

Under the Mistletoe... Myth, Medicine, and More! Dr. Jan Haldeman

Holiday merrymaking may be over, but mistletoe lingers on! This intriguing parasitic plant is even more evident in winter treescapes (mostly deciduous oak) of our region. In other words, plants can be more easily seen without leaf cover of their host trees. Mistletoe blooms in the fall, and female plants produce fruit, white berries, in winter. Flowers on male plants produce their pollen and then wither.

There are 1300 or so species of plants called "mistletoe". The name originated from two Anglo-Saxon words: "mistel" for dung and "tan" for twig. "Dung twig" seems inappropriate for a plant used for stealing a kiss! Folks observed mistletoe growing from spots of bird poop on twigs and limbs. A number of bird species feed on mistletoe berries and the sticky seeds pass through their guts. When seeds land on a limb, they begin growth by producing strong parasitic roots that penetrate bark and grow into the wood. Birds show no adverse effects from eating mistletoe berries, though these fruits are very toxic to humans, and caution should be taken when using them for decoration in homes with young children.



Here's a close up of mistletoe leaves and berries. A winter twig of its host, a water oak can be seen at lower right.

"Our" mistletoe species growing throughout the southeast on oaks and some other deciduous trees is American Mistletoe. Its botanical name is *Phoradendron leucocarpum*, from Greek meaning "thief of a tree with white fruit"; Phor = thief, dendron = tree, Leuco = white and carpum = fruit. It is actually a "small time thief," because its parasitic roots extend only into

vessels of xylem tissue from which it steals water and minerals. Our mistletoe has green leaves which photosynthesize, and roots do not extend into sugar-conducting tissue (phloem). For a healthy tree, mistletoe is mostly a benign pest. But a mistletoe infestation can ultimately kill a tree if it already is, or becomes, diseased or damaged.



This time of year a heavily infested tree can appear evergreen, when it's really not, like this oak in front of the courthouse in Abbeville, SC.

Some species of mistletoe are complete parasites, making no food by photosynthesis and therefore stealing sugar as well as water and minerals. In forests of Canada, down into Minnesota and Michigan, and especially in pine forests of the north and southwestern United States, mistletoes that infest spruce and pine

species are considered serious pests. One commonly called "Pine Dwarf Mistletoe" infests important pine species of the Northwest. Growing on pine stems, this mistletoe forms clumps of abnormal shoot growth called "Witches Brooms." This form of mistletoe has a fruit that builds up hydrostatic pressure as it ripens and, when ripe, shoots its sticky seed with a force strong enough to propel it 60 mph to a distance of up to 30 feet!

So what about myths of mistletoe? Those go back to pre-Christian Europe, when Druids welcomed the New Year with branches of mistletoe. It was considered a mystical plant because it appeared suddenly in trees and lacked roots. There are various stories of mistletoe in the lore of Vikings and Celts. Plants were said to have miraculous healing powers, to enhance fertility of animals and humans, and to give protection from witches and ghosts. The tradition of kissing under the mistletoe comes from Vikings who viewed it as the sacred plant of Frigga their Goddess of Love. A story tells how she revived her slain son Balda, whereupon her tears of joy turned into white mistletoe berries, and she kissed everyone who passed beneath the tree where it grew! This naturally evolved into Christian tradition of Love that conquers Death, as well as a number of symbols of friendship and goodwill for Christmas Season.

And how about mistletoe as a medicinal plant? American as well as European, Korean, and Australian mistletoes (different species in different families) have been used for medicinal remedies for centuries. Teas and extracts are prepared from leaves and berries. Because of toxicity its medical use is controversial. As a folk medicine, mistletoe preparations are reported to relieve digestive upsets, and mental disturbances such as epilepsy. It has been shown to stimulate smooth muscles and has been used to prevent hemorrhage after childbirth. Migraine headaches, rheumatism, asthma, and diarrhea have been treated with mistletoes. Effects on blood pressure are apparently the opposite for American and European mistletoes. American mistletoe causes blood pressure to rise; European mistletoe causes it to drop. Mistletoe extracts are available for purchase from many herbal medicine stores (pharmacies in Europe) as well as online.

An extract of European mistletoe named Iscador has gained considerable interest as a treatment for cancer. It is reported to act by stimulating the immune system in a manner that enhances destruction of cancer cells. In 1996 a patent was granted for a mistletoe component named T4GEN, and a synthetic version of this compound has been produced which is to be tested for a potential as a cancer drug.

The many mistletoes of the world are classified in four or five different families. To read more about fascinating variety and versatility of mistletoes, check out this site:
<http://www.sciencenews.org/articles/20001223/bob9.asp>