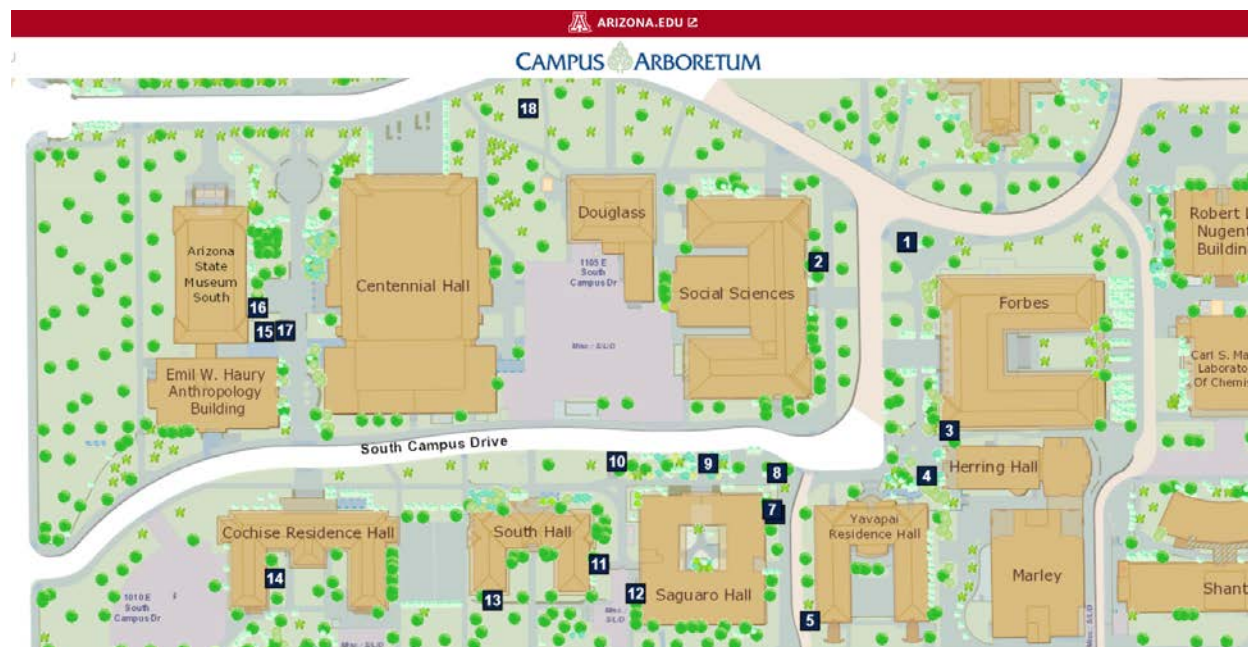


Medicinal Plants



Landscape Plants Provide Health and Healing!

As Arizona's Land Grant institution, the University of Arizona is charged with offering applied research and education that addresses solutions to Arizona's changing needs. This practical focus led to major developments in Mining and Agriculture in the early years, and continued excellence in urban horticulture in later years through research, education and outreach. From the very beginning, trees and shrubs were planted, and studied creating an "oasis" of learning in desert horticulture. Throughout its history, UA faculty used the campus grounds as a test site for potential new agricultural commodities, introducing olives, citrus, and date trees, to name a few. Later, in response to population growth, urban development and concerns for resource conservation, faculty interests expanded to include arid-adapted landscape ornamentals that were also tested on the main campus grounds. As a result of this long-standing commitment, many of the trees on the main campus produce edible products that can be harvested and served.

With the goal of promoting sustainability, the Campus Arboretum provides leadership to promote conservation of resources including efficient use of water, labor, and chemical inputs in landscape management. Further, we maximize the benefits of campus trees by providing guidance on tree selection, preservation, and management to enhance longevity, tree structure, aesthetics and safety. As you walk through campus today, we hope you'll appreciate the beauty as well as utility of this living example of urban sustainability research.

In this tour, you will learn how plants have been used for centuries to treat and remedy all sorts of ailments. Find out about the medicinal plants growing on campus. Learn about their historical uses, chemical properties and their uses in modern medicine. Plants growing all around us hold unique properties just waiting to be discovered.

1. Location: NE Forbes Building
Scientific Name: *Cupressus sempervirens*
Common Name: Italian Cypress
Family: Cupressaceae
Origin: Mediterranean

Botanical Characteristics:

The Italian cypress is a tall conifer with a narrow, columnar growth habit.

