

Elderberry



Sambucus canadensis
Elderberry

An Herb Society of America
ESSENTIAL GUIDE

The seal of The Herb Society of America is circular, featuring a central wreath of various herbs. The text "HERB SOCIETY OF AMERICA" is written around the top inner edge, and "1933" is at the bottom. The seal is rendered in a light, semi-transparent purple color.

The Herb Society of America

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The Herb Society of America acknowledges the International Herb Association for the selection of the 2013 Herb of the Year. The International Herb Association has been selecting an Herb of the Year since 1995 and The Herb Society of America is pleased to provide educational material to support their selections.

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Editor's Comments

When Elizabeth Kennel invited me to serve as editor of *The Essential Guide to Elderberry*, I was hesitant to take on the project. I am, however, very pleased that I did. The experience has been incredible, and every contributor to the guide deserves high praise for their diligent researching, writing very informative articles and providing excellent resources. The committee hopes that each reader will be inspired to incorporate elderberry into their life in some way; our ancestors surely did.

As a child, I remember elderberry growing on my grandfather's farm along a stream that flowed from a spring through his property, and my father always picked elderberries for my mother to bake pies. Beyond that, until a few years ago when I discovered elderberry tea, I knew little about other possible uses for this incredible plant. Now, I am particularly fascinated by the current research into the antiviral properties of elderberry, which makes it a good candidate for fighting various strains of flu.

This spring, I watched for areas where elderberries were growing in order to take a few pictures, and I hoped to later ask permission to pick some berries, but I had no idea that this would take me on an adventure to my great grandfather's farm. One particular patch that I was watching, to my surprise, was a part of his original farm. I was pleased to be given a tour of the farm house (I had never been inside), and was also given permission to pick elderberries by the current owner. I was cautioned, however, to watch out for snapping turtles and poison ivy. On another picking day, I went with my nephew into a ravine area on his farm along a small stream, wading through Multiflora Rose and high weeds to get to a tall elderberry shrub! Do I have respect for the generations before me who had these experiences every year and knew the great benefits of using the flowers and berries medicinally and for food? Yes, I do, and I haven't even discussed the job of removing only the ripe berries from their toxic stems and the process of preparing juice before I made cordial and jelly—both delicious!

In preparing this guide, each author shared with me how much they enjoyed researching their particular topic, and I know that everyone who reads some or all of the articles is in for a treat. Please put their research to use and plant *Sambucus* on your property—it will make the picking of elderberries much simpler!

JOYCE BROBST, Editor



Joyce Brobst is a past president of The Herb Society of America (1998-2000) and a member of the Pennsylvania Heartland Unit. She is a retired science teacher and remains involved by growing *Pelargoniums*, reading, lecturing and researching a variety of topics. She has been honored with inclusion in *Who's Who Among America's Teachers* and has participated in The Oxford University Round Table on two occasions. Joyce has contributed articles for *The Herbarist* and is co-author of the book *Pelargonium, Herb of the Year 2006* with Pat Crocker and Caroline Amidon. She is a member of The Herb Society's Rosemary Circle and received The Society's Helen de Conway Little Medal of Honor in 2006 and Nancy Putnam Howard Award in 2011. Joyce is also a member of The Pennsylvania Horticultural Society and The Hardy Plant Society.

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Photo by Susan Rountree



*H*istory &
*E*arly *U*ses

History and Lore of Sambucus

BY CAROLINE AMIDON



The story of *Sambucus*, elderberry, goes back into early history. It is felt that the plant may have been deposited in present day Europe, Asia and the North American continent by the retreating Ice Age, 12,000 to 9,000 B.C.E. (Grigson, p. 26). Based upon the vast number of legends surrounding them, the history of European Elder, *Sambucus nigra*, and the Dwarf Elder, *Sambucus ebulus*, must go back to the very first people who discovered their many and

varied health benefits. As time went on it is easy to see how the plant became revered as “magic” and generated stories, some of which persist to this day in rural parts of the world. “Funerary flints found in megalithic long barrows were Elder leaf shaped, suggesting that the association of Elder with death goes back a long way” (Elder Lore, p. 1). Elder seeds found in Neolithic pole-dwellings in Switzerland date from about 2000 B.C.E. and suggest that the plant was in cultivation at that time.

The name of the plant dates back to the Greco-Roman period. The word *sambucus* came from the Greek word *sambuca*. Theophrastus (370-285 B.C.E.) described elder in *Historia Plantarum*; however, he did not refer to its medicinal qualities, even though Hippocrates had already described various uses. At the time of Pliny the Elder (77 C.E.) the medicinal properties of the plant were well known, and in his writings he notes this as well as its use as a hair dye. He also noted that the twigs made the shrillest of pipes. Interestingly, it has been shown that American Indians made similar pipes and flutes and pogguns. In *Materia Medica*, Dioscorides prescribes the use of elder for various complaints. Gerard and Culpeper both extol the medical benefits of elder, and in 1644 an entire book, *The Anatomie of the Elder*, devoted to its medical uses was written by Martin Blockwich.

The Greek word *sambuca* morphed into the Latin word *sambucus* meaning “Sackbut,” the name given to a Roman stringed instrument which was thought to have been made of *Sambucus*. If so, because of the size of the tree, it would have to have been a small hand harp or lyre, or possibly a flute. Even today, in Italy, a musical instrument called a *sampogna* is made of elder wood. Because of the presence of the tree *sambuca* in India, China and southeastern Asia there is a suggestion that the word might have come originally from Sanskrit and the Hindu stories of Ganesha (Stoney, 2010).

Today’s (and yesterday’s) common name “Elder” came from the Anglo-Saxon word *aeld* or *ellarn* which meant fire or kindle and was the base used for the name of the tree “Eldrun.” The stems of the eldrun tree had a soft pithy core which could be hollowed out making the stems perfect for blowing up a fire. Prometheus was said to have carried fire to man on earth in just such a hollowed elder stem. As people discovered the many and varied uses of this tree the stories surrounding it grew. Some of the other names by which the tree is known are: Black Elder, Common Elder, Pipe Tree, Bour Tree (14th C.), Bore Tree, Burtre, Bottry, Ellharn, Hylde, (Anglo-Saxon) Eldrun, (Low Saxon) Ellhorn, (German) Hollander, (French) Sureau. Other names were Hollen, Hylde, Hylantree, Hollunder, Danewort, Borrall, Eller, Tea Tree, Trammon, and Devil’s Wood.

It was thought that the tree was inhabited by Hylde Moer who was the goddess or nymph of vegetation, life and death. Because of this, the tree was considered sacred and should not be harmed in any way. If one dared to burn the wood, Hylde Moer might make the fire go out just for spite. Because of fear, chants and prayers were offered to the tree in the form of appeasement. The tree’s protective spirit or dryad that lived within was considered the reason that the tree was

rarely struck by lightning and therefore it was often planted close to houses and barns. In later times this “lightning proof” quality was attributed to the belief that Christ’s cross was made of elder wood. Also because of Hylde Moer the wood was not harvested for furniture; if a cradle or chair was made out of the wood the spirit might pinch and haunt the occupant. Superstitions about burning elder wood existed into the twentieth century. Folk stories say that people who harmed the tree might be struck down with any or many types of disasters—toothache, bad luck, illness and so forth. With such reverence was the tree held that if one had to have some wood for one reason or another, one must kneel, with hands folded and entreat the spirit of the tree three times, with the following prayer:

“LADY ELDER,
GIVE ME SOME OF THY WOOD,
THEN I WILL GIVE THEE SOME OF MINE,
WHEN I BECOME A TREE”

(Baker, p. 52).

Proper procedures were important to avoid retribution and in respect, men often tipped their hats to elder trees. Hylde Moer’s involvement with life and death resulted in the placement of sprigs of elder in graves to help the deceased transition into the next life. During the time of Christianity this changed into the placing of a cross made of elder twigs on the grave; when it grew those left behind knew their loved one was happy.

As Christianity spread through Europe it tried to discourage Pre-Christian tree worship as wrong by circulating the story that Judas had hanged himself from an elder and worse yet that the wood of the cross upon which Christ was crucified was also made of elder. Ever after “it became an emblem of death, trouble and sorrow:

BOUR TREE, BOUR TREE, CROOKED, WRONG
NEVER STRAIGHT AND NEVER STRONG,
NEVER BUSH AND NEVER TREE,
SINCE OUR LORD WAS NAILED ON THEE”

(Baker, p. 52).

