the hidden mechanisms of the human body. His position allowed him to conduct autopsies on the corpses of murder victims and executed criminals, and the results astonished him so much that he set out to rewrite some of the basic guidelines of traditional medicine. Apparently unaware of the fact that classical Chinese medicine is based on a diagnostic system which makes reference to functional circuits rather than structural "organs,"* he proclaimed that many traditional claims about the size, shape, and location of the body's internal parts were wrong. In a brief but extremely influential study featuring the provocative title, *Yilin Gaicuo* (Correcting the Mistakes of Former Medical Books, 1830), Wang mapped out the "genuine" features of the body organs. But even though Wang's layman enthusiasm has become a standing joke among later commentators ("the more he corrected, the more mistakes he created"), his work has by no means become the laughing stock of the trade. The formulas he designed have passed the test of time and now belong to the standard repertoire of every contemporary TCM physician. The *Xue Fu Zhu Yu Tang* (Drive Out Stasis in the Mansion of Blood Decoction), for instance, has surpassed classic blood vitalisers in popularity and is often considered one of the most versatile formulas of all time. The fact that it was created as the result of a gross anatomical misconception - the assumption of a central "mansion of blood" right on top of the diaphragm, a place where Wang often found congealed blood after opening the thoracic cavity by unsophisticated means - seems to make no difference in clinical practice, which is always the last judge in the experience-based science of Chinese medicine.

By emphasising the etiological importance of blood stasis and by significantly downgrading fears about the traditionally exaggerated side effects of blood vitalising herbs, the unscholarly Wang and his work now take up a prominent place in the annals of Chinese medicine. Most importantly, Wang's blood vitalising formulas, all bearing the signature of the benevolent mandarin by containing only the most common and inexpensive herbs, have opened up new avenues for many "strange" and "difficult" diseases. Post-stroke paralysis is one of them. His autopsies may have alerted Wang to the fact that many "wind stroke" victims have actual blood clots in the brain, and that it was this blood stasis which had to be eliminated along with the general pattern of Qi deficiency. His solution to the condition of Qi deficiency/blood stasis was *Bu Yang Huan Wu Tang* (Tonify the Yang

to Restore Five Tenths Decoction), featuring an unusually heavy dose of Huang Qi (Radix Astragali) [120g] to boost Qi dependent body functions, and Dang Gui Wei (Radix Angelicae Sinensis), Chi Shao (Radix Paeoniae Rubrae), Di Long (Lumbricus), Chuan Xiong (Radix Ligustici Wallichii), Hong Hua (Flos Carthami Tinctorii), and Tao Ren (Semen Persicae) to resolve blood stasis and open the obstructed channels.

Once knowledge of modern medicine entered China and validated the concept of structural blood obstruction in the brain, Wang's approach began to be implemented by more and more doctors. Also, and perhaps more importantly, *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction) seemed to work better in clinical practice than any other remedy aimed at reversing the typical paralysis observed in stroke victims. As may have become evident in some of the modified trial formulas mentioned in the previous chapters, blood stasis is nowadays always considered as a factor in stroke situations, no matter what the category of differentiation may be. Moreover, although the formulas recommended in the first two categories of stroke differentiation may vary, virtually all mainland doctors seem to agree that *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction) is the single most effective formula for post-stroke syndrome as long as signs of Qi deficiency and blood stasis are present.

Both the large scale trials conducted by Lu Chengxu and Shao Shengkuan utilised the original *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction) in the category of Qi deficiency/blood stasis. Dr. Zhu Yongwen, in a stroke study published in 1989¹², combined the formula with the meridian opening effect of *San Chong San* (Three Insect Powder) [Quan Xie (Buthus Martensi), Wu Gong (Scolopendra Subspinipes), Tu Bie Chong (Eupolyphagae seu Opisthoplatiae)] and obtained the following results: of 58 participating cases, 35 were reported cured, 14 markedly improved, 8 improved, and 1 without result.

Dr. He Youzuo set up a comparative trial¹³ where 51 patients with cerebral thrombosis were treated with standard Western IV therapy, while a second group of 53 similar cases also received oral administration of *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction). Both groups were treated for twenty days before final evaluation was made. At the end of the treatment period, 17 of the first group and 32 of the second group were declared cured; 10 in the first group and 14 in the second group markedly improved; 14 in the first group and 5 in the second group improved; 6 in the first and 2 in the second group showed no results; 2 of the first group and 0 of the second group died. The general effectiveness was assessed at 80% for the first group treated by orthodox intravenous administration of anticoagulants, and 96% for the second group treated additionally with *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction).

