

# Exploring the Dosage of *Asari Radix* et *Rhizoma* in Traditional Chinese Medicine and its Application in Rheumatoid Arthritis

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## He et al.: Dosage of *Asari Radix* et *Rhizoma* in Rheumatoid Arthritis

*Asarum* has a pungent and warm taste, which belongs to the lung and kidney meridians and has the effects of relieving the exterior and dispersing the cold, dispelling the wind and relieving pain, warming the lung and dissolving the drink. *Asarum* has made many achievements in the treatment of rheumatoid arthritis. However, the saying that "it is too expensive" has caused controversy about the toxicity and dosage of the drug. To some extent, it has affected the clinical application of the drug. Therefore, the author discusses the role of *Asarum* in the treatment of rheumatoid arthritis from the perspective of its drug efficacy, its nature and taste, the correlation between dose and toxicity, the classic compatibility of *Asarum* and its application in rheumatoid arthritis. Trace the origin of *Asarum* in ancient books and the origin of "Xin Bu Qian" and discuss its application with reference to modern pharmacological research and the practical application of *Asarum* in rheumatoid arthritis cases. *Asarum* has a good effect in rheumatoid arthritis. The dosage of *Asarum* for oral administration is usually 6-10 g. For external use, the dose may be greater than 10 g. *Asarum* is widely used in the treatment of rheumatoid arthritis. It is not necessary to stick to the theory of "pain is not more than money" when taking the decoction for oral use.

**Key words:** *Asari Radix* et *Rhizoma*, efficacy, attribution, dosage, toxicity, rheumatoid arthritis

According to the Divine Husbandman's Classic of the Materia Medica, the herb is pungent, warm in nature and belongs to the lung and kidney meridians. It is used to treat coughing and rebellion. Headache, cerebral movement, constriction of a hundred joints, rheumatic paralysis and dead muscles. It is used for a long time to brighten the eyes and benefit the nine orifices. It is also classified as the 'top grade'. The book was written at the end of the Han Dynasty and the book "The Book of Famous Doctors" states that Hoisin is mainly used for warming the middle, lowering the Qi, breaking up phlegm, facilitating water channels, opening the chest, removing paralysis of the throat, benefitting the liver and gallbladder, and opening up the essence. In the Tang dynasty, the "Treatise on the Nature of Medicine" states that Hoisin is "sweet and pungent in taste". To the Song dynasty to comply with the "famous doctors" of the said, "Kai Bao Ben Cao" still said pungent "taste pungent, warm main warm middle, down the gas, break phlegm, water channels, open the chest, in addition to throat paralysis, benefit liver and gallbladder, pass essence". In the millennium of

clinical practice, the generations of doctors also based on their own practice summed up the experience of pungent medicine, such as the Ming dynasty Du Wenzup in the "medicine" in the discussion of pungent "I have tried to use it to benefit the water why?. I do not know all the pungent into the lungs, the lungs rely on pungent to open up, so can benefit the vein." Huang Yuan-you, a Qing dynasty doctor, said that *Asari Radix* et *Rhizoma* "descend and stop coughing, drive away cold and dampness and turbidity, the most clear airways and water sources. Thus, it seems that the pungent nature, the normalization of the lung and kidney meridian, the effectiveness of the dispersal of cold, dispel wind and relieve pain, warming the lung to drink, open the orifice; this is the consensus of generations of doctors on the efficacy of the *Asari Radix* et *Rhizoma* nature of the normalization of the meridian<sup>[1]</sup>. "The dosage of *Asari Radix* et *Rhizoma* shouldn't heavier than a feather" said, first found in the book in 1068-1093 "the herb say"<sup>[2]</sup>, the author Chen Cheng in "the herb say" said "*Asari Radix* et *Rhizoma* if single with the end, not more than half a penny, more than this