During the Middle Ages people thought that evil spirits and witches could be repulsed by pinning elder leaves around any and all entrances to the house. Floating the burning pith of elder trees on Christmas Eve would reveal the identity of the witches and sorcerers to the people of the neighborhood. Much magic is attributed to elder; for instance, wood elves are said to visit the elder forest to hear the music played on elder flutes by the wood spirits. Fairies love music and their instruments were thought to be made from elder wood probably because Hilda the mother of the elves was said to live in the root of an elder tree. People knew that if they happened to be under an elder tree at midnight on Midsummer’s Day, they would see the King of the Fairies and his court pass by. The wood is traditionally used to make magic wands. The long story of the Elder Wand in the Harry Potter books can be read on the following website: http://harrypotter.wikia.com/wiki/Elder_Wand

One of the more delightful stories has to do with holding vampires at bay. Because vampires must count things compulsively the placement of vast quantities of elderberries on windowsills will keep them occupied until dawn breaks. This is an older story than that of garlic as a vampire repellent.

Not so delightful a story is one about a man who cut an elder stick for his son and was



shocked to see the tree bleeding from the cut. Later, on the way home they passed a woman who was a suspected witch and she had a bloody rag wrapped around her wounded arm. It was believed that a witch could change from a human into an elder at will.

In Bohemia, people believed that illness could be transferred to the elder tree by placing a sick person's bath water on the tree for three days, each time chanting, "Elder, God sends me to thee, that thou mightst take my fever upon thee" (Folkard, p. 319). In England, people wished warts away by carving a notch for each wart in an elder twig and then burying it; when the twig rotted away the warts were supposed to disappear (probably the normal length of time for this to occur naturally, with or without the twig). Similarly, carrying a twig with three or four notches was to relieve rheumatism.

Because all parts of the tree, except the flowers, give off a bad smell, elder was called "'God's stinking tree' in Dorset (England) and was banned from domestic use" (Baker, p. 53). It did, however, work as an insect repellent. So to protect milk from souring, elder trees were planted near dairies. Branches were often hung in entryways of both homes and barns to repel insects and twigs were fastened to horses' bridles. "In West Surrey, Gertrude Jekyll found that an elder near a well tainted the water" (Baker, p. 53). In the New World, Kentucky farmers' wives found that elder wood used in making a butter churn would turn the butter rancid, and cooking utensils made of elder would give food a bad taste. A twig of elder carried in the jacket pocket of a horseman was reputed to protect the rider from saddle soreness; as late as the 1950s members of a fox hunt were still carrying on the tradition.

In 1656, William Coles in *Adam and Eden*, summed up the thinking of the time on elder: "There is hardly a Disease from the Head to the Foot but it cures. It is profitable for the Headache, for Ravings and Wakings, Hypochondriak and Mellancholly, the Falling-sickness, Catarrhes, Deafnesse, Faintnesse and Feacours" (Baker, p. 55).

This was a tree of incredible importance in the distant and not too distant past, and it is being rediscovered now. So let us enjoy the lore, legend, nonsense and fun about it while we look to the important research being carried on in the present.



Caroline Amidon

Gardening came naturally to Caroline Amidon, who grew up outside of Philadelphia and learned the skills from her mother and grandmother. After Bennington College (Vermont), she taught elementary school, married and raised a family.

Her interest in plants and cooking led her to The Herb Society of America, Philadelphia Unit. She became Chairman of the Unit, joined the board of the national organization and served as President from 1996 to 1998. Caroline was awarded the Helen de Conway Little Medal of Honor and the Nancy Putnam Howard Award for Excellence in Horticulture by The Herb Society of America.

Caroline lives in her beloved Chester County (PA) with her corgi and cats, and maintains two greenhouses and a large garden. She served on her township's planning commission for 20 years and is a member of two garden clubs, The Pennsylvania Horticultural Society and The Hardy Plant Society.

Together with Joyce Brobst, Caroline maintains a collection of over 75 varieties of *Pelargoniums* in one of her greenhouses. Their collection is registered with The Herb Society's Plant Collections. She and Joyce willingly share their knowledge with all who request it.



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Ethnobotany of Elderberry

SOME AMERICAN INDIAN ELDERBERRY USES

BY E. BARRIE KAVASCH, ETHNOBOTANIST, MASTER HERBALIST

The wind through summer elderberry shrubs makes natural music, singing of many potential gifts. Every part of these perennial shrubs has been explored for centuries. Considering how widespread and prolific the elders are, it is not surprising that they were used in countless ways. Our American Indian ancestors created legacies of uses—as colorful as they were diverse—that continue to interest us and challenge our investigations. Native people knew their elderberries by many names, and names continue to haunt us.



The genus name *Sambucus* comes from the Greek word *sambuke* for a musical instrument once made of elderberry wood. For centuries elderberry has been used to heal the body, mind, and spirit through the gifts of medicines, foods, beverages, baskets, charms, ceremonial items, inks, dyes and body paint, jewelry, hunting whistles and musical instruments, and even maple sugar spiles as well as insecticides and fish poisons. One of the most sacred elderberry instruments was and is the long, hollow blow pipe fashioned by Creek, Cherokee, Mikasuki, and Seminole Indian medicine people that was used to blow special energies into herbal healing formulas. Sometimes made of native bamboo in the south, the earlier and more powerful instruments were fashioned from choice fruit-bearing elder—itsself a valuable medicinal ingredient in many native formulas.

ELDERBERRY MUSIC: The dense, creamy white wood of the elderberry with the easily pierced central pith made it desirable for American Indians to carve courting flutes as well as hunting whistles from stout elderberry branches and stems. Piercing elk whistles and shrill eagle and hawk whistles were also carved for ceremonial uses. Some Native American dancers wore small elderberry flutes threaded on sinew strung loosely around their necks. Clever artists even carved elderberry stems into fine beads for similar uses. Elder wood was often soaked to diminish the bitter taste and even soaked in ripe elderberries mashed into a vivid purple/black dye or ink. Kachina societies among Pueblo tribes in the American Southwest used elderberry to make feather ceremonial wands and other valuable items for sacred dances. Some of our eastern European ancestors used the branches from the elder to make the *fujara*, *koncovka* and other uniquely Slovakian flutes. Similar musical instruments, like the *furulya*, are made of elderberry (*fekete bodza*, *Sambucus nigra*) in Hungary and other parts of eastern Europe. The elder certainly fueled many ethnic musical traditions.

ELDERBERRY DIVERSITY: *Sambucus* is a genus of more than 30 species of shrubs or small trees in the moschatel family, Adoxaceae. It was formerly placed in the honeysuckle family, Caprifoliaceae, but was reclassified due to genetic evidence. The genus is native in temperate-to-subtropical regions of both the northern and southern hemispheres, yet it is more widespread in the Northern Hemisphere. Elderberry leaves are pinnate with 5-9 leaflets (rarely 3 or 11). Each leaf is 5-30 cm (2.0-12 ins) long, and the leaflets have serrated margins. They bear large clusters of small white or cream-colored flowers in late spring; these are followed by clusters of small black, blue-black, or red berries (rarely yellow or white).

AMERICAN ELDERBERRY, *Sambucus canadensis*, grows across eastern North America and produces prodigious blue-black berries most years. The black-berried elder complex is variously treated as a single species, *Sambucus nigra*, found in the warmer parts of Europe and North America with several regional varieties or subspecies, or else as a group of several similar species. The flowers are in flat cymose corymbs, and the berries are black to glaucous blue; they are larger shrubs, reaching 3-8 m (9.8-26 ft) tall, occasionally small trees up to 15 m (49 ft) tall and with a stem diameter of up to 30-60 cm (12-24 in).

BLUE ELDERBERRY, *Sambucus cerulea*, grows across western North America and bears prodigious clusters of dark blue-black berries with a glaucous bloom on the surface giving them a beautiful sky-blue appearance. Ripe fruits were used in Sun Dance rituals with other ceremonial foods and to create inks and dyes for mats, clothing, baskets, and quills. Plains Indians used elderberry inks for various hide paintings, as well as for face and body paints and adornment.

FLORIDA ELDER, *Sambucus simpsonii*, grows across our southeastern regions producing blue-black berries. This was a valued food resource for many of the southern tribes from the Powhatans and Lenape in coastal areas, to the Cherokee, Creek, Catawba, Choctaw, Chickasaw, Seminole, and Mikasuki. Many of these people created herbal infusing baskets to use in processing the leaves, blossoms, and berries in various seasons and for their own unique foods and medicinal needs. Stout elderberry rods were made into splints for use as basket stays and rims.

VELVET ELDER, *Sambucus velutina*, grows across southwestern North America along with the Mexican Elder, *Sambucus mexicana*, native to the Sonoran Desert. Both produce black berries. These rugged shrubs sustained diverse wildlife and native people in countless ways. The Southern Elder, *Sambucus australis*, grows across temperate eastern South America, and like the others, contributed seasonal ripe fruits for native medicines, beverages, soups, sauces, and ceremonial foods.