There are numerous recent Chinese case studies using *Bu Yang Huan Wu Tang* (Tonify the Yang to Restore Five Tenths Decoction) for the treatment of cerebral thrombosis. Some studies, such as the control group trial by Dr. He, apply the formula or a modified version thereof

immediately after a cerebrovascular accident has occurred. Most TCM physicians believe, however, that the proper use of this formula is contingent upon Qi deficiency and that a heavy dose of Huang Qi (Radix Astragali) is inappropriate in acute excess situations. The formula is therefore typically applied during the recovery stage, that is anywhere between two weeks and ten years after the accident has happened. If heat phlegm is present, some researchers caution, primary attention should be paid to the phlegm before prescribing this formula. Emphasising their point, they cite several reports which indicate that patients without signs of Qi deficiency do not respond to the treatment or may develop side effects such as restlessness, facial flushing, insomnia, vomiting, or abdominal distention¹⁴. To avoid these side effects, Chinese doctors often start out by first prescribing less Huang Qi (Radix Astragali) [30-60g], and then gradually increase the amount to the original mega-dose of 120g.

Following the trend of New Medicine, that is the highly ideological Chinese attempt to mould Western diagnostics and Chinese treatment methods into a superior therapeutic system, blood vitalising materials are often employed as herbal anti-coagulants once a thrombosis diagnosis has been ascertained. For this purpose, *Di Dang Tang* (Resistance Decoction), the *Shanghan lun* prototype of the blood vitalising method, or just its major ingredient - leech [Shui Zhi (Hirudo seu Whitmaniae)] - are administered orally (see, for instance, Dr. Jiang Qiao's study on treating 68 cases of cerebral thrombosis, reporting a general effectiveness rate of 97%¹⁵). Many mainland hospitals have also produced convenient rescue injections made from single blood-vitalising herbs. As the available data documents, best results were obtained from Hong Hua (Flos Carthami Tinctorii) injections and the active ingredients of a solution made from Dan Shen (Radix Salviae Miltiorrhizae), Chi Shao (Radix Paeoniae Rubrae), Chuan Xiong (Radix Ligustici Wallichii), and Dang Gui (Radix Angelicae Sinensis). Interestingly, some side effects (lethargy, etc.) were observed in the Hong Hua (Flos Carthami Tinctorii) trial¹⁶, indicating that the traditional notion of Qi deficiency should best be acknowledged and addressed in a long term approach.

It took eager New Medicine researchers by surprise when evidence accumulated that unlike their mono-directional chemical counterparts, herbal blood vitalisers are not necessarily contraindicated in haemorrhage situations, and that some of them even seem to benefit haemorrhaging patients. When a highly secretive research compendium compiled by the National Ministry of Health indicated that a host of variegated effects can be derived from blood vitalisers, many hospital departments with a large contingency of stroke patients ventured to test out whether the exciting laboratory effects could be reproduced in clinical practice. For instance, one particularly stunning feature the report had mentioned was that many herbs in this category seem to possess the double feature of thinning the blood (like anti-coagulants), yet at the same time aiding absorption of extra-arterial blood and stopping bleeding. Even though traditional theory had asserted all along that certain types of bleeding can be remedied by the blood vitalising method, considering the diametrically oppo-

site nature of the standard Western treatment for thrombosis and haemorrhage this seemed almost impossible to believe. But then again, in the dynamic domain of Chinese medicine the as-needed effect of certain herbs had been observed before. Both Huang Qi (Radix Astragali) and Ge Gen (Radix Puerariae), for instance, are known to have the double function of elevating or lowering blood pressure, depending on the type of patient who imbibes it.

Leech [Shui Zhi (Hirudo seu Whitmaniae)] in particular, has been singled out as a remedy which significantly speeds up recovery in both haemorrhage and thrombosis patients. But as the authoritative compendium on experimental PRC hospital formulas (Compendium of Secret Chinese TCM Formulas¹⁷) reports, recent experiments demonstrate that the administration of San Leng (Rhizoma Sparganii), E Zhu (Rhizoma Curcumae Zedoariae), Ru Xiang (Gummi Olibanum), Mo Yao (Myrrha), and Tao Ren (Semen Persicae) can also significantly aid the reabsorption of blood in haemorrhage patients. CT pictures revealed that patients treated with any one of these herbs reabsorbed blood significantly faster than stroke victims who were exclusively treated with Western drugs.