Medicinal Value:

The essential oil exhibits antimicrobial activity. The dried leaves have traditionally been used in the treatment of stomach pain, diabetes, inflammation, laryngitis, and as a contraceptive.



2. Location: E Social Sciences Building
Scientific Name: *Dichrostachys cinerea*
Common Name: Sickle Pod
Family: Fabaceae
Origin: Tropical Africa

Botanical Characteristics:

Sickle pod is a thorny shrub growing up to 8m tall. The bark is brown and peels off in strips. The twigs and young leaves are densely hairy. The leaves are tripinnate, from 5 to 10 cm long and with 8-15 pairs of pinnae, each pinna being up to 4 cm long. Each pinna bears 10-25 pairs of short, narrow, crowded leaflets. The spines often bear leaves. The inflorescence consists of dense, white-pink or mauve filaments. Pods are about 2.5-7 cm long.

Medicinal Value:

The root bark is used in North Africa as a weak decoction for the treatment of venereal diseases and leprosy. The scraped stem bark is pounded and macerated in cold water, spices, and lime juice are added, and the mixture is given both for dysentery and for worms. An infusion of the root is administered as a postpartum tonic. The fresh leaves are applied externally for the treatment of abscesses and various inflammatory conditions. A hot decoction of the leaves is inhaled to relieve a sore throat. Ethanol extracts of the aerial parts show tumor inhibitory activity.



3. Location: SW Forbes Building
Scientific Name: *Moringa oleifera*
Common Name: Moringa
Family: Moringaceae
Origin: India

Botanical Characteristics:

Moringa is a medium to tall tree with pale gray bark. The twigs and young shoots are densely hairy. The leaves are tripinnate, usually 6 pairs of pinnae, large, and alternately arranged on the stem. Secondary and tertiary leaflets are oppositely arranged, dark green above and pale green underneath. The flowers are small, sweet scented, and cream colored. The pod-like fruits are up to 45 cm long, containing rows of black oily seeds of which each has 3 papery wings.

Medicinal Value:

This tree is a cardiac and circulatory tonic and used for antiseptic properties. It is used traditionally as a hypotensive and antidiarrheal agent. Studies have shown that the seeds have antispasmodic, anti-inflammatory and diuretic properties. The leaves and unripe pods are high in nutrition and are eaten as vegetables. The essential oil is antifungal and acts as a powerful antioxidant. Its radical scavenging activity protects LDL from oxidation. An infusion of the root bark is dispensed for venereal infections and the treatment of fevers. The pounded root is mixed with salt and used as a poultice for swelling. In India, the root is used as a stimulant in paralytic syndrome and for the treatment of epilepsy. Juice from the leaves and stem bark inhibits staphylococcus aureus and is fungicidal to *Candida albicans*, *helminthosporium sativum*, *microsporium gyseum*, and *trichiphyton mentagrophytes*. The 50% ethanolic extract of the root bark is antiviral to the vaccinia virus.



4. Location: SW Herring Hall
Botanical Family: Xanthorrhoeaceae
Scientific Name: *Aloe Ferox*
Common Name: Tree Aloe
Origin: South Africa

Botanical Characteristics:

The tree aloe has a single, unbranched, woody stem crowned with a dense rosette of 50-60 3 ft. long thick and fleshy leaves. It can grow to a mature height of 6-10 ft. Sharp reddish brown spines occur on the margins of the leaves. Old, dead leaves persist on the stem.

Medicinal Value:

This aloe is a common ingredient in Ayurvedic medicine. Two components used medicinally are the mucilaginous leaf gel from the center of the leaf, and the resin, collected by evaporating the latex from the pericyclic cells beneath the epidermis. The leaf gel has moisturizing, antioxidant, antifungal and antimicrobial components. Bradykininase is a chemical component that relieves pain and decreases swelling and redness. For these reasons it assists in the healing of skin abrasions and wounds. The latex contains anthraquinone glycosides with strong cathartic effects. These are important components in several laxatives. Aloe ferox latex is sustainably harvested in South Africa. Aloes have also been found effective as antihyperglycemics and hypoglycemic in experimental animals, due in part to glucomannan, a hydrosoluble fiber found in the leaf gel.