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dosage will cause shocked, although dead without injury can be verified and said" not the original poisonous, but to do not know how much to use. In 1249, Zhang Cunhui updated Tang Shenwei's "Classic and Historical Evidence for the Urgent Materia Medica" as the "Revision of the classic and historical evidence for the urgent Materia Medica", which also contained the statement, "If the *Asari Radix* et Rhizoma is used alone, it should not be more than half a penny". The Ming dynasty "the Materia Medica Compendium" and again restated the "Materia Medica say" *Asari Radix* et Rhizoma if used alone at the end not more than half a penny, more than the gas blockage cannot be death, although death can be verified without injury. The Shennong Ben Cao Jing classifies *Asari Radix* et Rhizoma as a superior product, without mentioning its toxicity<sup>[3]</sup>; the late Han period's "The Book of Famous Doctors" even states outright that *Asari Radix* et Rhizoma is "non-toxic". In the Eastern Han period, Zhang Zhongjing's "Treatise on Typhoid Miscellaneous Diseases", there are 17 prescriptions. The amount of *Asari Radix* et Rhizoma is between two and six taels, with two or three taels being the most common. This is the same as the dose in the "Lectures on Typhoid Fever"; four parts were one tael in the Han Dynasty and one tael is about 3 g today. From this, the dosage of Hoisin in the "Treatise on Typhoid Fever and Miscellaneous Diseases" ranges from 1.5 g to 18 g and the commonly used dosage is between 6 g and 9 g, which is much larger than the one penny stated by Chen Cheng<sup>[4]</sup>. Since the "Materia Medica" there have been many medical practitioners who have doubts about Chen Cheng's statement that "*Asari Radix* et should not be used for more than half a penny"<sup>[5]</sup>. In the Qing dynasty, Chen Shiduo's secret records of the 'Stone room: A complete treatment' states that *Asari Radix* et Rhizoma was used to treat headaches for one tael<sup>[6]</sup>. In the early Qing Dynasty, Zhang Zhicong said in his book "Ben Cao Chong Yuan" that, Hoisin is a top quality medicine of the Ben Jing, pungent and smelly, non-toxic, mainly bright eyes and sharp orifices. In the Republic of China, Zhang Xichen's "Medicine in the heart of the West" has also mentioned that "it has no effects if the dosage of *Asari Radix* et Rhizoma less than two pale"<sup>[7]</sup>. In modern times, some doctors have suggested the effect of the toxicity of *Asari Radix* et Rhizoma on the dosage form when it is used in medicine. Such as the modern medical doctor Zhang Ji Gong in the "medicine" said; *Asari Radix* et

Rhizome cannot be used too much, since it is the right theory, but said the dosage of *Asari Radix* et Rhizoma shouldn't heavier than half a penny it is not quite true. This can only be on the 'along used in swallowing' and not on the boil medicine. The experience of the editor is such that it is not a false statement<sup>[8]</sup>. Zhang Gong's words are intended to suggest that the *Asari Radix* et Rhizoma into the powder of *Asari Radix* et Rhizoma which used on swallowing should not be more than 3 g and into the boil medicine be free from the shackles of "the dosage of *Asari Radix* et Rhizoma shouldn't heavier than half a penny". Modern pharmacological studies have confirmed that the volatile oil, aqueous and alcoholic extracts of pseudo stemma have antipyretic, anti-inflammatory, sedative, anticonvulsant and local anesthetic effects; large doses of volatile oil can make the central nervous system first excitation and then inhibition, showing certain toxic side effects; pseudo stemma contains volatile oil as the main active ingredient and has acute toxicity and chronic phosphorus poisoning like liver and kidney damage; safrole in oil has carcinogenic and other chronic toxicity. The content of volatile oil in the powder is 3 times the same amount of *Pseudostellaria* as the decoction for 10 min, if the same effect is to be achieved, the powder dosage should be at least 3 times more than the powder. The volatility of methyl eugenol, one of the main active ingredients of *Pseudolarix*, is less than that of safrole, which is still present in the broth after 30 min of decoction, while the latter content has been greatly reduced, confirming the experience of *Pseudolarix* "not in large doses at the end, but in large quantities must be used in tonics"<sup>[9]</sup>. The *Asari Radix* et Rhizoma should be added to the body medicine, to reduce the loss of volatile oils; in addition, the *Asarum* roots are slender, low lignification, the latter does not affect the precipitation of non-volatile oils. This shows that the dosage of *Asari Radix* et Rhizoma should be related to the dosage form and the decoction method; it should not be mechanically copied, nor should it be used in large quantities blindly<sup>[10]</sup>. It is effective in dispersing cold, relieving wind and pain, warming the lung, dissolving drinks and opening the orifice; and the use of *Asari Radix* et Rhizoma in prescriptions has its own merits<sup>[11]</sup>. For example, when the four rebellious Tang is important in *Asari Radix* et Rhizoma, to solve the Yin and Yang gas does not go together, with *Asari Radix* et Rhizoma through the up and down; when the four rebellious plus Wu Zhu

