

Plantago

English common plantain, broad-leaved plantain

Botanical name *Plantago major* L.

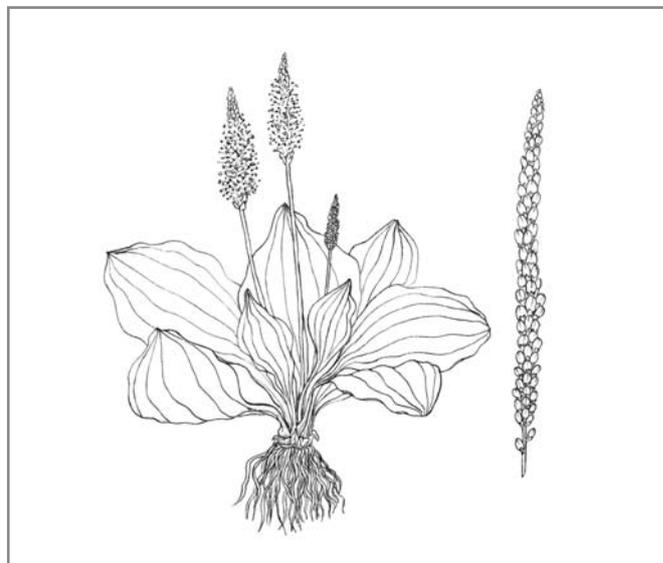
Pharmaceutical name *Plantagininis majoris folium*

Part dried leaves

Mandarin chē qián zǐ (车前子) is the seeds of *P. asiatica* L., *P. depressa* Wild., or *P. major* DC.

Family Plantaginaceae

A perennial herb, up to 15 cm tall, with a basal rosette of oval leaves 15-30 cm in diameter. Leaves are oval, with acute apex and 5-9 conspicuous veins. Flowers are greenish yellow with pale purple anthers on long spikes. Native to Europe, it has been spread by man throughout the world, including America and New Zealand. Common on roadsides and in meadows.



Temperature cool

Tastes sour-astringent, bitter

Organs IN, LU, BL

Actions, uses, and herb pairs

Chinese actions (Western actions)	Western uses	Pair examples (disorders)
I. clear Bladder Heat (anti-inflammatory, antimicrobial, spasmolytic)	urinary disorders with burning sensation, dysuria, or edema	Plantago + Arctostaphylos (acute cystitis)
II. clear Lung Phlegm and Heat (antimicrobial, anti-inflammatory, spasmolytic, antitussive, expectorant)	acute or chronic bronchitis with dry cough, difficult expectoration, cough-related chest pain, or purulent sputum	Plantago + Viola tricolor (bronchitis with dry cough)
III. clear Intestines Heat, reduce diarrhea and bleeding (astringent, antihemorrhagic, anti-inflammatory, antimicrobial, spasmolytic)	diarrhea, colitis, pseudomembranous colitis, intestinal bleeding, hemorrhoids	Plantago + Polygonum (ulcerative colitis)
IV. clear Stomach Heat (anti-inflammatory, antimicrobial, spasmolytic)	gastritis, gastric ulcer	Plantago + Althaea (gastritis with burning sensation)
V. clear topical Heat, Damp Heat, Heat Toxin (anti-inflammatory, antimicrobial)	red, irritating skin rashes, blood poisoning, ulcers, wounds	Plantago as a single herb (blood poisoning ¹)

USE OF DIFFERENT TYPES AND PLANT PARTS

West The leaves of *P. lanceolata* (ribwort plantain) are used in the West for similar indications as the leaves of *P. major*.

China The seeds of *P. asiatica* (chē qián zǐ) or the entire plant is used in China (see below).

Traditional use in China

chē qián zǐ, the seeds of *P. asiatica*, is classified as cold and sweet, and as entering the Bladder, Kidney, Liver, and Lung meridians. It is used to²:

- promote urination and to treat painful urination from Damp Heat
- clear Heat from Liver channel to treat red painful eyes
- clear Lung Phlegm Heat for cough with much yellow sputum

chē qián cǎo, the entire plant of *P. asiatica*, is said to be less effective than the seeds in promoting urination, but to be better for clearing Heat, and for stopping bleeding and diarrhea.

