

A review of Wild Asparagus (*Stemona tuberosa*) Lour.

Anthony C. Dweck FLS FRSH FRSC
Consultant

Latin names: *Stemona sessilifolia* Miq.; *Stemona japonica* (Bl.) Miq.; *Stemona tuberosa* Lour.

Family: Stemonaceae

Synonyms: *Roxburghia gloriosoides* Roxb., *R. viridiflora* Smith, *R. stemona* Steud.
[Keys]

Common names: Pai Pu [Hsu]; Bai Bu in Chinese [Geng *et al*], the name translates to “hundred parts” (so named because its roots are over one hundred in number) [Lu]. Wild Asparagus (English) [Lu]. Sessile Stemona Root, Japanese Stemona Root, Tuber Stemona Root.

Habitat: It is an herbaceous plant found in Central China, Indochina, Taiwan, India.
[Keys]

Part used: Tuberous roots cropped all the year round, especially in autumn. After being well washed and docked at each end, the roots are steam-cooked, then dried in the sun or in ovens at 50-60°C.

Description: The drug occurs as yellowish white, cylindrical tubers, the interior hollow and dark brown. the taste is bittersweet [Keys].

Nature: Sweet and bitter; slightly cold. It was described also as sweet, bitter and neutral

Affinity or Meridian: Lungs.

Energy: slightly warm.

Class: 10, herbs to suppress cough and reduce sputum [Lu]

Chemical composition: The tubers contain an alkaloid called stemonine (C₂₂H₃₃NO₄; white needles, odorless, slightly bitter; soluble in alcohol, ether, acetone, toluene, benzene, chloroform; m.p. 160°), which is mildly toxic [Keys].

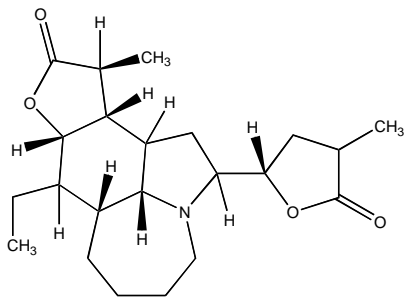


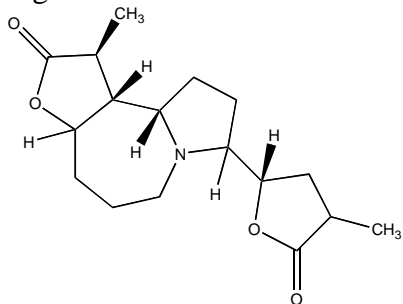
Fig.1 tuberostemonine

In addition, the tuberous roots contain alkaloids: tuberostemonine (Fig.1), isotuberostemonine, stemonidine, sinostemonine; glucides 2.3%, lipids 0.83%, proteins 9%, organic acids (citric, formic,

malic, succinic ...) [WHO]. Three bibenzyls were isolated from the roots of *S. tuberosa* [Zhao *et al.*].

The root of *Stemona* plants contains alkaloids. The root of *S. sessilifolia* contains tuberostemonine and oxotuberostemonine. From the root of *S. japonica* protostemonine, stemonamine and isostemonamine were isolated. Tuberostemonine, stenine, oxotuberostemonine, stemonine (Fig.2), stemotinine and isostemotinine were identified in the root of *S. tuberosa* [Zhu]. Two new alkaloids, named tuberostemoninol and stemoninoamide, were isolated from the roots of *S. tuberosa* [Lin *et al.*], two new alkaloids, named neotuberostemonine and bisdehydroneotuberostemonine, were also isolated from the roots [Ye *et al.*] and stenine, a new alkaloid [Ueo *et al.*]. Also stemonone (Fig.3), stemonal (fig.4) and neotuberostemonine (fig.5). The full list of alkaloids and all the structures are given as follows: Stenine, Tuberostemonine, Tuberostemonol, Didehydrotuberostemonine, Bisdehydroneotuberostemonine, Neotuberostemonine, Oxotuberostemonine, Stemoamide, Tuberostemoamide (Stemoninoamide), Tuberostemospirone, Stemotinine, Isostemotinine, Tuberostemonone and Tuberostemoninol [Pilli].

Fig.2 stemonine



Properties: Antitussive; demulcent to lungs; anthelmintic; kills lice [Reid].

The herb decoction could inhibit multiple types of bacteria and skin fungi. It was lethal to maggots, mosquitoes, mandarin aphids, cutworms, etc.

Medicinal use: Stemonine calms the respiratory centre; it is strongly effective against *Pediculus capitis*, *P.*

corporis and *Phthirus pubis* without irritation or toxicity [Keys].

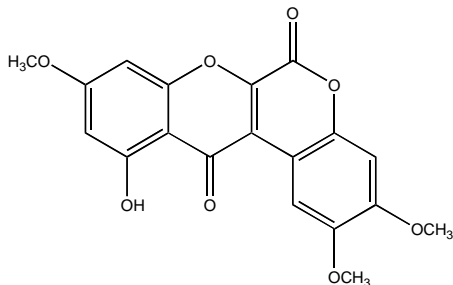


Fig.3 stemonone

The insecticidal effect was confirmed and the aqueous and the 70% alcoholic extract of the herb were lethal to *Pediculus capitis* and *P. vestimenti*. It was also able to kill lice ova. The alcoholic extract killed *P. pubis* in a few min after contact.