A recent study conducted at the Affiliated Teaching Hospital of Tianjin University of Medical Sciences¹⁸ reports the primary use of blood moving herbs in 52 cases of acute cerebral haemorrhage. Since all patients responded favourably to the treatment, the study suggests that blood moving herbs can not only prevent further bleeding, but quite obviously aid the absorption of blood, restore consciousness and limb movement, and control headaches. The study suggests that in cases of acute intracerebral haemorrhage, blood moving herbs like Dang Gui (Radix Angelicae Sinensis), Dan Shen (Radix Salviae Miltiorrhizae), Ji Xue Teng (Radix et Caulis Jixueteng), Chuan Xiong (Radix Ligustici Wallichii), Hong Hua (Flos Carthami Tinctorii), and Shui Zhi (Hirudo seu Whitmaniae) should be combined with herbs that are traditionally thought of as moving and stopping blood at the same time, such as Pu Huang (Pollen Typhae), San Qi (Radix Pseudoginseng), and Hua Rui Shi (Dolomitum). As soon as the situation stabilises, the author recommends that the last three materials are removed and, according to the specific symptom profile, replaced with herbs that tonify Qi, move Qi, transform phlegm, sedate the Liver, or open the bowels and relieve constipation.

Despite these findings, however, the Chinese medical community is still cautious about generalising the use of blood movers in haemorrhage situations. Since in Western medicine, treatment plans for cerebral thrombosis and cerebral haemorrhage are diametrically opposed, no final word has been spoken as to whether blood movers should be included in all kinds of cerebrovascular accident; and perhaps more importantly, as to whether all blood moving herbs possess the highly desirable double feature of thinning yet stopping the blood.

CONCLUDING REMARKS

During the last twenty years Chinese researchers have turned out a flood of reports on different approaches and remedies for various types and stages of stroke. The

highly variegated studies and research papers reveal that the age old debate on stroke is by no means over, and that the process of standardising diagnostic categories and defining a standard clinical regimen is still in the making. However, all researchers - including many Chinese Western-style doctors - unanimously agree that it is not premature to assert that Chinese herbal treatment seems to be superior to Western treatment as administered in modern Chinese hospitals, particularly during the recovery stage. During the acute stages of cerebrovascular accident, a combination of both methods is said to be most effective. In the face of sloppy statistical procedures, and ideological factors (stressing the Marxist-scientific yet patriotic system of New Medicine), it is always healthy to look at PRC reports with a certain amount of scepticism. The enormous wealth of data accumulated in this particular field, however, is too prolific and statistically coherent to be ignored. It alerts us to the possibility that Chinese medicine may offer a good alternative or adjunct to orthodox Western stroke treatment. As with other diseases, however, Chinese medicine is unable to offer a single remedy as panacea, but instead relies on proper differentiation and prescription of appropriate herbs and formulas.

APPENDIX

Bu Yang Huan Wu Tang

(Tonify the Yang to Restore Five Tenths Decoction)

Huang Qi (Radix Astragali) 120

Dang Gui Wei (Radix Angelicae Sinensis) 6

Chi Shao (Radix Paeoniae Rubrae) 4.5

Di Long (Lumbricus) 3

Chuan Xiong (Radix Ligustici Wallichii) 3

Tao Ren (Semen Persicae) 3

Hong Hua (Flos Carthami Tinctorii) 3

Therapeutic Principles: tonify source Qi, move blood and open up the connecting channels.

Symptoms and Signs: hemiplegia, deviated eyes and mouth, sluggish speech, drooling from the corners of the mouth, atony in the lower extremities, frequent urination or urinary incontinence.

Tongue: with white coating.

Pulse: moderate and weak.

Herbs and actions: Huang Qi tonifies source Qi, thus addressing the root of stagnation and indirectly aiding blood circulation; Dang Gui Wei, Chi Shao, Chuan Xiong, Tao Ren and Hong Hua move blood; Di Long opens up the channels and collaterals.