Yu Sheng Jiang Tang to *Asari Radix* et Rhizoma through the drug sluggish, to prevent peony *Angelica* nourishing greasy hinder long cold within the clear; Wu Ling San within the use of *Asari Radix* et Rhizoma to disperse the cold wind of Shao yang, strive to pungent, help through the bladder, help water dampness outward, feasible to remove the function of joint swelling. Rheumatoid arthritis belongs to the category of diseases such as paralysis and amebiasis in Traditional Chinese medicine and there have been many discussions on the etiology and pathogenesis of paralysis<sup>[12]</sup>. This was the first time that the three evils of wind, cold and damp were proposed as the main causative factors of paralysis. The Su Wen-Treatise on Paralysis states that paralysis lies in the veins and the blood clots and does not flow. The book on paralysis states that all paralyzes are caused by a deficiency of the Ying and Wei, the couples are not dense, the wind, cold and damp take advantage of the deficiency to attack the inner body, the positive qi is blocked by the evil qi and cannot be propagated, thus remaining stagnant, the qi and blood are clotted and astringent, and the paralysis becomes prolonged. It is pointed out that the deficiency of the Ying and Wei, the sparse couples, the wind, cold and dampness take advantage of the deficiency and cause the stagnation of Qi and blood as the main pathogenesis of paralysis. Zhu Liangchun believes that the onset of paralysis is closely related to deficiency of the Wei-Yang, deficiency of the directing vessel and invasion of evil qi<sup>[13]</sup>. Lu Zhizheng points out that spleen and stomach imbalance and liver qi stagnation are the causative factors and aggravating factors of rheumatic paralysis<sup>[14]</sup>. According to Zhou Zhongying, internal causes such as congenital deficiency of endowment, overexertion and stimulation of the seven emotions, are the main causes of paralysis, while external attacks of wind, cold, dampness and heat are often factors that trigger or aggravate the disease<sup>[15]</sup>. It is often used clinically in combination with Hessian and Radix et Rhizoma, and is mostly effective. Wang Jihua, First Affiliated Hospital of Henan University of traditional Chinese medicine<sup>[16]</sup> often used the combination of *Asari Radix* et rhizoma-*Cinnamomi ramulus*, which is considered to be *Cinnamomi ramulus* to focus on relieving the muscles and opening the veins and *Asari Radix* et Rhizoma is good at treating the lower Chen cold, so the herbs are particularly effective for paralysis with swelling and pain in the lower limbs and fear of cold. The

dosage of *Asari Radix* et Rhizoma is 5-6 g. Wang Yan of the Second People's Hospital of Renshou County<sup>[17]</sup> used *Ephedra*, *Asarum* and aconite decoction as the main formula. 40 patients with rheumatoid arthritis had disappeared joint pain and improved joint limitation after taking the formula, with an efficiency of up to 95 % and the dosage of Hessian in the formula was up to 8 g. Xu Li of the People's Hospital of Chengyang, Qingdao<sup>[18]</sup> used *Angelicae pubescens* and *Loranthus* decoction as an adjunctive treatment for rheumatoid arthritis and treated 100 patients with rheumatoid. The levels of inflammatory cytokines in 100 patients with rheumatoid arthritis were significantly lower than those in the control group taking only Western medicine after 4 w of treatment. In addition to decoction for internal use, *Asari Radix* et Rhizoma is also effective when used externally. Lv *et al.*<sup>[18]</sup> used a self-prepared fumigation formula include *Asari Radix* et Rhizoma 10 g. After 20 d of treatment, the levels of inflammatory factors in the fumigated group improved significantly compared with those in the non-fumigated group. Kang *et al.*<sup>[19]</sup> warm acupuncture combined with *Asari Radix* et Rhizoma acupoints injection for rheumatoid arthritis effectively improved joint pain, swelling, morning stiffness and various laboratory inflammatory indexes in patients with rheumatoid arthritis.

### Conflict of interests:

The authors declared no conflict of interests.

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