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BLACKBERRY ELDER, *Sambucus melanocarpa*, of western North America is a small shrub, rarely exceeding 3-4 m (9.8-13 ft) tall. The flowers are in rounded panicles and the berries are black. Some botanists include it in the red-berried elder group. The ripe berries were much sought after by wildlife and native people for diverse uses. Thompson Indians tamped the frayed inner bark into pulp to poultice wounds or an aching tooth. The Yuki Indians used a strong flower decoction poulticed on the skin for bruises and sprains. Cahuillas used

elderberries in favorite "saucos," thick delicious sauces, made throughout summer months when the blue berries were often abundant. They also used elderberry fruits, bark, and wood in medicinal applications, made splints from the dense white wood into basket stays and rims and fashioned clappers for music-makers.

ARCHAEOLOGICAL EVIDENCE: Carbonized elderberry seeds recovered at archaeological sites in some storage pits where the seeds were preserved indicate prehistoric elderberry use. At a Mills County, Iowa site dating from 1000-1300 C.E., 71 elderberry seeds were identified. The elderberry seeds at this site may indicate the collection and storage of berries and possibly other uses of elderberry. Elderberries probably grew in wooded areas on the bluff slope near the earthlodges, native dwellings, and are a common sight along rural Iowa roads; indeed many roadside hedges exist today.

Red-Berried Elders

are complex and often treated as a single species and were mostly avoided as foods yet occasionally used in medicines, insecticides, and poisons by native peoples.



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Sambucus racemosa, the **European**

Red Elder, which is found growing throughout the colder parts of the Northern Hemisphere, and several regional varieties or subspecies are very attractive. The flowers are in rounded panicles and the berries are bright red. These are handsome, comparatively smaller shrubs, rarely exceeding 3-4 m (9.8-13 ft) tall. The **American Red Elder**, *Sambucus pubens*, and the **Mountain Red Elder**, *Sambucus microbotrys*, that are found in our southwestern mountains, plus the **Pacific Coast Red Elderberry**, *Sambucus callicarpa*, found growing along the west coast were surely exploited by native people for various less well-documented needs. Ichthyotoxins (fish poisons) were made from the pounded ripe berries, bark, roots, and leaves of various elderberries. Laws were passed in the early American colonies to prohibit this practice.

Sambucus sieboldiana (**Japanese Red Elder**; Japan and Korea), along with *Sambucus tigranii* (**Caucasus Red Elder**; southwest Asia, in mountains), *Sambucus williamsii* (**North China Red Elder**; northeast Asia), *Sambucus chinensis* (**Chinese Red Elder**; eastern Asia, in mountains), and *Sambucus latipinna* (**Korean Red Elder**; Korea, southeast Siberia) round out a fuller sense of these widespread berry-producing wild resources.

Carbonized elderberries, sometimes mixed with blueberries and other carbonized seasonal wild fruits, have been found in other prehistoric food storage pits in various native settlement camps that were excavated.

Also fascinating are the carbonized elderberry seeds found in ancient human remains called copralites (fossilized human feces). This evidence has been found in dry arid caves across the U.S., and scientific analysis helps to create an earlier picture of human elderberry consumption more than 5,000 years ago, yet cannot signify whether the fruits were used for foods, medicines or ceremonial consumption.

Most native people ate the ripe elderberry fruits, fresh and dried, and pounded the fruits into cakes, made of wild game meat and fat (tallow), called pemmican. This was readily dried, preserved well, and carried like today's "high-energy" trail foods. The spring flowers were also eaten in foods, stews, and beverages and dried for future foods and medicinal uses. The broad, flat flower clusters were dipped into batter and fried for delicious treats with elder syrup or honey.

DIVERSE ELDERBERRY

ETHNOBOTANY: Many ethnobotanical uses for elderberry were documented for native tribes all across the Americas, and some were doubtlessly missed. The blue-berried elders were safer and more widely used; the red-berried elders are more toxic (poisonous) and only rarely used for medicinal needs. Some evidence of red-berried elder is found among various southern tribes who pounded the toxic ripe berries and roots into fish poisons (ichthyotoxins) that were spread on the water to stun and suffocate fish, frogs and turtles, which could then be readily collected for food.

From roots to leaf tips, elderberry supplied earlier native people with a veritable medicine chest of valuable resources. The blue- or black-berried elder is the one more highly esteemed for foods and medicines. These diverse species are widespread across temperate regions and many different tribes shared common and similar uses of all plant parts, and some unique variations stand out.

Many different tribes of Algonquian Indians used elderberry bark infusions, (scraped upward) as an emetic or (scraped downward) as a purgative, in order to "cleanse" the body of infection. This was similarly practiced by the Carrier, Cherokee, and Gitskan Indians, as well as the Iroquois and Ojibwa Indians who also used bark and root preparations as emetics. Iroquois healers also used bark and ripe berries as analgesics, anti-inflammatories, to treat fevers (febrifuge), and as a vulnerary. The floral tea was used as a laxative. Onondaga healers used the elder bark as an emetic/antidote for treating those poisoned by water hemlock.

The Cherokee Indians used elderberry teas and strong infusions for treating rheumatism. They used elderberry floral tea as a diaphoretic and other plant parts in decoctions and salves for skin problems, dropsy, infection, and fever. The Chickasaw used branch infusions applied to the forehead for headaches and over bruises and wounds to draw out abscesses and relieve pain from infections. Choctaw medicine people poulticed salted pounded leaves onto the temple to treat headache and drank seed and root infusions for liver ailments and digestive complaints. Creek Indian healers stirred pounded roots in hot water and poulticed them on swollen breasts for relief.

In the regions of Delaware, the Lenape Indians used elder flower decoctions for children's colic, and leaves and stems were brewed for blood disorders and jaundice. They poulticed bark scrapings onto sores, swellings and wounds. The Lenape (often called the Delaware) were noted healers and often taught other tribes their plant wisdom. North of them, the Mohegan Indians used elderberries in decoctions for jaundice and liver complaints. Farther south the Houma used pounded roots as anti-inflammatories and fermented berries to make a therapeutic tonic. The pounded bark was used as an analgesic to relieve pain.

The Rappahanocks used a fermented elderberry wine for neuritis and rheumatism and a bark infusion to treat various sores and swelling. Seminole healers used elderberry root bark decoctions as emetics and purgatives, for stomachache, and to treat arthritis and rheumatism.

Among the Great Lakes healers, the Menominee Indians used dried elder flowers in infusions for fever, and like the Meskwaki Indians, they used the inner bark of young stalks as a purgative. Bark infusions were also used as diuretics, expectorants, and for difficult childbirth. Elderberry bark was also used as a fly and insect repellent. As insecticides, many tribes strewed crumbled dried elderberry leaves within their lodges. The Micmac Indians used bark, berries, and flowers as emetics, purgatives, and soporifics. The Penobscot Indians used the elderberry bark to poultice tumors and for cancer treatments.

Native peoples in the Caribbean use their seasonal elderberry resources in equally diverse ways (according to James Duke). The Dominican Caribs use leaf decoctions for cold and fever, and the Dominicans use a floral infusion in ocular catarrh ("ceguera") and to poultice around the eyes. The Haitians compress the leaves on the head for headache and migraine, and they use diaphoretic flower infusions for chest colds, fever, and sore throat. Haitians also use a leaf infusion for measles, scarlet fever and smallpox.

Beyond our immediate focus, the Peruvian Elder, *Sambucus peruviana*, in northwest South America with black berries, was an important food and medicine plant for native people in the region, who also fashioned musical devices and ceremonial objects and respected the native shrubs for many other uses. The Canary Islands Elder, *Sambucus palmensis*, and the Madeira Elder, *Sambucus lanceolata*, each produce black berries that were esteemed native foods, as well as flowers, roots, and leaves that were each used for health needs.

ELDERBERRY TOXICITY: Elderberry leaves, twigs, branches, seeds and roots contain a cyanide-inducing glycoside (a glycoside which gives rise to cyanide as the metabolism processes it). Ingesting any of these parts in sufficient quantity can cause a toxic build up of cyanide in the body. Due to the possibility of cyanide poisoning, children should be discouraged from making whistles, slingshots, or other toys from elderberry wood. In addition, "herbal teas" made with elderberry leaves (which contain cyanogenic glycosides) should be treated with high caution. However, the blossoms and ripe berries (pulp and skin) are safe to eat after proper processing.

ELDERBERRY REFLECTIONS: We remember various biblical relationships to the elderberry, the arsenic-poisoned elderberry wine in the classic *Arsenic and Old Lace*, and the most powerful magic wand in the famous Harry Potter series, which was made of elderberry wood; yet how many of us grew up tasting tart, sweet elderberry syrup (and vinegars) to calm a cough and sore throat or enjoyed elderberry syrup on our waffles? Many of our elders made elderflower wines and champagnes, as well as elderberry wine and cordials, as I have done in my earlier days.

One of my favorite achievements was an “elderblow champagne” that I used to make in late spring from the fresh blossoms that actually effervesced!