Tuberostemonine produced an inhibitory effect on the motility of *Angiostrongylus cantonensis*, *Dipylidium caninum* and *Fasciola hepatica* at 6.7×10^{-6} – 6.7×10^{-5} M *in vitro* [Zhu]. It is used for killing insects and worms and used externally in pediculosis capitis, pediculosis corporis, oxyuriasis (infestation with pinworms) and pudendal itching [Zhu]. Note: The pudendal nerve carries sensations from the external genitals, the lower rectum, and the perineum (between the genitals and the anus).

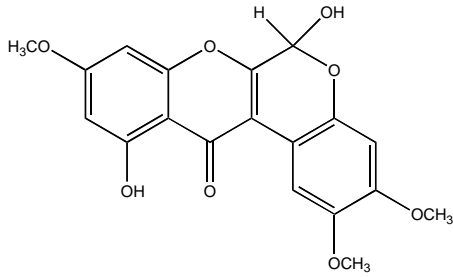
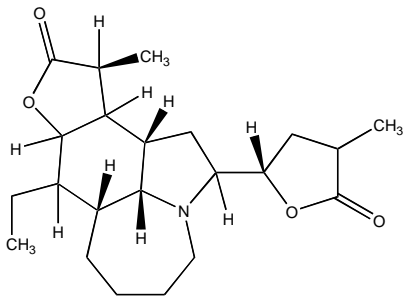


fig.4 stemonal

The infusion of the drug can be applied externally to treat head louse, body louse, pubic louse and clothes louse (not effective against louse eggs). When sprayed, the drug can destroy bedbugs. When taken orally, the drug can be used to treat enterobiasis (an infestation with or a resulting infection caused by

the pinworm *Enterobius vermicularis*; occurs especially in children); and the disease can also be treated by washing the anus with the decoction of the drug. [Internet site: www.botanicum.com/singles/baibu.htm]

Fig.5 neotuberostemonine



Coughs; chronic, dry coughs; whooping cough; tapeworm; external application to lice
Experiments indicate that Bai Bu is effective for suppression of cough [Zhu; Tierra] and it is also an anti-tuberculous herb [Lu] and recent applications have confirmed the drug to be effective against tuberculosis [Reid] and chronic bronchitis [Zhu]. Demulcent, antitussive, antifungal [Tierra]. It has recently been studied for the treatment of pertussis - a disease of the

respiratory mucous membrane (also known as whooping cough)[Wang *et al*].

The tuberous roots are well known for their antibacterial, anthelmintic (a medication capable of causing the evacuation of parasitic intestinal worms) [Hsu], antiparasitic [Zhu; Tierra] and expectorant properties. The decoction of the herb was also inhibitory against multiple species of bacteria and fungi and the alcoholic extract of the herb at 1:100-1:1600 inhibited and at 1:80 killed *Mycobacterium tuberculosis* var. *hominis* [Zhu].

The decoction or extract is applied externally against impetigo and scabies. Can also be used as an insecticide against mosquito larvae [Lee; WHO], fleas and bugs [WHO]. The insecticidal effects have been confirmed recently [Brem *et al*; Jiyavorrnant *et al*].

Chinese use: To moisten the lungs and stop cough, to kill lice and parasites [Lu; Geng *et al*]. Also to bring down energy, and destroy worms [Lu].

Indications & Combinations:

Cough in common cold. *Stemona* root (Bai Bu) is used with *Schizonepeta* (Jing Jie), *Platycodon* root (Jie Geng) and *Aster* root (Zi Wan). Whooping cough. *Stemona* root (Bai Bu) is used with *Glehnia* root (Bei Sha Shen), *Tendrilled fritillary bulb* (Chuan Bei Mu) and *Swallowwort rhizome* (Bai Qian). Cough due to tuberculosis. *Stemona* root (Bai Bu) is used with *Ophiopogon* root (Mai Dong) and *Fresh rehmannia root* (Sheng Di Huang). It is recommended for cough due to deficiency fatigue, pulmonary tuberculosis, chronic bronchitis, and whooping cough [Lu]. Also indicated for colds, phthisis (involving the

lungs with progressive wasting of the body) and scabies (a contagious skin infection caused by the itch mite; characterized by persistent itching and skin irritation) [Hsu].

Dosage: Used internally as antitussive.

Dose, 5-10 g [Keys; Reid; Geng *et al*]. Externally, as pediculicide (a chemical agent that kills lice) [Keys].

Dose: 3 - 9 grams [Tierra]

Dose: 4.5 - 9 g. [Zhu]

Prescribed in the therapy of cough, ascariasis (infestation of the human intestine with *Ascaris* roundworms) and oxyuriasis in a dose of 4 to 12g per day, in the form of a decoction, extract, powder or pills, for 4 to 6 days [WHO].

Lice of the head or body. The herb is made into a 20% tincture, or a 50% decoction used as an external wash [Geng *et al*]. Pinworm - the 30ml 100% decoction as an enema before sleep, daily for five days [Geng *et al*].

Contraindications: *Stemona* root should not be used when there is spleen and stomach deficiency with diarrhoea [Tierra]. Oral administration of the herb preparations caused heartburn, dryness of the mouth, nose and pharynx, dizziness, chest discomfort, shortness of breath and anorexia. The incidence of the side effects was 20-30% [Zhu]

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