

# Schinus molle

## Peruvian Peppertree

### Brazilian Peppertree



**Family:** Anacardiaceae

**Genus:** *Schinus*

**Species:** *molle*, *terebinthifolius*, *aroeira*

**Synonyms:** *Schinus angustifolius*, *S. areira*, *S. bituminosus*, *S. huigan*, *S. occidentalis*, *S. antiarthriticus*, *S. mellisii*, *Sarcotheca bahiensis*

**Common Names:** Brazilian peppertree, Peruvian peppertree, California peppertree, aroeira, aroeira salsa, escobilla, Peruvian mastic tree, mastic-tree, aguaribay, American pepper, anacahuita, castilla, false pepper, gualeguay, Jesuit's balsam, molle del Peru, mulli, pepper tree, pimentero, pimientillo, pirul

**Parts Used:** Fruit, bark, leaf

Brazilian peppertree is a shrubby tree with narrow, spiky leaves. It grows 4 to 10 m tall, with a trunk 25 to 35 cm in diameter. It produces an abundance of small flowers formed in panicles that bear a great many small, flesh-colored, berry-like fruits in December and January. It is indigenous to South and Central America and can also be found in semitropical and tropical regions of the United States and Africa. In both North and South America, three different trees - *Schinus molle*, *Schinus aroeira*, and *Schinus terebinthifolius* - are all interchangeably called "peppertrees."

All parts of the tree have high oil and essential oil contents that produce a spicy, aromatic scent. The leaves of the Brazilian peppertree have such high oil content that leaf pieces jerk and twist when placed in hot water as the oil is

released. The berries, which have a peppery flavor, are used in syrups, vinegar, and beverages in Peru; are added to Chilean wines; and are dried and ground up for a pepper substitute in the tropics. The dried berries have also been used as an adulterant of black pepper in some countries.

## TRIBAL AND HERBAL MEDICINE USES

Virtually all parts of this tropical tree, including its leaves, bark, fruit, seeds, resin, and oleoresin (or balsam) have been used medicinally by indigenous peoples throughout the tropics. The plant has a very long history of use and appears in ancient religious artifacts and on idols among some of the ancient Chilean Amerindians.

Throughout South and Central America, Brazilian peppertree is reported to be an astringent, antibacterial, diuretic, digestive stimulant, tonic, antiviral, and wound healer. In Peru, the sap is used as a mild laxative and a diuretic, and the entire plant is used externally for fractures and as a topical antiseptic. The oleoresin is used externally as a wound healer, to stop bleeding, and for toothaches, and it is taken internally for rheumatism and as a purgative. In South Africa, a leaf tea is used to treat colds, and a leaf decoction is inhaled for colds, hypertension, depression, and irregular heart beat. In the Brazilian Amazon, a bark tea is used as a laxative, and a bark-and-leaf tea is used as a stimulant and antidepressant. In Argentina, a decoction is made with the dried leaves and is taken for menstrual disorders and is also used for respiratory and urinary tract infections and disorders.

Brazilian peppertree is still employed in herbal medicine today in many countries. It is used for many conditions in the tropics, including menstrual disorders, bronchitis, gingivitis, gonorrhea, gout, eye infections, rheumatism, sores, swellings, tuberculosis, ulcers, urethritis, urogenital disorders, venereal diseases, warts, and wounds. In Brazilian herbal medicine today, the dried bark and/or leaves are employed for heart problems (hypertension and irregular heart beat), infections of all sorts, menstrual disorders with excessive bleeding, tumors, and general inflammation. A liquid extract or tincture prepared with the bark is used internally as a stimulant, tonic, and astringent, and externally for rheumatism, gout, and syphilis.



