

# Understanding the Mechanism of Sun Simiao's Treatment of Stroke from the Perspective of the Divergence of Pungent Medicine

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**Abstract:** In ancient times, the application of Xuming Decoction was popular in the treatment of stroke. Sun Simiao was a famous physician in treating stroke disease in his times. He inherited the theme of Xuming Decoction for treating wind with pungent herbs. This paper focuses on reviewing Sun Simiao's application of Xuming Decoction in "Qianjin Yaofang", we re-apprehend the mechanism of Sun Simiao's treatment of stroke from the perspective of the divergence of pungent medicine.

**Keywords:** Sun Simiao; Xuming decoction; Stroke; Pungent medicine

**Publication date:** March, 2021

**Publication online:** 31 March, 2021

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Stroke disease (zhong feng), also known as apoplexy (zu zhong), is a symptom of hemiplegia, numb skin, crooked tongue, inarticulateness, and even sudden fainting and unconsciousness<sup>[1]</sup>. The incidence of stroke has been increasing in recent years. The prognosis is poor and seriously endangers the health of patients. Therefore, it is of great significance to reduce the sequelae of stroke, speed up recovery, increase the survival rate of patients, and improve the quality of life.

## 1 The origin of Xuming decoction

The Xuming (life-sustaining) Decoction was first recorded in the chapter "Stroke and Gout Disease"

in the book "Jinkui Yaolue (The Synopsis of the Golden Chamber)" authored by Zhang Zhongjing in the Eastern Han Dynasty. In the chapter, the etiology, pathogenesis, clinical manifestations, diagnosis and treatment of stroke had been discussed in depth. Before the Tang and Song dynasties, the treatment of stroke was guided by the theory of "internal deficiency and evil", and the Xuming Decoction was used as the basis of prescription. With modifications to the prescription tailored accordingly, the treatment effect was very good. The compatibility of the pungent medicines in the Xuming Decoction is its unique characteristic. In his magnum opus "Qianjin Yaofang (The Essential Prescriptions Worthy of Thousand Golds)", Sun inherited the thoughts of his predecessors and systematically explained the etiology, pathogenesis, treatment methods and prescriptions of stroke, and put forward new points of view. Sun inherited the philosophy of using pungent medicines Xuming Decoction in the clinical treatment of stroke, and discussed in details on the different syndromes of stroke. The clinical effects of prescriptions based on modified Xuming Decoction were definitive and significant.

## 2 Brief analysis on the characteristics of sun's treatment style

### 2.1 Heavy use of sweating method

Sun Simiao had a deep understanding on the diagnosis

and treatment of stroke. He included "Ancient and Modern Xuming Decoctions" in "Qianjin Yaofang", and he was full of praise for its wonderful effects of treating stroke. He thought that "Wind often invades other internal organs from the five internal organs from the back... It can be saved by taking the Xuming Decoction urgently." Sun divided stroke into four major categories: "partial dryness, wind rash, wind yi, and wind numb". It was believed that the disease is mainly caused by wind evil, and if the qi of wind is unbalanced, it will cause "the whole body to become rigid and the pores occluded". The treatment method should be mainly based on the sweating method, "if someone needed to sweat but did not sweat, his pores will become occluded, causing him to die from stuffiness". It was pointed out that when taking the decoction for treating stroke, it is better to make the head, face, hands, feet, stomach and back sweat constantly. It was believed that in the treatment of stroke, profuse sweating is appropriate, and Xuming prescriptions are suitable. "Therefore, there are ephedra in all wind prescriptions...so it is known that the patient cannot be cured without sweating." It can be seen that ephedra is indispensable in stroke treatment prescriptions. Ephedra can not only make one sweat and dispel evil from both surface and interior, but can also enter the interior to break the accumulation of the symptoms<sup>[2]</sup>.