ELDERBERRY POTENTIALS: The wind through mature winter elderberry shrubs whistles around more wild potentials, including the rubbery brown (often dried up) growths of the jelly fungus, *Auricularia auricula-judae*, a type of Tree Ears, that was eaten by many tribal peoples and harvested year round – fresh or dried. This particular jelly fungus is known to be beneficial for heart and lungs. Did native people realize this when they added it to soups and stews? This dark jelly fungus is easily reconstituted in hot broth, and many of us enjoy it as a delicious “mushroom” now available in gourmet markets and highly esteemed for its health benefits as well as its unique texture.

ELDERBERRY FUTURES: Perhaps we will begin to cultivate our many valuable species of wild elderberries and create elderberry groves, orchards, and elderberry farms full of future health potentials. Inspired by the Chinese and Europeans who cultivated the European Elderberry (recognized in Europe for its health-promoting properties for many generations), we may see the flowering of new ideas and elderberry products for eye/vision nutrients and antioxidants to forestall human aging. Elderberry potentials are ripe and growing stronger especially in treating colds, influenza, and respiratory ailments. American Indians may now be planning regional elderberry farms to supply the growing health food world with elderberry products to feed the apparent need for more antioxidants, anti-inflammatories, and nourishing elderberry eye care products, along with choice elderberry pemmican, vinegars, juices, syrups, and myriad food, medicinal, basketry, and musical accessories. Elderberry continues to be a unique renewable resource!



E. Barrie Kavasch

E. Barrie Kavasch is an author and botanical illustrator who has published more than 25 books on American Indian cultures and natural history, including five books of poetry. Her first book, *Native Harvests: Foods & Botanicals of the American Indians*, published by Random House more than 35 years ago, was hailed as “the most comprehensive book on the foods of the American Indians,” by the *New York Times*. Her beautifully illustrated book *American Indian Healing Arts: Herbs, Rituals, and Remedies for Every Season of Life*, has been widely acclaimed and translated into foreign editions, as has *The Medicine Wheel Garden: Creating Sacred Space for Healing, Celebration, and Tranquility*. She has taught and lectured extensively nationally and received many

awards for recognition including The Herb Society of America’s prestigious Gertrude B. Foster Award for Excellence in Herbal Literature. Barrie is a 16th generation direct descendant of Pocahontas. She also has distant Cherokee, Creek, and some Choctaw ancestry along with diverse European ancestry. Herbal research helps to weave all of her bloodlines together. Barrie is an herbalist and Reiki Master currently developing a therapeutic line of essential oil formulas to treat a range of common health concerns. As a cancer survivor, Barrie has studied various aspects of healing for many years.

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Colonial Uses of Elderberry

BY SANDY HELSEL

Archaeological evidence suggests that the elder tree has been in use around the world from ancient times forward. The ancients, Pliny and Hippocrates wrote about it, as did the British Herbalist John Evelyn in the seventeenth century. In 1644, Dr. Martin Blockwich wrote a 230-page book entitled *The Anatomie of the Elder* which described the medicinal uses of the tree. In 1675, in Worlidge's book on husbandry, the elder was listed as a tree that should be planted in hedges for the purpose of enclosing land (Grieve, 1971). A cookbook by Elizabeth Raffald was published in 1769 and in it were recipes for Elder Rob, Elder Shoots and Buds, Distilled Elderflower Water, Elderflower Vinegar, and Elder Raisin Wine. There are folk stories from Romania, Germany, and Russia regarding witches and spirits inhabiting the plant (Folkard, 1884 & Grieve, 1971). It seems clear that Europeans valued their elder trees.

When, in the 1600s, Europeans began to immigrate to the New World, they took with them materials and seeds and items that had been of use in the mother country, and among those we can presume, was the European Elder, *Sambucus nigra*. The settlers were probably pleased to find several species of elder that were native to Canada and America and that these were already in use by the indigenous people of the New World. Roger Williams wrote that he found Indians enriching their cornpone with strawberries and elderberries (Stavely & Fitzgerald, 2004). Native Americans were using elderberries as medicine, basketry dye, arrow shafts, blow-guns, flutes, and as fire starters (Barrows, 1900).



Use of the elder shrub by both the colonists and the natives took three forms: cosmetic, culinary, and medicinal. Cosmetically, distilled elderflower water was thought to soften, tone and restore the skin, bleach freckles and soothe sunburn. *Culpeper's Complete Herbal* said that the berries could be used to effectively dye the hair.

Supposed evidence of the elder's culinary use was discovered at an archaeological excavation at the Peyton-Randolph House in Williamsburg, VA. After finding that elder had been on the site, this comment was made: "Elderberry bushes take a number of years to produce berries and their presence on a site.... usually can be attributed to cultural activity. What use the elderberry was put to is unknown, but it could have served as food, drink, or a food preservative" (Edwards, p. 286). Harvard's Arnold Arboretum included both *S. canadensis* and *S. nigra* in its list of Colonial Garden Plants and concluded that the berries were used for making wine and pies (Wyman, 1951). Martha Washington mentions elderberry jam and wine in the cookbook that she passed to her daughter and which was published generations later. In *The Art of Cookery*, a book certainly used by colonial cooks, Hannah Glasse included elderberry wine and also pickling "elder shoots in imitation of bamboo" (p. 270). William Woys Weaver wrote the preface to the revised edition of *A Quaker Woman's Cookbook*, and although it was first published in 1821, Weaver says that the book spans foodways of 150 years, from 1700-1850, and it has recipes entitled Elderberry Jam for Colds, Elderberry Ointment, and Elderberry Wine.



We assume that the colonists used these recipes and ate elderberries, but archaeological excavations of a Newport, RI privy turned up real evidence—2,508 elderberry seeds were found therein (Beaudry, 2010)!

Elderberry's medicinal uses should be prefaced by an understanding of the way medicine was practiced in colonial times. A sick or injured person of the gentry or wealthy class would probably seek the services of a physician. Apothecaries often were also physicians who had studied medicine. These practitioners may have used bloodletting techniques and/or the use of minerals such as gold, mercury, sulfur, and silver, which we now know was, in most cases, counterproductive. People of the "middling sorts" and the poor, however, would have been treated by the women of the house. Women served as "doctor, nurse and pharmacist for their family" (Colonial Medicine, p. 5), and most of them were trained by their mothers and grandmothers. They made use of the herbs that could be gathered in the wild, or raised in kitchen gardens, or purchased at town markets, and then they used these herbs in recipes handed down from relatives and neighbors (Colonial Medicine, 1992). It was in these "concoctions" that elderberry was prized. Colonial women, for instance, would make a rob (inspissated juice, reduced to a paste-like consistency and kept covered in small pots) of elderberry juice and sugar and keep it on hand. A spoonful in a warm glass of water would be taken for coughs and flu-like symptoms.

If the colonist could read and needed medical advice, or a way to repel insects or make a cosmetic, he or she would reach for a copy of Sauer's or Culpeper's herbal. These books were used by housewives, cooks and gardeners for recipes and cures of the times. Both books included extensive folk remedies using the elder. It is interesting to note that it was thought unwise to eat uncooked salad, so recipes listed as "salads" that often called for elder shoots fixed with spinach or eaten alone were used as medicinal purgatives, and elderberry vinegars were thought to "disperse tough, thick phlegm" (Weaver, 2001, p. 130).

The sixteenth-century doctor, Michael Ettmuller, said that the elder was "the medicine chest of the country people" (Grieve, p. 269). In *A Modern Herbal*, Maude Grieve averred what Evelyn wrote in praise of the elder, saying that "if the medicinal properties of its leaves, bark, and berries were fully known, I cannot tell what our countrymen could ail for which he might not fetch a remedy from every hedge, either for sickness or wounds" (p. 269). Since every part of the tree was medicinal, nearly everything could be treated with it, from toothache to the plague. Grieve goes on to say that elder was used in nearly every form, "in rob and syrup, tincture, mixture, oil, spirit, water, liniment, extract, salt, conserve, vinegar, oxymel, sugar, decoction, bath, cataplasm and powder" (p. 269). Among other things it was used to treat colic, venereal disease, bring down fevers, as a painkiller, as an emetic, as a laxative, and to reduce swellings (Elderberry, 2006).

A loose definition of an herb is any useful plant. To say that the elder tree was useful was a gross understatement. Our colonial ancestors were surely more attractive, better fed and healthier because of the elderberry!



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Sandy Helsel

Sandy Helsel is a retired history teacher and real estate salesperson. She is an Herb Society of America member, Colonial Triangle of Virginia Unit, and has been interested in gardening in general and herbs in particular for 20 years, especially after several tours of British and Irish gardens. Articles on her garden in Williamsburg, VA have been published in *Better Homes and Gardens* and *Virginia Living* magazines and the garden was open for Virginia Garden Week in 2009 and for a Colonial Williamsburg Garden Symposium pre-tour the same year.

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In addition to being a highly respected research scientist, Dr. James Duke enjoys writing poems and playing the guitar. The poems and lyrics are set to well-known melodies. "Elders for the Elders" is one of his many works which he submitted for our enjoyment.