## PLANT CHEMICALS

Phytochemical analysis of Brazilian peppertree reveals that the plant contains tannins, alkaloids, flavonoids, steroidal saponins, sterols, terpenes, and a large amount of essential oil. The essential oil present in the leaves, bark, and fruit is a rich source of chemicals (over 50 constituents identified thus far, including biologically active triterpenes and sesquiterpenes). Some of these chemicals scientists have not seen before, and many of the plant's documented biological activities are attributed to its essential oil. The fruit can contain up to 5% essential oil, and the leaves can contain up to 2% essential oil.

The list of chemicals found in the Brazilian peppertree is long: amyirin, behenic acid, bergamont, bicyclgermacrene, bourbonene, cadinene, cadinol, calacorene, calamenediol, calamenene, camphene, car-3-ene, carvacrol, caryophyllene, cerotic acid, copaene, croweacin, cubebene, cyanidins, cymene, elemene, elemol, elemonic acid, eudesmol, fisetin, gallic acid, geraniol butyrate, germacrene, germacrone, guaiene, gurjunene, heptacosanoic acid, humulene, laccase, lanosta, limonene, linalool, linoleic acid, malvalic acid, masticadienoic acid, masticadienonic acid, masticadienonic acid, muurolene, muurolol, myrcene, nerol hexanoate, octacosanoic acid, oleic acid, paeonidin, palmitic acid, pentacosanoic acid, phellandrene, phellandrene, phenol, pinene, piperine, piperitol, protocatechuic acid, quercetin, quercitrin, raffinose, sabinene, sitosterol, spathulene, terpinene, terpineol, terpinolene, and tricosanoic acid.

## BIOLOGICAL ACTIVITIES AND CLINICAL RESEARCH

In laboratory tests, the essential oil (as well as leaf and bark extracts) has demonstrated potent antimicrobial properties. Brazilian peppertree has displayed good-to-very strong *in vitro* antifungal actions against numerous fungi, as well as *Candida*. One research group indicated that the antifungal action of the essential oil was more effective than the antifungal drug Multifungin®. The essential oil and leaves have clinically demonstrated *in vitro* antibacterial activity against numerous bacterial strains (which probably explains why it is an herbal remedy for so many infectious conditions in its native countries). In 1996, a U.S. patent was awarded for an essential oil preparation of Brazilian peppertree as a topical bactericidal medicine used against *Pseudomonas* and *Staphylococcus* for humans and animals, and as an ear, nose, and/or throat preparation against bacteria. Another patent was awarded in 1997 for a similar preparation used as a topical antibacterial wound cleanser. In much earlier *in vitro* tests, a leaf extract of Brazilian peppertree demonstrated antiviral actions against several plant viruses. In addition to these documented antimicrobial properties, Brazilian peppertree passed an anticancer plant screening program in 1976 by demonstrating antitumorous actions. More recently, in 2002, researchers in Argentina documented that it was toxic *in vitro* against a human liver cancer cell line.

Over the years, several research groups have conducted animal studies on Brazilian peppertree that have further substantiated some of its many traditional uses in herbal medicine. A fruit extract and a leaf extract were shown to lower blood pressure in dogs and rats, as well as to stimulate uterine activity in guinea pigs and rabbits. Leaf extracts have clinically demonstrated pain-relieving activity in mice and antispasmodic properties in rats and guinea pigs (including uterine antispasmodic actions). In 1974, the anti-inflammatory effect of Brazilian peppertree was documented; the herb was used to treat 100 patients with chronic cervicitis and vaginitis effectively. In 1995 and 1996, other researchers documented the anti-inflammatory properties of this herb once again.



## **CURRENT PRACTICAL USES**

A monograph published in 1976 on Brazilian peppertree's essential oil indicated no toxicity in animals and humans ingesting or applying the essential oil topically. Today, herbalists and natural health practitioners in both North and South America use Brazilian peppertree mostly for colds, flu, and other upper respiratory infections; as a remedy for hypertension and for irregular heartbeat; for fungal infections and Candida; and as a female balancing herb for numerous menstrual disorders, including menstrual cramps and excessive bleeding.