Indications: stroke prevention, cerebral thrombosis, cerebral embolism, cerebral haemorrhage, subarachnoid bleeding, post-stroke syndrome, numbness due to arteriosclerosis; concussion, intracranial haematoma due to injury, post-traumatic brain syndrome, post-traumatic blindness, double vision, chronic subdural haematoma, cerebral anoxia, headaches due to post-concussional syndrome, headaches due to blood stasis, vasomotorical headaches; acute carbon monoxide poisoning, recovery stage of carbon monoxide poisoning; sciatica, lumbosacral pain, peroneal pain, greater occipital nerve pain, brachial plexus damage syndrome, frozen shoulder, inflammation due to hypertrophy of spine; polyneuritis, post-radiculoneuritis syndrome, infantile paralysis (po-

liomyelitis), paralysis due to myelitis, progressive myodystrophy, facial paralysis (Bell's Palsy), Parkinson's; neurasthenia, insomnia, epilepsy, hysterical paralysis; heart disease, acute cardiovascular infarction, bradycardia; Reynaud's syndrome, thromboangiitis obliterans, varicose veins; chronic nephritis, chronic hepatitis, epidemic haemorrhagic fever, systemic lupus erythematosus (SLE), psoriasis, Behcet's syndrome; altitude polycythemia; diabetes; amenorrhoea, metrorrhagia; liver cirrhosis; postoperative inflammatory lumps; sudden hair loss; hypertrophy of prostate; urticaria.

Typical modifications:

- For acute stroke may combine with *Zhen Gan Xi Feng Tang* (Sedate the Liver and Extinguish the Wind Decoction).

- For paralysis of the lower extremities add Niu Xi (Radix Achyranthis Bidentatae).

- For slurred speech add Shi Chang Pu (Rhizoma Acori Graminei), Yuan Zhi (Radix Polygalae Tenuifoliae) and Yu Jin (Tuber Curcumae).

- For drooling from the corner of the mouth combine with *Er Chen Tang* (Two Cured Decoction) or *Xiang Sha Liu Jun Zi Tang* (Six Gentlemen Decoction with Aucklandia and Amomum).

- For post-stroke paralysis may add Ji Xue Teng (Radix et Caulis Jixueteng), Qian Nian Jian (Rhizoma Homalomenae Occultae) and Niu Xi (Radix Achyranthis Bidentatae); or Gui Zhi (Ramulus Cinnamomi Cassiae), Niu Xi (Radix Achyranthis Bidentatae), Dan Shen (Radix Salviae Miltiorrhizae), Ji Xue Teng (Radix et Caulis Jixueteng) and Gan Cao (Radix Glycyrrhizae Uralensis).

- For post-stroke syndrome exceeding six months, combine with patent formula *Xiao Huoluo Dan* (first take decoction and patent for two weeks, then take only patent for a while, then start decoction again).

- For infantile paralysis may add Dang Shen (Radix Codonopsis Pilosulae), Niu Xi (Radix Achyranthis Bidentatae), Gui Zhi (Ramulus Cinnamomi Cassiae).

- For sciatica add Dang Shen (Radix Codonopsis Pilosulae), Ji Xue Teng (Radix et Caulis Jixueteng), Gui Zhi (Ramulus Cinnamomi Cassiae) and Gan Cao (Radix Glycyrrhizae Uralensis).

- For headaches add Bai Zhi (Radix Angelicae), Niu Xi (Radix Achyranthis Bidentatae), Gan Cao (Radix Glycyrrhizae Uralensis).

- For chronic nephritis may add *Qi Ju Di Huang Wan* (Lycium Fruit, Chrysanthemum and Rehmannia Pill).

- For altitude polycythemia add Gui Zhi (Ramulus Cinnamomi Cassiae), Dan Shen (Radix Salviae Miltiorrhizae), Ku Shen (Radix Sophorae Flavescens), Xia Ku Cao (Spica Prunellae Vulgaris) and Bai Ji Li (Fructus Tribuli Terrestris).

Notes: *Bu Yang Huan Wu Tang* first appeared in the pioneering compendium 'Correcting the Mistakes of Former Medical Books (*Yilin Gaicuo*)'. As the representative formula for removing blood stasis by boosting the Qi and opening the collaterals, it constitutes a major milestone in Chinese medical history. Featuring an unusually heavy dose of the Qi tonic Huang Qi, the formula marks a radical departure from the earlier theory that blood stasis is caused by prolonged Qi stagnation. This method opened up new avenues for a wide variety of chronic diseases which involve both Qi deficiency and