Elders for the Elders

Elderberry, like black cherry, it's extraordinary, very good for you, and tastes good too.

My elders kinda think, that an elderberry drink, might even help to stop the avian flu.
Can an elderberry tune, strengthen your immune, if you sing as you sip that brew divine?
Good medicine for sure, the elderberry cure, as a jam or juice or wine, it works out fine.

Elderberry's best, for the herbal med'cine chest, and might frighten the avian flu to flight.

It has a killer factor for *Helicobacter*, untweaks your twisted tummy 'til it's right.
Like an elderberry pill, I really think it will, cool the tummy and tame an ulcer down.
And elder flower brew, is a good cosmetic too, and whitens skin that's turning brown.

I remember from my scouthood, the flowers taste real good, when baked into pancakes,
Round and brown.

Elder syrup from last year, beats that elder beer, to top off that precious pancake, best around.
What a breakfast, what a treat, kinda hard to beat, and you don't really have to have no meat.
Elder syrup tops the cake, best cake that you can make, almost too beautiful to eat.

- JAMES DUKE, ca 2009

Uses of Elderberry

DURING THE CIVIL WAR ERA

BY ANN GORRELL



Imagine going to a doctor, drugstore or even a hospital today and finding that there are no medicines to ease your pain or make you well, such as it was in the mid-19th century, during the War Between the States. Both the North and the South experienced extreme shortages of medicines and medical supplies not only due to blockades preventing these materials from reaching destinations, but also because of the vast numbers of those wounded and ill from diseases.

Because ready-made medicines were not available, useful plants that were available became the answer. Researching, identifying, and providing instructions for using those plants that were available in the countryside

became a priority not only for the military but also for the civilian population. As an example, Dr. Francis Peyre Porcher (1863), Surgeon, P.A.C.S., was temporarily released from service to prepare and publish his “Resources of the Southern Fields and Forests, Medical, Economical, and Agricultural, Being also a Medical Botany of the Confederate States; With Practical Information on the Useful Properties of the Trees, Plants, and Shrubs.” That title alone may reflect the seriousness of the situation.

Elderberry (*Sambucus canadensis*) was just one of the useful plants identified. Because it was found growing almost everywhere, elder leaves, bark, flowers, and berries could be used fresh. Dr. Porcher was quite honest in describing the leaves as being “fetid, emetic and a drastic purgative” (p. 408). Even other sources found the leaves made into a poultice were useful on sores and cuts to stop the bleeding, on bruises, and as a tea used to wash external skin eruptions (Long, 2002).

“In the country, fresh elderberry leaves were laid near the head of a bed-ridden person to keep away flies” (Jacobs, p.161). Maggots from flies appeared to be quite a problem in the wounds of soldiers. Doctors first started using the cooled infusion of any part of the elderberry, applied with a cloth, to expel the maggots (Confederate States of America, 1863); they also made an ointment for the same purpose (Porcher, 1863). However, regardless of how gross it sounds, they later discovered that the maggots actually ate away the dead flesh, allowing the healthy tissue to heal (Fowler, 1988).



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The flowers were infused to “provide an eye wash for eye infections” (Long, p. 41). This infusion could also be drunk as a stimulant and was sudorific, causing the patient to sweat and thus breaking the fever. In the form of an ointment, it could be used as a discutient (Porcher, 1863). The infusion of flowers was also used to treat constipation.

Using the inner bark, Dr. Porcher says, "the purgation which results from its employment is sometimes, however, too severe" (p. 408). However, he says it acts well in dropsy (edema) and as an alternative in various chronic diseases (Porcher, 1863). The *United States Medical and Surgical Journal* gives the recipe for an ointment using the inner bark of *S. nigra* (the European species which was used interchangeably) as one of the ingredients to cure "camp itch." You can imagine what that is. "The patient was to wash with soap and water and then rub the ointment on the affected parts until it was all absorbed. This was to be done twice a day. The patient with the worst form of the disease (should) wear the same under-clothing one week, as the clothes necessarily will absorb the ointment, thereby saving the patient the trouble of applying it more frequently" (Fowler, p. 72).

Dr. Benjamin H. Stratton of Mount Holly, N.J., used elderberry syrup "in the treatment of gout, chronic rheumatism, eruptive and syphilitic affections...combined with iodide of potassium, with marked benefit" (Worthington, p. 244).

The beautiful black/purplish berries have long been made into pies, jams, jellies, sauces, syrups and wine, and watching the birds devour the berries gives an additional clue as to their appeal.

Even ink was scarce during the Civil War. So that individuals could continue with personal correspondence, recipes for making ink were published in newspapers. For example, one recipe read, "They just pick the berries off the stem—bruised and then boiled them enough to strain all the juice out thoroughly—then put it on and boiled it a while longer. The same directions answer for blacking" (Mitchell, p. 18).

It was indeed a time for medical experimentation during the Civil War. Some plant remedies worked and some didn't. The elderberry growing all over the countryside did leave a small mark in the history of the War Between the States.

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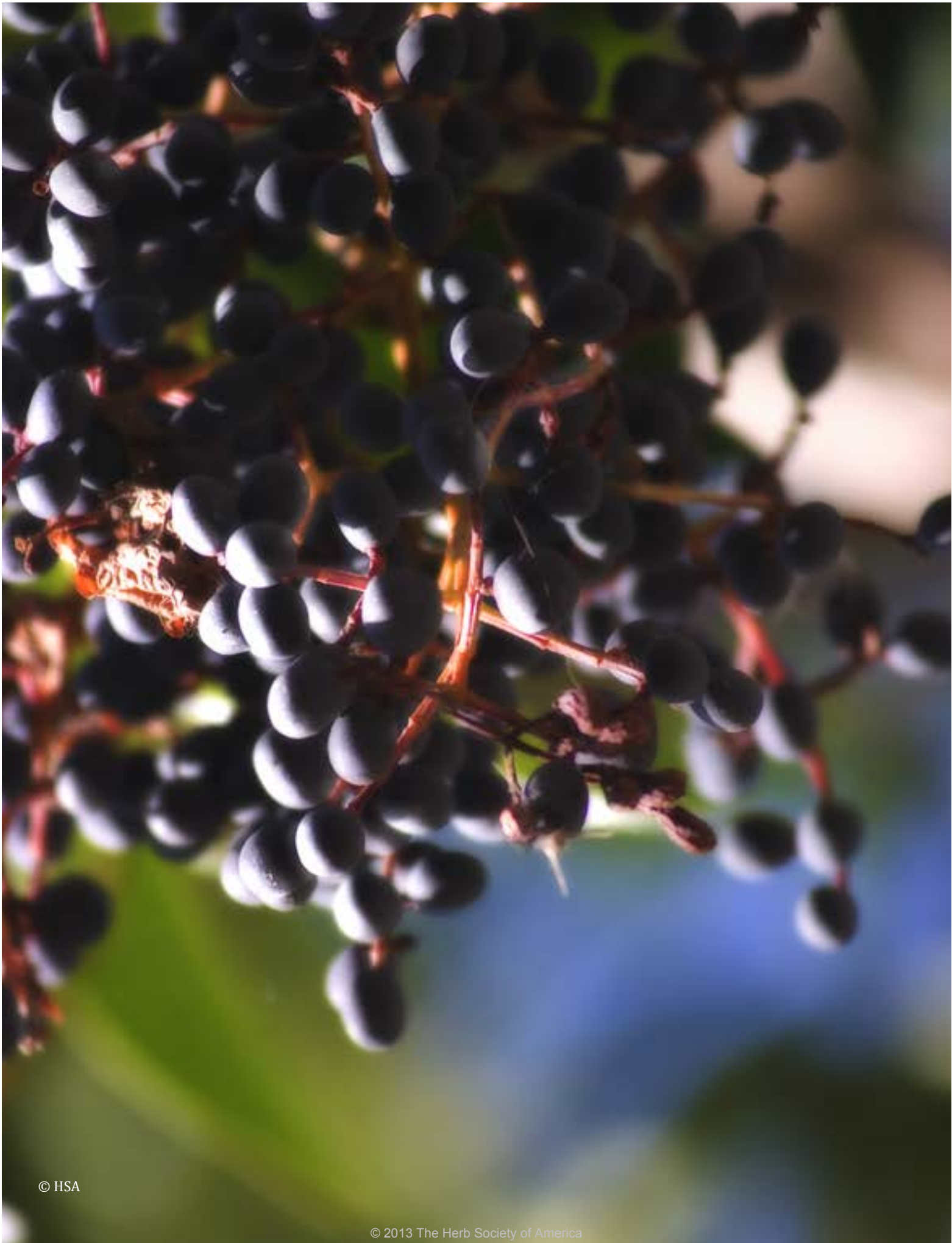
Ann Gorrell

Ann Gorrell is a native Virginian, Master Gardener and herb enthusiast. After retiring from the Federal Service, she hung up her business suits, and put on her garden overalls to continue to cultivate her passion—herbs. A popular local speaker, she enjoys sharing her knowledge and love of herbs with fun lectures and workshops. She is also a docent, gardener and flower arranger at Kenmore Plantation and Gardens in Fredericksburg. Ann is a member of the Virginia Commonwealth Unit of The Herb Society of America.