Sun believes that "stroke patients usually heaty", and the stroke starts from the heat in the interior. In the treatment method, attention should be paid to both the symptoms and the root causes. The Xuming Decoction is the basis for the treatment of stroke, and the heat-clearing medicine is for treating the symptoms. For those suffering from sudden stroke, treat the symptoms if it is urgent. It is emphasized that Zhuli (bamboo leeks) Decoction (zhuli, raw ginger juice, raw kudzu juice) should be used first to clear away heat and phlegm. After the symptoms are relieved, prescribe Xuming Decoction to clear the collaterals and nourish qi and blood. This was a rule for treating stroke as concluded by Sun. The "heat leading to stroke" theory pioneered by the Sun opened up new way of thinking for later generations to understand stroke and broke through the barriers of "external wind theory". The chilling medicines, such as antelope horn, bamboo leeks, and skullcap, which Sun supplemented in his Xuming Decoction prescriptions, became common medicines for calming

the liver and extinguishing wind, clearing heat and eliminating phlegm during the Ming and Qing Dynasties<sup>[3,4]</sup>. In addition, the application of sweating method should also take note of supplementing void and depleting solid.

## **2.2 Heavy use of pungent medicines**

Sun's general medicine for the treatment of stroke is no other than Xuming Decoction. Observing the composition of many Xuming prescriptions, according to the nature and flavor of the medicine, pungent medicines predominate, such as: ephedra, guixin, aconite, dried ginger, chuanxiong, etc. Heavy use of pungent medicines is due to the fact that they can not only induce sweating and disperse the evil from the surface and interior, but also cleanse the stasis, clear the body fluid, nourish and invigorate, both cleansing and nourishing, and can be used for the symptoms of stroke, cold and heat, void and solid.

## **3 The traditional efficacy and modern research on pungent medicines**

### **3.1 The traditional efficacy of pungent medicines**

The first record of the effects of pungent medicines is found in "Suwen • Studies on the Laws of the Organs": "Sourness restricts astringencies, bitterness dries dampness, sweetness relieves urges, pungency disperses, and saltiness softens firmness". The pungent medicines can disperse and invigorate, dispel the evil from the surface and the interior, cleanse the blood stasis; make the blood flow to the whole body, so as to clear the qi and blood vessels, and then promote the blood supply to the human necrotic tissue and accelerate the recovery of its functions<sup>[5]</sup>. In addition, pungent medicine has the effects of moisturizing and nourishing, cleansing collaterals and removing blood stasis, raising and dispersing yang, and resuscitating etc<sup>[6]</sup>.

### **3.2 The modern efficacy of pungent medicines**

Modern studies have shown that pungent medicines contain volatile oils, glycosides, alkaloids and other components, of which volatile oils are the main components. Most of these components have strong biological activity. For example, pungent medicines mostly have antipyretic and sweat-inducing effects, and they cure by inducing sweating. The Nei Jing says that "the pungent enters and sweat comes out". In addition, most of them have antibacterial or

antiviral effects, which confirms the scientificness of the theory that pungent medicines dispel 'evil' off the surface; their effects on the cardiovascular and cerebrovascular system are mainly manifested in the expansion of the coronary artery, increasing the systemic blood flow, and reducing myocardial oxygen consumption and vascular resistance, etc.; they have excitatory and inhibitory effects on the central nervous system, and improves the functional activities of the human body, anesthetic, sedative, painkilling, and anticonvulsions, etc<sup>[7][8]</sup>.

#### 4 Conclusion

Xuming Decoction was the standard treatment for stroke in ancient times. The application of ephedra, cassia twig, chuanxiong and other medicines in the prescription reflects the important role of pungent medicines in the treatment of stroke. Sun Simiao is a well-known expert in the treatment of stroke in his times. In the "Qianjin Yaofang", a dedicated chapter discusses the etiology, pathogenesis and treatment methods of stroke. Modified Xuming Decoctions were prescribed for most of the clinical syndromes, inheriting the theme of using pungent medicines in Xuming Decoction to treat stroke, inheriting the ancient wisdom and inspiring the future generations, and opened up new ways of thinking for later generations in treating stroke.

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