blood stagnation, particularly post-stroke syndrome and other types of paralysis. Recent research has demonstrated that the formula significantly speeds up the recovery process for stroke patients, especially if taken within two months after the occurrence of a cerebrovascular accident. The formula apparently aids absorption of blood, decreases brain pressure, increases blood circulation, and maximises oxygen supply to the cells. Although the formula has been used successfully for all types and stages of cerebrovascular accident, many stroke experts recommend that it should only be prescribed after i. the patient has regained consciousness, ii. after the blood pressure has returned to normal or below normal levels, iii. if there is no fever, and iv. if there are only few or no signs of phlegm. With particular regard to the immune enhancing and the auto-immune controlling properties of Huang Qi, the range of indications for *Bu Yang Huan Wu Tang* has recently been extended to include a wide variety of disorders. In modern clinical practice, Huang Qi is often used in more moderate amounts (30-60g), while the blood moving herbs are generally prescribed more heavily.

Zhen Gan Xi Feng Tang

(Sedate the Liver and Extinguish the Wind Decoction)

Niu Xi (Radix Achyranthis Bidentatae) 30
 Dai Zhe Shi (Haematitum) 30
 Long Gu (Os Draconis) 15
 Mu Li (Concha Ostreae) 25
 Gui Ban (Plastrum Testudinis) 15
 Bai Shao (Radix Paeoniae Lactiflorae) 15
 Xuan Shen (Radix Scrophulariae Ningpoensis) 15
 Tian Men Dong (Tuber Asparagi Cochinchinensis) 15
 Chuan Lian Zi (Fructus Meliae Toosendan) 6
 Yi Tang (Saccharum Granorum) 6
 Yin Chen Hao (Herba Artemisiae Capillaris) 6
 Gan Cao (Radix Glycyrrhizae Uralensis) 4.5

Therapeutic principles: sedate the Liver and extinguish internal wind, enrich Yin and subdue Yang.

Symptoms and signs: frequent dizziness, sensation of ascending Qi in the stomach region (frequent belching), general restlessness, heat sensations in the chest and/or epigastric region, vivid dreams of restlessly wandering around; distention in the eyes, ringing in the ears, hot pain inside the head, flushed face; gradually increasing loss of sensation in the extremities, corners of the mouth deviating to one side, sudden loss of consciousness, short concentration span or mental changes or partial paralysis after regaining consciousness.

Tongue: red with little or no coating.

Pulse: long, wiry and forceful.

Indications: hypertension and related symptom complex (dizziness, headache, tinnitus, insomnia), hypertension due to acute nephritis; transient ischaemic attacks, cerebrovascular accident; neurasthenic insomnia; vascular headaches (including migraine); skin diseases (neurodermatitis, pruritis, chronic urticaria, thrombocytopenic purpura); metadromic epilepsy; trigeminal neuralgia.

Herbs and actions: Niu Xi entices the blood to flow downward. Dai Zhe Shi reverses Qi counterflow in the Stomach channel and the Chong Mai. Mu Li and Long Gu subdue upflaring Liver-Yang. Gui Ban and Bai Shao extinguish Liver wind and nourish Liver Yin. Xuan Shen

and Tian Men Dong clear Lung Qi and nourish Lung Yin, thus indirectly keeping the Liver in check. Yi Tang, Yin Chen Hao and Chuan Lian Zi assist the natural flow of Liver Qi. Gan Cao protects Stomach Qi and harmonises herbal actions.

Typical modifications:

- For obvious heat sensation in the chest or Stomach add Shi Gao (Gypsum).
- For obvious phlegm add Dan Nan Xing (Rhizoma Arisaematis cum Felle Bovis).
- For deficiency in the Kidney pulse positions add Shu Di Huang (Radix Rehmanniae Glutinosae Conquatae) and Shan Zhu Yu (Fructus Corni Officinalis).
- For unformed stool remove Gui Ban and Dai Zhe Shi and add Kaolin.
- For patients with hypertensive headache, dizziness, short temper, restlessness and insomnia, remove Gui Ban, Yi Tang, Yin Chen Hao and Gan Cao and add Gou Teng (Ramulus Uncariae Cum Uncis), Xia Ku Cao (Spica Prunellae Vulgaris), He Shou Wu (Radix Polygoni Multiflori) and Ye Jiao Teng (Caulis Polygoni Multiflori).
- For sudden onset of headache due to flaring up of Liver Yang add Gou Teng (Ramulus Uncariae Cum Uncis) and Bai Zhi (Radix Angelicae).
- For chronic headaches add Dan Shen (Radix Salviae Miltiorrhizae) and Chuan Xiong (Radix Ligustici Wallichii).