S. cerulea © HSA







*B*otanical, Horticultural &
Ecological Aspects

The Botany & Horticulture of Elderberry

BY DENI BOWN



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CLASSIFICATION

Elders belong to the genus *Sambucus* and for centuries were placed in the honeysuckle family, Caprifoliaceae. As most keen gardeners are aware, botanical science has made great advances in the last 25 years through the development of a system of classification known as phylogeny, which is based on DNA and chemical characters as well as on more traditional observations of appearance and details. While this gives botanists a much greater understanding of the evolution of flowering plants and their relationships, gardeners and others with a strong interest may notice only that there is yet another name change to take on board!

Before we go any further, it must be noted that the genus *Sambucus* has been found to form a close group with *Viburnum* and *Adoxa*. This group is now considered as separate from Caprifoliaceae and may be better placed in the moschatel family, Adoxaceae. Recent publications in botany and horticulture are therefore more likely to give Adoxaceae as the family to which *Sambucus* belongs, rather than Caprifoliaceae. The characters that distinguish the Adoxaceae are 1) a partially inferior ovary, 2) short style, 3) sessile or subsessile stigma, 4) corolla without nectary at the base, 5) small reticulate pollen grains, and 6) large chromosomes. Another distinctive feature is that the stamens are divided to the base and may therefore appear more numerous than they are.

Fortunately, no doubts have been raised about the validity of the genus *Sambucus*. The name was bestowed upon this group of species by Carolus Linnaeus (1707-78) and is derived from the Greek *sambuke*, a “musical pipe”, referring to the stems which were easily hollowed out to make a simple wind instrument. However, when we move on to consider the species, there has to date been little agreement, with the number given as anything from 5 to 30. The reason for these differences of opinion is that elders have a wide distribution and are variable, with the result that there are many geographical variants. Taxonomists tend by nature to be either “lumpers” or “splitters”. The former would probably put the number of species in the genus at five, grouping variants together under the dominant species, whereas the latter might claim as many as 25 to 30, or at least argue for the recognition of certain variants as subspecies and/or varieties. There are two main species complexes: black-fruited *S. nigra* and red-fruited *S. racemosa*. The other three are not complexes but “oddballs” that do not belong to the two main ones. These include: *S. melanocarpa* which could be described as a black-fruited form of the red-fruited *S. racemosa*; a couple of Australasian elders with white or yellow berries; and lastly a small group of non-woody elders with an herbaceous, rather than shrubby habit. In more detail, they can be described as:

- **Black-fruited complex**, typified by *S. nigra* L. (European Elder/Elderberry) which occurs in warmer parts of Europe and western Asia and also in both North and South America. It is characterized by having flat to convex clusters of flowers, black to blue-black or glaucous berries that appear blue, and the habit of a medium to large shrub or small, often multi-stemmed tree. Taxa in this complex, which have been given species or subspecies status by some botanists include: *S. australis* Cham. & Schtdl. (Southern Elder), temperate eastern South America; *S. canadensis* L. syn. *S. nigra* L. subsp. *canadensis* (L.) Bolli (American Elder/Elderberry), eastern North America; *S. cerulea* Raf. (often incorrectly spelled *caerulea*, *coerulea*) syn. *S. nigra* L. subsp. *cerulea* (Raf.) Bolli (Blue Elder/Elderberry), western North America from British Columbia to Arizona and California; *S. javanica* Reinw. (Chinese Elder, Sweet Elder), southeastern Asia; *S. lanceolata* Banks ex Lowe. syn. *S. maderensis* Lowe; *S. nigra* var. *lanceolata* (R. Br.) Lowe (Madeira Elder), Madeira, off northwest coast of Africa; *S. mexicana* Tapiro (Mexican Elder), Sonoran Desert (southwest United States and central Mexico); *S. neomexicana* Wootton syn. *S.*

cerulea Raf. var. *neomexicana* Woot. (New Mexico Elder), New Mexico; *S. palmensis* Link. (Canary Islands Elder, Sauco), Canary Islands, off northwest coast of Africa; *S. peruviana* Kunth. (Peruvian Elder, Sauco, Rayan), northwest South America; *S. simpsonii* Rehder. syn. *S. canadensis* L. var. *laciniata* A. Gray (Florida Elder), Florida; and *S. velutina* Durand & Hilg. syn. *S. cerulea* Raf. var. *velutina* (Durand & Hilg.) Schwerin (Velvet Elder), southwest North America (central California and western Nevada).

- **Red-fruited complex**, headed by *S. racemosa* L. (Red Elder) which occurs in colder regions of the northern hemisphere. This mostly has a smaller and shrubbier habit than *S. nigra* complex and has rounded to pyramidal clusters of flowers, followed by bright red berries. This complex includes: *S. callicarpa* Greene (Pacific Coast Red Elder, Red Coast Elder), coastal regions of western North America; *S. chinensis* Lindley (Chinese Red Elder), mountainous regions of eastern Asia; *S. latipinna* Nakai (Korean Red Elder), Korea and southeastern Siberia; *S. microbotrys* Rydb. syn. *S. racemosa* L. subsp. *pubens* Michx. House var. *microbotrys* (Rydb.) Kearney & Peebles (Mountain Red Elder), mountainous regions of southwest North America; *S. pubens* Michaux (American Red Elder, Stinking Elder), northeastern North America; *S. sieboldiana* (Miq.) Blume ex Graebn. syn. *S. racemosa* L. subsp. *sieboldiana* (Miq.) H. Hara (Japanese Red Elder), Japan and Korea; *S. tigranii* Troitsky (Caucasus Red Elder), endemic to Armenia, southwest Asia; and *S. williamsii* Hance (North China Red Elder), northeastern Asia.
- *S. melanocarpa* A. Gray syn. *S. racemosa* L. var. *melanocarpa* (A. Gray) McMinn (Blackberry Elder, Western Elder) from the Rocky Mountains is a small shrub with characteristics of both black and red elders, having black fruits like *S. nigra* but flowers in rounded clusters like *S. racemosa*.
- **Australasian Elders** which are characterized by rounded clusters of flowers and white to yellow berries. These include *S. australasica* (Lindl.) Fritsch (Yellow Elder, Native Elderberry), an evergreen species from rainforest edges in eastern Australia and possibly into New Guinea, and *S. gaudichaudiana* DC. (Australian Elder, White Elder) from cooler forests and coastal scrub in southeastern Australia and Tasmania. The latter is variously described as evergreen or deciduous with annual stems. If the latter description is correct, it might belong to the next group.
- **Dwarf Elders**, a distinctive group of rhizomatous perennial herbaceous species that have flowers in flat terminal clusters and black or red berries. Best-known are *S. ebulus* L. (Dwarf Elder, Danewort) a black-fruited species from central and southern Europe, northwest Africa and southwest Asia which is naturalized in parts of northeast North America, and *S. adnata* Wall ex DC syn. *S. schweriniana* Rehder. (Asian Dwarf Elder, East Himalayan Elder) from eastern Asia and the Himalaya, which bears red berries. Also probably in this group is a species described as *S. wightiana* Wall. Ex Wight & Arn., from Afghanistan and Himalayan regions of India and Pakistan, in which the fruits turn orange-red before ripening black.

From this brief overview it can be seen that although elders can be found in many different parts of the world, they do not differ greatly in appearance. In a nutshell, they are all shrubby and often suckering or sub-shrubby and rhizomatous with rather soft pithy stems, opposite, pinnate, usually malodorous, finely toothed leaves, flattish or rounded to conical clusters of tiny white to cream, often scented or unpleasant-smelling flowers and either black, blue-black, red, yellow or white berries. As a rule, if you live where there are elders and you know your local wild plants, you will recognize an elder from anywhere else in the world. The foliage and flowers are remarkably similar and so too are the berries if you allow for regional differences in habits, shapes, and colors.

ECOLOGY

Elders not only look quite similar worldwide but also tend to live in similar habitats, with a preference for damp soils, often near water and bogs and on the moist margins of forests, woodland or scrub, preferring partial shade in warmer sunnier climes but tolerating higher light levels in more northerly regions where winters are longer and cloud cover is more prevalent. In general most elders prefer substrates with fairly high levels of nitrogen, favoring nutrient-rich valley bottoms, ravines, and seasonal watercourses such as wadis in northern Africa and arroyos in southwestern United States and northern Mexico. In addition, elders are often associated with the rich soils of human habitation; common elders were always associated with the privy (a toilet situated in a shed outside the house before the days of plumbing in the UK, i.e., until the 1950s) where they were either traditionally planted or, more likely, grew spontaneously. There are suitably damp rich soils at higher elevations and at sea level, so some elders have adapted to mountainous regions while others are denizens of coastal lowlands and arid areas where there are seepages below sandy or stony surfaces. Elevation may well be a factor in speciation or at least in variation, but the wide distribution of the genus as a whole is undoubtedly a result of being dispersed by birds, both resident and migratory, the latter spreading seeds far from the parent plant as they gorge on fruits before flying long distances.