Traditional use in the West

CULPEPER (1651)³

Lung for consumption of the lung (tuberculosis), ulcers of the lung, and coughs that come from heat

Intestines for all problems or ulcerations of the intestines or bowels; to reduce bleeding

Urinary system for obstructions of the kidneys or edema; for foul or bloody urine by reason of ulcer in kidney or bladder

Head and eyes used topically for pains of the head coming from heat, and to cool inflammations of the eyes

Topical for bleeding wounds, burns and scalds, skin rashes and itching, ulcers that are hard to heal, hot gout, genital sores, and hemorrhoid pain

CHRISTOPHER (1976)¹

Topical the best healer of blood poisoning, when used both internally and externally

Comparison with a similar herb

POLYGONUM AND PLANTAGO

Similarities Both herbs are astringent, anti-inflammatory, and hemostatic, and they are specific for diarrhea with bleeding.

Differences

Polygonum bistorta has greater traditional use as an anti-catarrhal, for clearing mucus from the bronchii and intestines, and for clearing discharge from the urogenital system.

Plantago major

- may be more cooling and more appropriate for respiratory, gastrointestinal, or urinary disorders with sensations of heat
- may be a stronger antimicrobial
- may be more strongly spasmolytic
- is more specific for gastritis and gastric ulcer

Constituents and pharmacology

TYPES OF CONSTITUENTS

- **iridoid glycosides** mainly aucubin (0-1.3% in leaves)⁴
- **phenylethanoids** (caffeic acid derivatives) mainly plantamajoside and, in some subspecies, acteoside⁴.
- **flavonoids** luteolin, apigenin, baicalin, plantagin⁴
- **mucopolysaccharides** plantagluco-side
- **immunopolysaccharides** PMII (a pectin-type polysaccharide)⁴
- **tannins** reported for *P. lanceolata*⁵, but not for *P. major*⁴
- **other** young plants may contain 25 mg ascorbic acid and 8.5 mg carotenoids per 100 g leaves⁴

ACTIONS SUPPORTED BY RESEARCH

The following actions have been reported for *Plantago* plant material or for its isolated constituents:

antiviral⁶, antimicrobial (mild)⁴, immunomodulatory^{4,6,7}, anti-inflammatory⁴, antiulcer⁴, antidiarrheal⁸, spasmolytic⁹, anticancer^{4,6}

Respiratory disorders The traditional Western use of *P. lanceolata* (but not yet of *P. major*) for respiratory disorders has been supported by recent clinical studies⁹. One study on patients with acute bronchitis and post-infectious dry cough, reported that the equivalent of about 7 g of 1:1 fluid extract of *P. lanceolata* per day reduced cough frequency and intensity, cough-related chest pain, dry cough, and purulent sputum, and that it improved expectoration¹⁰.

ACTIONS LINKED TO A CONSTITUENT

- **antimicrobial** aucubin has been reported to have both antibacterial and antiviral effects⁹
- **anti-inflammatory** aucubin (iridoid glycoside), acteoside, plantamajoside (phenylethanoids), flavonoids, mucopolysaccharides⁴
- **spasmolytic** aucubin and catalpol (iridoid glycosides), acteoside (phenylethanoid)⁹
- **immunomodulatory** PMII (polysaccharide)⁷

Dose and dispensing: internal

DRIED HERB 2-4 g of dried herb, as powder or as infusion, three times per day (BHP)¹¹.

TINCTURE 2-4 ml of 1:5 tincture in 45% alcohol, three times per day (BHP).

INITIAL DOSE Can start at the standard dose (JR).

DURATION Can be used long term (JR).

Dose and dispensing: topical

Bruised fresh leaves applied as a poultice to the affected part, and the poultice replaced every hour (Christopher). An infusion can be taken internally at the same time.

Cautions

GENERAL CONTRAINDICATIONS None reported for *P. major* (BSH)¹² or for *P. lanceolata* (ESCOP)⁹.

CHINESE CONTRAINDICATIONS *P. asiatica* seeds are contraindicated in pregnancy, and are to be used with caution in patients with exhausted Yang Qi or with spermatorrhea from Deficient Kidney or from exhaustion due to overwork (Bensky)².

PREGNANCY AND LACTATION No adverse effects reported for *P. major* (BSH) or for *P. lanceolata* (ESCOP).

SIDE EFFECTS None reported for *P. major* (BSH) or for *P. lanceolata* (ESCOP).

OVERDOSE No incidents reported for *P. major* (BSH) or for *P. lanceolata* (ESCOP).

DRUG INTERACTIONS None reported for *P. lanceolata* (ESCOP).