Notes: *Zhen Gan Xi Feng Tang* is an experimental formula designed by the most famous Chinese physician of the Republican era, Zhang Xichun. During the first two decades of the 20th century he published a series of research papers and compiled them into the influential book 'Chinese at Heart but Open to the West: An Integrated Approach to Traditional and Modern Medicine' (*Yixue Zhong Zhong Can Xi Lu*). The discussion of the life-threatening disorder *zhongfeng* ('struck by wind') features prominently in this work, underscoring the historical suspicion that this type of wind had internal origins and thus differed fundamentally from external *zhongfeng* wind invasion. Zhang concluded that this condition is caused by a Yin deficiency of the 'Wind' organ, the Liver, which consequently becomes unable to contain its Yang aspect. Therefore the formula is designed to subdue the acutely upflaring Yang and enrich the deficient Yin at the source. Small amounts of Yi Tang, Chuan Lian Zi and Yin Chen Hao are included to assist the upward flow of Liver Qi. If suppressed too abruptly, Zhang concluded, the proud general among the organ networks would only erupt with even greater force. In mainland China, *Zhen Gan Xi Feng Tang* has become one of the most widely used remedies to prevent cerebrovascular accidents in hypertensive patients with severe headaches, transient ischaemic attacks or other pre-stroke symptoms.

Da Cheng Qi Tang

(Major Order the Qi Decoction)

Da Huang (Rhizoma Rhei) 12
 Mang Xiao (Mirabilitum) 9
 Hou Po (Cortex Magnoliae Officinalis) 15
 Zhi Shi (Fructus Citri seu Ponciri Immaturus) 12

Therapeutic actions: purge heat accumulations.

Symptoms and signs: general signs of *Yangming* bowel excess syndrome (constipation, frequent tossing and

turning in bed, severe discomfort and distention in the epigastric and abdominal regions, abdominal pain resisting pressure, hard feeling when palpated, possibly tidal fevers, delirious talk, sweating in the hands or feet; or general signs of heat accumulation with circumfluence (green and putrid smelling diarrhoea, abdominal pain, hard mass detectable when palpated); or general signs of internal heat excess (seizures, outbreaks of madness).

Tongue: dry, with yellow or black coat, possibly with cracks.

Pulse: deep and full.

Indications: acute ileus (adhesive ileus, ascaris ileus and other types), acute pancreatitis, acute appendicitis, cholecystitis, gallstones; acute pneumonia; acute outbreak of pulmonary heart disease; encephalitis; bacillary dysentery; shock; respiratory distress syndrome (RDS); crush syndrome; acute nephritis, uraemia in patients with chronic nephritis; stroke; hypercortisolism; lead poisoning; schizophrenia; haemorrhoids; bone fractures, external injuries.

Typical modifications:

- For prior testing of the purgability of the intestines, remove Mang Xiao and decrease amounts of Hou Po and Zhi Shi (this will produce *Xiao Cheng Qi Tang* - Minor Order the Qi Decoction).
- For stroke remove Zhi Shi and Hou Po and heavily add Gua Lou (Fructus Trichosanthis) and Dan Nan Xing (Rhizoma Arisaematis cum Felle Bovis). For obvious heat phlegm further add Zhu Li (Succus Bambusae) and the patent formula *Qingkai Ling*.
- For acute pneumonia remove Zhi Shi and Hou Po and add Xuan Shen (Radix Scrophulariae Ningpoensis) and Gan Cao (Radix Glycyrrhizae Uralensis).
- For uraemia add Lai Fu Zi (Semen Raphani Sativi).
- For hypercortisolism add raw He Shou Wu (Radix Polygoni Multiflori), Long Dan Cao (Radix Gentianae Scabrae) and Huang Jing (Rhizoma Polygonati).

Tian Ma Gou Teng Yin (Gastrodia and Uncaria Decoction)

Tian Ma (Rhizoma Gastrodiae Elatae) 9
Gou Teng (Ramulus Uncariae Cum Uncis) 12
Shi Jue Ming (Concha Haliotidis) 18
Zhi Zi (Fructus Gardeniae Jasminoidis) 9
Huang Qin (Radix Scutellariae Baicalensis) 9
Niu Xi (Radix Achyranthis Bidentatae) 12
Yi Mu Cao (Herba Leonuri Heterophylli) 9
Du Zhong (Cortex Eucommiae Ulmoidis) 9
Sang Ji Sheng (Ramus Loranthis seu Visci) 9
Ye Jiao Teng (Caulis Polygoni Multiflori) 9
Fu Shen (Poriae Cocos Paradicis Sclerotium) 9

Therapeutic principles: calm the Liver and extinguish wind, clear heat and move blood, calm the Shen, tonify Liver and Kidney.