Elders of all kinds are a rich source of food for wildlife. Numerous different insects – and hummingbirds in some regions – feed on the attractive flowers and showy berries, which are produced abundantly every year and are a magnet for birds and small mammals. Stem boring insects of various kinds also utilize the soft stems for larval food and egg-laying material. Even the dead wood of elder has its uses as the host of *Auricularia auricula-judae*, an edible and medicinal fungus that occurs worldwide and goes under the common name Judas' Ear, referring to the belief that Judas hanged himself on an elder tree. Another name is jelly ear fungus, describing its ear-like shape and soft rubbery texture, while herbalists refer to it as “fungus sambuca” because of its association with the genus *Sambucus*.

CHEMISTRY

Another feature shared by all elders is their toxicity. However, this should not put us off growing and using these remarkably beneficial plants which have served human beings as food and medicine for millenia. As the Swiss physician and alchemist Paracelsus wrote in the 15th century: “All substances are poisons; there is none which is not a poison. The right dose differentiates a poison and a remedy.” In poisons databases elders are classed at toxicity level 3, the least hazardous category of four classes, of which 1a (extremely hazardous) and 1b (highly hazardous) are the most poisonous, followed by 2 (moderately hazardous). This means that they are lightly hazardous and should be respected as such. And it is worth remembering that there are no hard and fast rules about toxic plants. Plants of the same species can differ in toxicity according to age, growing conditions, season, and genotype, and individual susceptibilities vary greatly, with children, pregnant women and the elderly or immune-compromised being at greater risk. In addition, small children have strange tastes and like to experiment, often consuming very unpleasant-tasting substances that amaze their parents but are all too familiar to staff in poison treatment centers.

All parts, including roots and especially unripe or raw ripe fruits are poisonous, containing cell toxins and gastric irritants. The flowers, minus their tiny green stalks, appear to be the least toxic part and are used fresh as the basis for herb teas (tisanes), juices, cordials, and mildly alcoholic “elderflower champagne.” To be on the safe side, fruits and fruit juice should be heated to the boiling point or cooked before consumption and care should be taken when preparing both flowers and fruits that all stalks are removed; they are not only toxic but taste unpleasant.



Cases of poisoning are usually caused by eating too many raw berries or as a result of putting stems in the mouth. Poisoning in livestock is more often from consumption of the foliage. The main toxins in elders are sambunigrin and ebuloside. The former is a cyanogenic glycoside; in the digestive system it releases cyanide which in excess causes acute gastrointestinal discomfort with diarrhea, vomiting, and neurological symptoms. Ebuloside is an ester iridoid glucoside and this compound, together with others, such as cardiac glucosides, appear to be more toxic than sambunigrin, causing burning of the throat, nausea, vomiting, bloody diarrhea, headache, dizziness, and visual and cardiac disturbances.

In addition to poisoning caused by ingestion, elders can cause contact dermatitis in susceptible individuals so gardeners should be aware of this when pruning. The name elder is derived from an Anglo-Saxon word, *aeld*, meaning "to kindle" as the pith-filled stems are easily hollowed out to make a pipe for blowing embers into flame, or a simple flute-like musical instrument. The fact that this has been done throughout human history suggests that it poses little risk when stems are presumably dried for these purposes. It is worth being cautious though when placing fresh stems in the mouth, as children are likely to do if they make whistles or pop guns when playing outdoors.

CULTIVATION

There are five main species that are most likely to be of interest to gardeners, or at least to herb gardeners. They are *S. canadensis*, *S. cerulea*, *S. ebulus*, *S. nigra*, and *S. racemosa*. Again it might be possible to generalize but at this point it is best to consider each one separately.

S. canadensis (American Elder/Elderberry) is very similar in appearance to the common European Elder, *S. nigra* and is regarded by some botanists as a regional variant, *S. nigra* subsp. *canadensis*. It is a multi-stemmed, fast-growing, shrubby tree, 5 to 15 ft high, with arching branches, brittle, pithy stems and corky bark. The pinnate, unpleasant-smelling, leaves have 5 to 11 (usually 7) lanceolate leaflets that have toothed margins and turn yellow-green in the fall. Tiny white flowers with a musty fragrance are borne in flat clusters in July, followed by purple-black berries which ripen in September. The flowers attract bees, flies and beetles of many kinds, and about 50 species of birds are known to feed on the fruits, but for human consumption they are unpleasant-tasting and toxic when unripe or raw.

American Elder/Elderberry is a very hardy and adaptable plant that can be grown in almost any zone from 3 to 9. It transplants easily and tolerates most soils and conditions, including bogs and city pollution, in sun or part shade. Exceptions are hot dry places and maritime environments subject to salt spray. The deciding factor in whether or where to plant it is its suckering habit. Unless controlled it will form thickets and crowd out its neighbors. The best place for it is therefore a native plant garden or along a road, fence line, or wet area where you are unlikely to plant more choice ornamentals – though having said this, there are some selected forms with attractive leaves and larger flower heads and berries that might deserve a better position.

Management consists of cutting out dead or weak stems or coppicing (cutting back) the whole plant in early spring. Propagation is easy by dividing suckers or by ripe cuttings in winter or greenwood cuttings in spring. It can also be grown from seeds sown, when ripe, in a cold frame. They should germinate the following spring.

Pests and diseases are not usually a problem but in adverse conditions American Elder/Elderberry may be affected by powdery mildew, leaf spot, canker, aphids and spider mites. Increasing humus, nutrient, and moisture levels should help. American Elder/Elderberry also attracts specific pests, such as elder borer moth, elderberry longhorn beetle and elderberry sawfly, and both mason and carpenter bees may collect the pith for their nests, but the keen gardener may regard these as of more interest than detriment.

S. cerulea (Blue Elder/Elderberry, Blueberry Elder) is arguably the star of the genus as an ornamental. Again, some botanists regard it as a subspecies of common elder so it is often described as *S. nigra* subsp. *cerulea*. It is usually smaller and often slower growing than American Elder/Elderberry, reaching 5 to 10 ft, occasionally up to 30 ft, with pale stems and deciduous pinnate leaves with 5 to 9 lanceolate, toothed leaflets. Though multi-stemmed and producing suckers, it remains self-contained and does not form colonies. The flowers, which are white to cream and borne in flat-topped clusters in the spring, are certainly eye-catching but when fruiting in August and September, this elder is a show stopper. From a distance the berries look blue, as the name suggests, but on closer inspection it can be seen that they

are black, overlaid with a waxy grey-blue bloom which is easily smudged by being rubbed in the wind or when birds brush against them when feeding.

Blue Elder thrives in zones 4 to 8 and grows best in sunny positions and moist soils above 3000 feet. In the wild, where it is often associated with Serviceberry (*Amelanchier* spp.), Chokecherry (*Prunus virginiana*), Big Sagebrush (*Artemisia tridentata*), *Ribes* spp. and *Rosa* spp., it mostly occurs near streams and at forest margins. Propagation is by seeds sown in a cold frame when ripe, or stored at 41^oF (5^oC) and then given two months at 70-85^oF (21-30^oC) followed by three months at 41^oF (5^oC) after sowing. Cuttings are easy from half-ripe wood with a heel, taken in July or August, and from ripe wood from the current season's growth, also with a heel, in late fall. Branches may also be layered in the fall and severed from the parent plant when rooted the following summer. This process sometimes happens naturally to stems weighed down by snow or flood debris.

[*S. ebulus* \(European Dwarf Elder, Danewort\)](#) occurs throughout southern and central Europe, southwestern Asia and northwest Africa. It is naturalized in parts of northeast North America and in certain conditions can be invasive. In its natural habitat—damp hollows in regions with a Mediterranean climate—it is often confined by arid hillsides and has natural competitors to keep it in check. Like most elders, it is adaptable and thrives in various substrates, from light sandy soils to heavy clay, in sun or part shade and at a range of pH levels, taking exposed windy situations and atmospheric pollution in its stride. The only limiting factor seems to be coastal areas subject to salt spray.

Dwarf Elder differs in one major way from other elders in being a perennial herb with extensive, very robust underground rhizomes from which arise erect, usually unbranched and non-woody stems. It reaches 2 ft high on average and occasionally up to 6 ft, forming large colonies. The leaves are 6-12 inches long with 5-9 finely toothed leaflets and have the characteristic foetid smell. They turn red and burgundy as the stems die down for winter dormancy. Flowers are white, occasionally pink-tinged, with purple anthers and a fairly pleasant scent. They are borne in flat-topped terminal cymose corymbs 4-6 inches in diameter in July and August, and like most elder flowers are pollinated by flies, bees and beetles. Large clusters of glossy, sour, black berries ripen from August to September.

