

Alkekengi

Alkekengi officinarum, the bladder cherry,[2] Chinese lantern,[3] Japanese-lantern,[4] strawberry groundcherry,[5] winter cherry,[3] or Klabuster cherry is a species of flowering plant in the nightshade family Solanaceae. It is a close relative of the new world *Calliphysalis carpanterii* (Carpenter's groundcherry) and a somewhat more distant relative to the members of the *Physalis* genus.[6] This species is native to the regions covering Southern Europe to South Asia and Northeast Asia.

It is easily identifiable by the large, bright orange to red papery covering over its fruit, which resembles paper lanterns. It is a perennial herbaceous plant growing to 40–60 cm tall, with spirally arranged leaves 6–12 cm long and 4–9 cm broad. The flowers are white, with a five-lobed corolla 10–15 mm across, with an inflated basal calyx which matures into the papery orange fruit covering, 4–5 cm long and broad. And it has one variety, *Alkekengi officinarum* var. *franchetii*.

Research has shown *Calliphysalis carpanterii* (formerly classified as *Physalis carpanterii*) to be among the most closely related species to *Physalis alkekengi*. [6]

It is a popular ornamental plant, widely cultivated in temperate regions of the world, and very hardy to below -20°C (-4°F). [7] It can be invasive with its wide-spreading root system sending up new shoots some distance from where it was originally planted. In various places around the world, it has escaped from cultivation. [8]

In the United Kingdom it has been given the Royal Horticultural Society's Award of Garden Merit. [7][9]

Physalis alkekengi has been used for a wide range of purposes in traditional medicine for around two millennia. It was used to heal fever, induce mental serenity, and assist in childbirth, according to ancient Chinese books including the *Erya* and *Shen Nong Ben Cao Jing*. Its usage in reducing heat, boosting energy, and aiding in diuresis was also mentioned in Li Shizhen's Ming dynasty *Compendium of Materia Medica*. The plant's juice was thought to be useful in treating jaundice. This traditional Chinese medicine's lengthy historical use illustrates the wide range of therapeutic uses. [10]

The dried fruit is called the golden flower in the Unani system of medicine, and used as a diuretic, antiseptic, liver corrective, and sedative. [11]

In Chinese medicine, *Alkekengi* is used to treat such conditions as abscesses, coughs, fevers, and sore throat. [12] The extinct Dacian language has left few traces, but in *De Materia Medica* by Pedanius Dioscorides, a plant called *Strychnos alikakabos* (Στρυχνοσ αλικακας) is discussed, which was called *kykolis* (or *cycolis*) by the Dacians. Some have considered this plant to be *Alkekengi officinarum*, but the name more likely refers to *ashwagandha* (*Withania somnifera*). [13]

Physalis alkekengi may be beneficial to health, particularly in the treatment of diabetes and its aftereffects. A variety of benefits, including anti-inflammatory, antibacterial, antioxidative, hypoglycemic, analgesic, immunomodulatory, anti-tumor, and anti-asthma capabilities, are provided by its rich chemical makeup, which includes steroids, flavonoids, and

polysaccharides. *P. alkekengi* is a promising natural resource for the treatment of diabetes due to these processes. To definitively confirm its practical therapeutic uses for diabetes treatment, more research and clinical investigations are necessary.[14]

The plant *Physalis alkekengi* L. has strong anti-inflammatory qualities. Nitric oxide (NO) generation is successfully inhibited, proinflammatory cytokines such as TNF- α , IL-6, and IL-1 β are inhibited, and reactive oxygen species (ROS) production is attenuated by the plant extracts.[15]

They also inhibit cell apoptosis, which suggests that they have potent anti-inflammatory properties. These results indicate that *Physalis alkekengi* L. may be a promising natural treatment for inflammatory skin conditions by reducing inflammation, oxidative stress, and cellular damage.[15]

Alkekengi officinarum contains a wide variety of physalins.[16][17][18] When isolated from the plant, these have antibacterial[19] and leishmanicidal[20][21] activities in vitro.

It also contains caffeic acid ethyl ester, 25,27-dehydro-physalin L, physalin D, and cuneataside E.[22]

More than 530 different chemicals, including steroids, flavonoids, alkaloids, phenylpropanoids, sucrose esters, piperazines, volatile oils, polysaccharides, amino acids, and trace elements, are present in *Physalis alkekengi*. Its many potential therapeutic qualities, including those that are anti-inflammatory, antibacterial, antioxidant, hypoglycemic, analgesic, anti-tumor, and immune-regulating, are attributed to these well-researched constituents.[10]

In Japan, its bright and lantern-like fruiting calyces form a traditional part of the Bon Festival as offerings intended to help guide the souls of the dead. A market devoted to it – *hizuki-ichi* – is held every year on 9–10 July near the ancient Buddhist temple of Sensō-ji in Asakusa.

Alkekengi seed fossils are known from Miocene of Siberia, Pliocene of Europe and Pleistocene of Germany.[23] Pollen grains of *Alkekengi officinarum* have been found in early Pleistocene sediments in Ludham east of Wroxham, East Anglia.[24]

Alkekengi officinarum was previously included in the genus *Physalis* until molecular and genetic evidence placed it as the type species of a new genus.[25][26]

