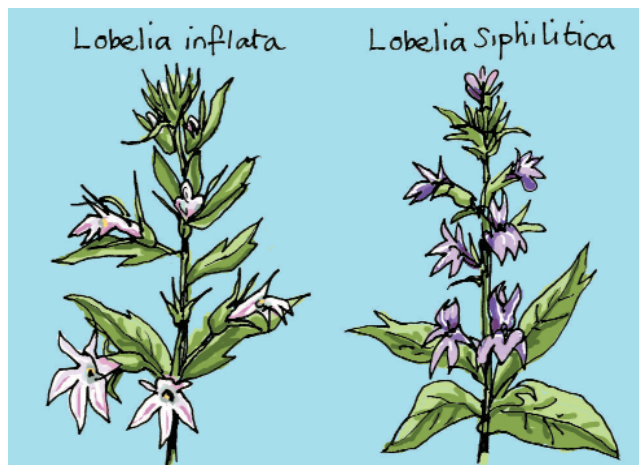


Medicinal uses of lobelia, old and new

The genus *Lobelia* includes some 375 species, including annuals, perennials, shrubs and even trees. Most are native to tropical and warm temperate regions. Several herbaceous species are popular in gardens and thrive in moist, shady and semi-shady locations. Most common are *L. erinus*, used as a summer bedding plant and in hanging baskets, and *L. cardinalis*, a tall crimson-flowered perennial herb.

Lobelia contains about 14 alkaloid constituents similar to those found in tobacco. The main one is lobeline, a yellow oil with a tobacco-like taste and smell. It stimulates the respiratory centre in the brain stem, producing stronger and deeper breathing. In North America, *L. inflata* and *L. siphilitica* have long been used as a source of lobeline. Lobelia was a highly prized medicinal plant used extensively by the Native Americans as a general panacea, being employed for just about everything that ailed them, giving rise to one of its common names of Indian tobacco. Native Americans



smoked the dried leaves to treat various respiratory complaints, including asthma and chronic bronchitis, and used it for other illnesses ranging from stiff necks and earache to syphilis. All parts of the plant are powerfully emetic, and some Native American tribes used it as such in religious ceremonies, hence its other common names of pukeweed, gag-root, and vomitwort.

Lobelia extract has a long history of medicinal use, with reports of varying degrees of success in the treatment of tobacco addiction, using the chemical similarities between lobeline and the tobacco alkaloids.

Recent research has suggested a potential use for lobeline in treating the abuse of methamphetamine (commonly known as crystal meth). Researchers at the University of Kentucky found that lobeline reduced the self-administration of d-methamphetamine by laboratory rats. They concluded that it reduced the rats' perception of drug-induced pleasure.

The research indicated that lobeline does not induce the same feelings of reward as methamphetamine, and therefore did not act as a substitute reinforcer. This finding would indicate that lobeline, unlike some other pharmacological agents used to treat addiction, does not itself pose a risk for abuse, and it may be possible to develop the drug as a useful tool in the treatment of addicts.

Dangers of swapping frogspawn

Our garden pond has recently been a teeming mass of tadpoles, and the huge blobs of spawn that adorned the water's surface a few weeks earlier have now disappeared.

The amount of spawn this year seemed greater than previously, and we offered some to a friend who teaches at a local school, with the intention of creating interest among, as well as educating, the pupils. However, the staff had been instructed not to accept frogspawn, however well-intentioned the gift, and a little research on my part has confirmed this advice to be wise.

Froglife, a leading organisation concerned with conservation of amphibians in the UK, has advised the public not to donate frogspawn to other gardeners, a practice that goes back decades and is one reason why frogs have remained widespread while other amphibian species are thought to have declined. A major concern is that unwanted plants can be transferred with the spawn. In recent years, following an increase in the global trade in pond plants and animals, a number of non-native, invasive plant species have appeared in the wild in parts of Britain, and the vigorous growth of some of these invaders can rapidly create dense carpets that block out light and kill other plants.

The spread of disease in amphibians is a further concern. Recent research suggests that a frog disease known as red-leg, which is caused by a ranavirus and was first reported in the 1980s, can be transmitted from adult frogs to their spawn. It kills thousands of frogs a year, causing skin ulceration and systemic haemorrhaging. There are fears that the disease is reaching crisis levels and, since the common frog (*Rana temporaria*) is vital part of their diet, populations of predators such as foxes, stoats, and buzzards could be affected.

Instead of swapping spawn, experts advise the public to carry out measures to make gardens more frog-friendly, such as avoiding fencing with concrete bases, and introducing features such as stacks of logs and small rock piles, which attract frogs seeking shelter in which to hibernate during the winter months. These features would help create wildlife corridors, and also allow other native species into gardens, such as newts, pond-skaters and grass snakes.

Exploring the origins of syphilis

A long-held theory, often hotly debated, suggests that the explorer Christopher Columbus and his crew brought the venereal disease syphilis to Europe from the New World. The debate was fuelled by the fact that Europe's first known syphilis epidemic occurred during the years following Columbus's return to Europe. In 1495, the disease broke out among the army of Charles VII after the French king invaded Naples. It then proceeded to devastate the continent.

Caused by the bacterium *Treponema pallidum*, syphilis is curable nowadays with antibiotics, but untreated it damages the heart, brain, eyes and bones, and is ultimately fatal. Recent research at Emory University in Atlanta genetically compared treponemes, including those that caused related diseases such as yaws, from around the globe in order to create a family tree in an effort to pinpoint the origins of syphilis. Results indicated that strains that caused syphilis originated recently, with their closest relatives being bacteria collected from South America — in other words, the New World.

Yaws, the disease from which syphilis apparently originated, has probably been around since humans originated in Africa. However, one theory is that a similar disease of a different strain existed in the New World, and something happened that changed the mode of transmission from skin contact to that of a venereal disease. One theory is that syphilis became venereally transmitted only when it reached Europe, where it was less hot and humid than the tropics, and people wore more clothing, limiting ways it could be spread. Sex was the answer.

However, doubt has been cast on the above theory by the discovery in Hull and Essex of skeletons that show signs of syphilis but date from well before Columbus's voyage, and a Viking involvement has been suggested. Vikings landed on Canada's eastern coastline hundreds of years before Columbus, and Viking merchants began visiting North East England around 1300, about the time of the English skeletons that show signs of the disease. What sceptics of the Columbian theory cannot explain is the small number of cases in Europe pre-Columbus, which is not the epidemiological pattern expected. More research is required if we are ever to know the answer.