Symptoms and signs: headache, dizziness, blurred vision, tinnitus; vivid dreaming, insomnia; trembling extremities, sensation of numbness in the tongue and/or arms, sensation of ants crawling under the skin.

Tongue: red with yellow coating.

Pulse: wiry, possibly rapid.

Indications: hypertension; headache, vertigo; insomnia; hypertension, coma and/or convulsive seizures between the 20th week of pregnancy and the end of the first week

postpartum (eclampsia).

Herbs and actions: Tian Ma, Gou Teng and Shi Jue Ming calm the Liver, dispel wind and descend upflaring (Liver) Qi. Zhi Zi and Huang Qin clear heat and descend upflaring Qi. Yi Mu Cao moves blood and disinhibits water. Niu Xi moves blood, entices blood to move downwards and fortifies the Kidney. Sang Ji Sheng and Du Zhong fortify the Liver and Kidney. Ye Jiao Teng and Fu Shen pacify the Heart and calm the Shen.

Typical modifications:

- For serious symptoms of upflaring of Liver Qi add Ling Yang Jiao (Cornu Antelopis).
- For eclampsia remove Niu Xi and Yi Mu Cao.

Notes: *Tian Ma Gou Teng Yin* first appeared in the 1950's research compendium 'New Approaches to Patterns and Treatments in Complex Diseases' (*Zabing Zheng Zhi Xin Yi*). It was apparently inspired by two traditional formulas for upflaring Liver Qi. It is now one of the most frequently used formulas in the modern Chinese approach to hypertension, particularly if wind symptoms are involved.

An Gong Niu Huang Wan (Calm the Palace Pill with Cattle Gallstone)

Niu Huang (Calculus Bovis) 30
Yu Jin (Tuber Curcumae) 30
Xi Jiao (Cornu Rhinoceri) 30
Huang Lian (Rhizoma Coptidis) 30
Zhu Sha (Cinnabaris) 30
Zhi Zi (Fructus Gardeniae Jasminoidis) 30
Xiong Huang (Realgar) 30
Huang Qin (Radix Scutellariae Baicalensis) 30
Bing Pian (Borneol) 7.5
She Xiang (Secretio Moschus moschiferi) 7.5
Zhen Zhu (Margarita) 15

Ground into honey pills and mixed 50/50 with honey, one pill weighing 3g. Usually one pill is taken 2-3 times daily. In particularly severe situations, two pills can be taken at once.

Therapeutic principles: clear heat and open the orifice of the Heart, remove phlegm and detoxify.

Symptoms and signs: high fever accompanied by restlessness, unconsciousness and delirious speech, seizures in little children; or unconsciousness due to stroke.

Indications: loss of consciousness (inflammation of central nervous system such as encephalitis, hepatic encephalopathy, pulmonary encephalopathy, cerebrovascular accident); high fever (encephalitis, toxic dysentery, toxic pneumonia, pesticide poisoning); leprosy; schizophrenia; chronic headaches, vertigo; sinusitis.

Typical modifications:

- For deficient pulse, take two pills with ginseng tea.
- For excess pulse take with tea made from Jin Yin Hua (Flos Lonicerae Japonicae) and Bo He (Herba Menthae).
- For warm disease involving excessive thirst, high fever with loss of consciousness and delirious talk, add powdered Da Huang (Rhizoma Rhei).

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9. Yongyan Wang et. al., Huatan tongfu fa zhiliao zhongfeng bing 158 li liaoxiao guan cha (A Preliminary Report about the Effects of Treating 158 Cases of Cerebrovascular Accident with the Resolve Phlegm and Open the Bowel Method), in *Zhongguo yiyao xuebao* (Chinese Pharmacology News) 1/1986, 21.

10. There is no standard English translation of *Qingkai Ling*, but this conveys the literal meaning. It is available in two forms, one an injection made from the active ingredients of cattle gallstone and other substances, the other a fluid administered with a dropper to the nose of unconscious people. Sometimes both are used together.

11. See Ximing Hu, ed., *Mifang daquan*, vol.1, 634-35.

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