5. Location: SW Yavapai Hall
Botanical Family: Fabaceae
Scientific Name: *Acacia victoriae*
Common Name: Bramble Wattle
Origin: Australia

Botanical Characteristics:

This is a small tree with simple, dull blue-green, strap-shaped phyllodes subtended by straight, reddish-brown spines. Phyllodes are flattened and widened petioles (leaf stems) that serve the leaves. Each of these is slightly curved to about 5 cm long and has a prominent mid-vein and a waxy look. Branches are covered in 1 cm stipular spines. Each phyllode has 2 slender spines at its base. Cream-colored 1/2 inch puffball flowers occur in pairs in 10-12 cm clusters. Flowering is heavy and the scent is strong. The pods can grow to 8 cm long and 1/2 cm across. They are papery and easily dehisce along the seams.

Medicinal Value:

Avicins produced in the aerial plant organs have been shown to inhibit inflammation and cancer in laboratory studies. The seed extract in particular has shown potent anti-tumor properties via regulating cell cycles. Triterpenoid saponins decrease tumor cell proliferation and induce apoptosis.



6. Location: NE Saguaro Hall
Botanical Family: Solanaceae
Scientific Name: *Solanum elaeagnifolium*
Common Name: Potato tree
Origin: Mexican Tropics

Botanical Characteristics:

The potato tree is so named because it is in the same botanical family as the potato, Solanaceae, also known as the nightshade family. It is a small shrub with large, fuzzy, elliptic leaves which are alternately arranged along the branches. It produces white flowers.

Medicinal Value:

This plant is used to treat vertigo, digestive problems, and general body aches. The leaves act as an abortifacient and is therefore dangerous to pregnant women. The steroidal alkaloids extracted from the plant are used to produce synthetic steroids. This plant also exhibits anti-malarial activity. For more information, see: "*Chemical composition, antimicrobial, and cytotoxicity studies on S. elaeagnifolium and S. macranthum essential oils.*" by Essien, E. E., et al."



7. Location: NE Saguaro Hall
Botanical Family: Asteraceae
Scientific Name: *Parthenium* sp
Common Name: Feverfew
Origin: American Tropics

Botanical Characteristics:

Parthenium is a small shrub with simple, fuzzy, slightly lobed leaves.

Medicinal Value:

The compound called parthenin exhibits anticancer properties by signaling cancer cell death in human leukemia HL-60 cells. It also displays amoebacidal properties. This herb is traditionally used for alleviation of headaches, toothaches, asthma, tinnitus, psoriasis, dizziness, nausea, and vomiting.



8. Location: NE Saguaro Hall
Botanical Family: Lauraceae
Scientific Name: *Laurus nobilis*
Common Name: Bay Laurel
Origin: Mediterranean

Botanical Characteristics:

Sweet bay is a small tree or shrub with leathery, elliptic leaves.

Medicinal Value:

The leaves and extracts are used to suppress high blood sugar, fungal and bacterial infections. It has also been used to treat eructation, flatulence and gastrointestinal problems. It also exhibits anti-inflammatory, anticonvulsive, antiepileptic and antioxidant properties (Conforti et al., 2011). Infusions of dry bay leaves are used in folk medicine for their stomachic and carminative remedies and also to treat gastric diseases (Afifi et al., 2009). The essential oil is an analgesic and anti-inflammatory. Compounds with activity against MRSA have been purified from bay laurel. In high doses bay laurel has cytotoxic activity (causes damage to cells). Research has shown extracts have the ability to inhibit nitric oxide radicals which is significant for the treatment of inflammation, Parkinson's disease, Alzheimer's disease, and atherosclerosis.



9. Location: N Saguaro Hall
Botanical Family: Lamiaceae
Scientific Name: *Rosmarinus officinalis*
Common Name: Rosemary
Origin: Mediterranean

Botanical Characteristics:

Rosemary is an evergreen perennial shrub with aromatic, flat, needle-like, one inch long leaves. The branches grow in long tendrils giving the shrub a "hairy" look. It has small purple flowers.

Medicinal Value:

Rosemary oil is often used for stomach ailments, such as indigestion or stomach cramps. It can be used for the brain to stimulate memory. It has been used to treat insomnia. It can be used for respiratory issues, sore throats and the flu or the common cold . It can be made as a tea or as an inhalant. Rosemary is very often used in cooking and has flavored many roasts, steaks, and stews. The leaves can be boiled to make a hair rinse for shiny hair.



10. Location: NW Saguaro Hall

Botanical Family: Moraceae

Scientific Name: *Ficus carica*

Common Name: Common Fig

Origin: Middle East and Western Asia

Botanical Characteristics:

Small tree with large, palmately-lobed leaves and edible figs as fruit.

