

## Saussurea

Saussurea is a genus of about 300 species of flowering plants in the tribe Cardueae within the family Asteraceae, native to cool temperate and arctic regions of East Asia, Europe, and North America, with the highest diversity in alpine habitats in the Himalayas and East Asia. Common names include saw-wort and snow lotus, the latter used for a number of high altitude species in East Asia.

They are perennial herbaceous plants, ranging in height from dwarf alpine species 5–10 cm tall, to tall thistle-like plants up to 3 m tall. The leaves are produced in a dense basal rosette, and then spirally up the flowering stem. The flowers form in a dense head of small capitula, often surrounded by dense white to purple woolly hairs; the individual florets are also white to purple. The wool is densest in the high altitude species, and aids in the thermoregulation of the flowers, minimising frost damage at night and also preventing ultraviolet light damage from the intense high-altitude sunlight.

De Candolle named the genus after Horace-Bénédict de Saussure (1740-1799) and Nicolas-Théodore de Saussure (1767–1845).[2]

A number of the high alpine Himalayan species are grown as ornamental plants for their decorative dense woolly flowerheads; they are among the most challenging plants to grow, being adapted to harsh climates from 3500 to 5000 m altitude, demanding cool temperatures, a very long (up to 8–10 months) winter rest period, and very good soil drainage in humus-rich gravel soils.

Costi amari radix or costus root was an important item of Roman trade with India, and is believed to have been the dried root of *Saussurea lappa*. [3]

Several varieties of snow lotus are used in traditional Tibetan medicine. *Saussurea lappa* is used a component of the traditional Tibetan medicine Padma 28. Research conducted on the Himalayan medicinal plants by C.P. Kala reveals that the practitioners of Tibetan medicine living in the Pin Valley of Himachal Pradesh use its root for curing dysentery and ulcer.[4] *Saussurea laniceps*, *Saussurea involucrata* and *Saussurea medusa* flowers and stems have long been used in traditional Chinese medicine for the treatment of rheumatoid arthritis, cough with cold, stomachache, dysmenorrhea, and altitude sickness, and has been found to have antiinflammatory and analgesic effects,[5] as well as cardiotonic, abortifacient, anticancer,[6] and antifatigue actions.[citation needed] *Saussurea laniceps* have been proven to be more effective than *Saussurea involucrata* and *Saussurea Medusa*. [7]

*Saussurea obvallata*, known as "brahmakamala" in India is one of the most sacred species, and it has been used for offerings to goddess Nanda Devi for time immemorial.[8][9]

*Saussurea lappa* and has been shown to inhibit the mRNA expression of iNOS by lipopolysaccharide stimulated macrophages, thus reducing nitric oxide production.[citation needed] In rats, high doses of 50-200 milligrams per kilogram of crude ethanolic extract reduced observed inflammation in standard laboratory tests, and 25-100 milligrams per kilogram of the sesquiterpene fraction of the extract reduced several molecular markers of inflammation.[10][11] Ethanol extracts were shown to have analgesic and antiinflammatory effects at high doses of 75-300 milligrams per kilogram. As the slow-growing wild plant is

endangered by collections, a substitute grown in tissue culture has been suggested, which is mostly equivalent. Generally the analgesic and antiinflammatory effects of the plant are much inferior to those of indometacin.

In most Chinese martial arts literature, the snow Lotus was classified a rare herb as precious as lingzhi mushroom, and old ginseng.