Medicinal Value:

The parts of the plant that are used are fruits in different stages of ripening (fresh or dry), tree bark, leaves, twigs, young shoots, and the latex. The ash of this tree as well as a lye made from the branches and wood have traditionally been used. A wine made from the fruit has been used for treatment of tumors of the trachea and lung. In Ayurvedic medicine the fig is used for external treatments of eczema, leprosy, rheumatism, sores, ulcers, and pains. Fig decoctions are gargled for sore throats and fig fruits are eaten for treatment of diarrhea. The latex is used to remove warts and the fruit is used as a laxative. These effects were listed by Pliny in ancient Greece. Soranus, a physician of ancient Greece, also lists a suppository of dried figs among his contraceptives. The sap has been used as an anti-helminthic. The fruit extract contains an anticancer compound effective against Ehrlich sarcoma.



11. Location: SW Saguaro Hall

Botanical Family: Fabaceae

Scientific Name: *Vachellia pennatula*

Common Name: Feather Acacia

Origin: Mexican tropics

Botanical Characteristics:

This is a medium sized tree of 20-50 ft. tall and 16-20 ft. wide, with long, pinnately compound leaves and very small leaflets, giving a feather-like appearance.

Medicinal Value:

The bark is traditionally used as a remedy for indigestion. Extracts have shown cytotoxic activity against human tumor cells. They show selectivity towards cancer over healthy cells.



12. Location: E South Hall

Botanical Family: Fabaceae

Scientific Name: *Senegalia senegal*

Common Name: Gum Acacia

Origin: Northern Africa

Botanical Characteristics:

This is a small tree of 4-6m with short, bipinnately-compound leaves, stipular thorns, yellow flowers on spikes 5-10cm long and flat pods containing 5-7 seeds.

Medicinal Value:

Bark, when chewed, exhibits antimicrobial activity. The bark, leaves, and gum are used as an astringent to treat colds, ophthalmic problems, diarrhea, hemorrhages, skin diseases and inflammation. It has been made into a powder and used for irritable bowel syndrome (too much can cause an opposite effect). Gum Arabic is made from the sap. Chewing the gum has been shown to inhibit periodontal bacteria and the early deposition of plaque. The gum is used commercially as a stabilizer to give uniform consistency to food products, as well as encapsulation of pharmaceutical substances.



13. Location: S South Hall

Botanical Family: Fabaceae

Scientific Name: *Caesalpinia gilliesii*

Common Name: Yellow Bird of Paradise

Origin: Argentina and Chile

Botanical Characteristics:

This is a small shrub 2-4 m high with large, pinnately-compound leaves and yellow flowers with a long, red stamen. It flowers from May until September, but especially during the summer. Pods are 5-8cm long and 1.5 cm. wide. Ripe seedpods split open, ejecting seeds several yards away.

Medicinal Value:

This plant exhibits anti-tumor properties. Cesalin is an antitumor compound that inhibits DNA synthesis and mitotic division and is extracted from the seeds. In one study, aqueous extracts showed activity against sarcoma in mice.



14. Location: W Cochise Courtyard

Botanical Family: Rutaceae

Scientific Name: *Citrus x paradisi*

Common Name: Grapefruit

Origin: Southeast Asia or West Indies

Botanical Characteristics:

Medium sized tree with wide, elliptic leaves and grapefruits when in fruit.

Medicinal Value:

Aromatherapy massage reduces abdominal subcutaneous fat. Grapefruit juice prevents oxidative stress by raising liver antioxidant enzymes. Fruits are high in vitamin C and can lower blood cholesterol levels. Consult a doctor before taking statin drugs.



15. Location: W Centennial Hall

Botanical Family: Myrtaceae

Scientific Name: *Eucalyptus calmadulensis*

Common Name: Coral Gum

Origin: Western Australia

Botanical Characteristics:

Eucalyptus camaldulensis is a massive evergreen tree which reaches heights of about 130 to 180 feet. The trunk width is usually about five to seven feet in diameter. The crown is open, widely spreading, irregular and branches tend to form not far above the ground. The bark is smooth and white, gray, buff, or brownish-red in color. The red gum has leaves typical of most eucalyptus trees, which are lanceolate in shape. The leaves are a dull green to gray-green on both sides, about three to eight inches long, and a half inch to an inch wide. The white flowers bloom in groups of five to ten mainly in the late spring and summer and followed by small light brown seed capsules.

Medicinal Value:

Oil extracts have shown antimicrobial, antifungal, and anti-tumor properties. Eucalyptus oil contains cineole- an antiseptic that kills bacteria. In 19th century England the oil was used to clean urinary catheters in hospitals, since they were reusable. Today It is present in antiseptic mouthwashes to help prevent bad breath, gingivitis and plaque. It is used in cough drops, cough medicines. The oil is toxic if taken by mouth. In order to use it needs to be diluted with other oils. It is to be avoided by those with high/low blood pressure, epilepsy, asthma and pregnant women.



16. Location: W Centennial Hall

Botanical Family: Lamiaceae

Scientific Name: *Vitex agnus-castus*

Common Name: Monk's pepper

Origin: Mediterranean

Botanical Characteristics:

This tree has extremely aromatic leaves, flowers, and fruits, and has been used medicinally for centuries.

Medicinal Value:

Its fruit is a popular treatment for the management of female reproductive disorders including corpus luteum insufficiency, premenstrual syndrome (PMS), menopausal symptoms, and insufficient milk production. It has been told at one time that Monks used the Chaste tree parts to make a tea that reduced their sex drive. The extracts of the berries are thought to act on the pituitary and regulate hormones.



17. Location: W Centennial Hall

Botanical Family: Lythraceae

Scientific Name: *Punica granatum*

Common Name: Pomegranate

Origin: Iran

Botanical Characteristics:

Pomegranate is a shrub or small tree that grows to 12 to 20 feet. It is branched and has spines. The flowers are located on the branch tips. They are usually one and a quarter in width and are characterized by the thick, tube-shaped, red calyx. It has five to eight fleshy, pointed sepals forming a vase from which develop the three to seven crinkled, red, white or variegated petals enclosing the numerous stamens. The fruit has a rough rubbery skin/rind and a rich red color on the exterior. The inside is divided by membranous walls and white spongy tissue into compartments packed with transparent sacs filled with tart pink, red, or white pulp. In each sac, there is one angular-seed. The seeds embody 52% of the weight of the total fruit.

Medicinal Value:

There is evidence that this plant has been used medicinally with as far back as the times of Egyptian pharaohs. The rind of the fruit, the juice of the fruit, the bark, the seeds and the extract from the flower have been used for various purposes. Extracts have shown antibacterial properties that provide resistance to MRSA (Methicillin-resistant *Staphylococcus aureus*) and other bacteria. Other extracts serve as an effective microbicide for HIV prevention. The fruits are high in radical scavenging antioxidants. It also has anti-inflammatory properties and can reduce symptoms of chronic periodontitis. It has been used as a chemopreventive treatment on skin tumors. Male flowers' aqueous ethanolic extract can lower blood glucose.



18. Location: E Centennial Hall

Botanical Family: Taxodiaceae

Scientific Name: *Taxodium mucronatum*

Common Name: Montezuma Cypress

Origin: Mexican Tropics

Botanical Characteristics:

This conifer is small to medium in size with soft, needle-like leaves and older branches with a drooping appearance.

Medicinal Value:

Prevents Cathepsin B production which has been implicated in arthritis and certain cancers. It has been traditionally Used to treat gout, ulcers, and toothaches. Can be used as a diuretic and an emmenagogue. Extracts have also shown vasorelaxant effects.

For more information, see:

<http://www.sciencedirect.com.ezproxy2.library.arizona.edu/science/article/pii/S037887419501230B>



To learn more about these plants, including cultivation requirements, natural history and their location on the main University of Arizona campus grounds:

1. Go to <http://arboretum.arizona.edu/>
2. Click the “Find Trees & Tour” tab.
3. On the drop down menu choose “GIS Map”
4. Once map is open click on magnifying glass and search for whatever tree you are interested in!

REFERENCES AND OTHER SOURCES FOR LEARNING:

- Handbook of African Medicinal plants
- Handbook of Medicinal Spices
- International Journal of Pharmacology Vol. 9, Issue 7
- Medicinal Plants by M. Daniel
- Prescription for Nutritional Healing, 3rd Ed.
- Acosta-Solís, M., 1992.
- [Afifi et al., 1997](#)
- [Conforti et al., 2006](#)
- [Dall’Acqua et al., 2009](#)
- [Ferreira et al., 2006](#)
- Neurath et al., 2004
- [Ouchikh et al., 2011](#)
- [Ozcan et al., 2010](#)
- [Polovka and Suhaj, 2010](#)
- [Ramos et al., 2012](#)
- Samy A. Selim, 2014
- [Speroni et al., 2011](#)
- [Yun Quiao and Sun, 2013](#)

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