As a garden plant Dwarf Elder should perhaps be confined to a large container or treated in the same way as other invasive rhizomatous species. Though larger than mints and smaller than most bamboos, it can wreak similar havoc if not controlled.

[*S. nigra* \(European Elder/Elderberry\)](#) is a large deciduous shrub or small, often multi-stemmed tree with a wide distribution throughout Europe, western Asia, and northern Africa. It reaches 20-30 ft and has corky bark, soft pithy stems and pinnate leaves divided into 5-9 ovate toothed leaflets which have a strong unpleasant odor. The tiny creamy-white flowers appear in flattish clusters 4-8 inches across in early summer, followed by globose black berries about ¼ inch in diameter which ripen in the fall as the foliage turns various shades of yellow, cream and red-purple. It is a highly variable species, giving rise to a number of subspecies and varieties (regarded by some botanists as separate species) and to some very interesting ornamental cultivars. Given this range of ornamental elders, which can be used in the same ways for culinary and medicinal purposes, few gardeners choose to plant the common species unless in a native plant or wildlife garden or for cropping on a large scale.

Cultivation of common elder is straightforward. It copes with almost any soil and position in zones 5 to 9 as long as it has sufficient moisture and nutrients. A starved and drought-stricken elder is a sad sight, with small, drooping, yellowing leaves and puny clusters of flowers and fruits. Pruning should be carried out in winter in mild areas as plants come into leaf very early. Old stems can be cut back hard to regenerate a neglected shrub; otherwise remove die-back and badly placed stems. Hard pruning will produce larger leaves but fewer flowers and fruits. Propagation is also easy from seed sown in a cold frame when ripe in the fall, or by greenwood cuttings in early summer from non-flowering shoots and hardwood cuttings in winter. Ornamental cultivars should be propagated vegetatively as they are unlikely to come true from seed.

[*S. racemosa* \(Red Elder/Elderberry, Stinking Elder, Bunchberry\)](#) is, like European Elder, a large deciduous shrub or small tree with rugged corky bark, brittle, pith-filled, arching branches and a tendency to develop multiple main stems. It reaches 10-20 ft tall and its opposite, pinnate, foul-smelling leaves have 5-7 pointed, ovate to lanceolate, finely toothed

leaflets 2½-4 inches long. Creamy white flowers, again with an unpleasant smell, are borne abundantly in rounded or pyramidal clusters from April to July, followed by bright red berries which in some plants are so dense that they may become moldy if birds in the area are not numerous or have other preferred food sources. Though the fruits are generally considered less palatable than most black-fruited elders, they are used in similar ways, as are other parts of the plant.

Red Elder/Elderberry is circumpolar in distribution and occurs in colder parts of the northern hemisphere than common elder, extending into Siberia and northwestern Asia and over wide areas of the United States, through the Rockies as far south as California to the west and through the Appalachians in the east. Its preferred habitats are wetlands and moist woodlands from sea level to 9500 feet. Though shade tolerant, it favors sunny sites but is otherwise adaptable, thriving in most soils and at pH 5.0 to 8.0 as long as there is a good supply of water and nutrients.

For garden use there are fewer cultivars of Red Elder than of European Elder; however, because the fruits are more brightly colored it is often grown as an ornamental in its own right. Cultivation is the same as for European Elder, especially with regard to pruning in order to stimulate vigorous new growth, otherwise selectively remove old and badly placed stems.

Propagation is best from either hardwood cuttings in late fall or winter, or by softwood cuttings of non-flowering shoots in spring or summer. Layering is another option where there are suitably low flexible stems that can be bent to the ground and weighted with a mound of soil or stones. Red Elder can also be grown from seed. The easiest way is to sow fresh seed from ripe berries in a cold frame and let nature do the stratification. Otherwise if the seed ages and dries, you will need to break dormancy by subjecting it to 30-60 days at 68-86°F (20-30°C) followed by 90-150 days at 41°F (5°C) or short-cut the process by immersing the seed in sulfuric acid for 5-15 minutes before sowing and then sowing in warmth, keeping at 34-39°F (1-4°C) for 60 days.

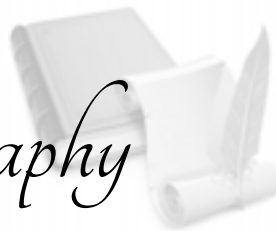
In addition to its value for wildlife, Red Elder can be used to stabilize banks of watercourses and prevent erosion on the sides of damp gullies where its dense root system provides firm anchorage.

Wherever you live, enjoy your encounters with the "medicine chest of the people," whether in the garden or on hikes in wild places where elder flowers and elderberries are so often a highlight of the changing seasons.

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Deni Bown is past Honorary President of The Herb Society of America (2004–2006), winner of the Gertrude B. Foster Award for Excellence in Herbal Literature (2002), and from 2003-2006 served on the Promising Plants Committee. She also chaired the Herb Society in the UK (1997-2000) and is author/photographer of the *HSA Encyclopedia of Herbs & Their Uses* and other books on herbs. She is currently Coordinator of the IITA-Leventis Forest Project in Ibadan, Nigeria, where she also works as a consultant in rainforest restoration, flora, and medicinal plants.

The Life Cycle of Elderberry

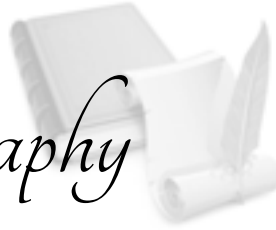
BY PAT KENNY

A Graphic Representation of Major Growth Stages of Elderberry

The juvenile plant (1) arises from the underground rhizome (2) of the mature parent stem (3), with leaves showing leaflets that can number 3, 5, 7, 9, or 11 (4). The dashed-scalloped outline shows the typical extent of the bloom canopy (composed of a cymose corymb inflorescence) and illustrates the primary and secondary branching peduncle and pedicels (5). Observe the diagrammatic rendering of buds and florets (6), with detailed views of the top (a) and side (b) of the florets showing 5 tepals (fused sepal and petal) and extrorse anthers (facing outward) on the stamens (from illustrators Alongi and Zomlefer). The pyramidal panicle of berries (drupes) (7) and cross section of a drupe showing stones (pyrenes) (8) follow, with the typical multi-stemmed elderberry thicket (9) concluding the growth stages.



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FOR ALL ILLUSTRATIONS CONTRIBUTED BY PAT KENNY

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Kenny, P. Personal photographs of elderberry.

Elderberry plant specimens: trunk, bark, leaves, stems, buds, blossoms, and fruits.

The Elderberry Flower

When researching the beautiful white-to-cream colored inflorescence associated with elderberry, it becomes obvious that there is uncertainty as to whether it is botanically a cyme or a corymb. The published references to flower form are split on these two names. By definition the cyme has a terminal flower in the center which blooms first, and the remaining flowers in the cluster follow. A corymb is just the reverse with the peripheral flowers blooming first. The confusion with elderberry is likely brought about by the fact that the individual flowers within the cluster bloom randomly. Therefore, the current thinking (with acknowledgement to Dr. Arthur Tucker) suggests that the flower is a cymose corymb which, depending on the species or cultivar, may have a panicle-like appearance. A panicle is a cluster of flowers on a branch. In this guide to elderberry you will find either cymose corymb or panicle used to describe the inflorescence.



Photo By Joyce Brobst

A Photographic Life Cycle of Elderberry

BY PAT KENNY

Elderberry is a rhizomatous, multi-stemmed shrub that can grow to become a thicket of small trees. The blooms are compound cymose corymbs which become pyramidal panicles with the weight of the fruit. The inflorescence is flat to round-topped with florets that open randomly: therefore, the berries also ripen randomly. The series of photographs depicts the elderberry life cycle.



Young elderberry as leaves push from their buds in spring.



Close-up view of a young plant in the spring.



Mature plant with prominent flower buds growing in a farmland hedgerow.



View of elderberry bark. The bark is furrowed and ridged and is known for having many lenticels. The stems have smooth white pith; however, the wood is reported to be very hard.



Close-up view of the pleasant smelling, creamy-white flower head in bud with a glimpse of the pink leaf peduncles (generally five) just behind the leaves.



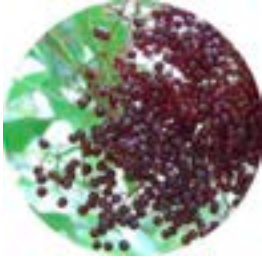
View of typical flower buds and open blossoms – they do not all open at the same time.



The blossom canopy which clearly shows the branching of five pink peduncles.



Note the individual florets on this close view of the blossom.



Face view of unripe berries.



Side view of unripe berries.



Mature tree with clusters of berries which do not all ripen at the same time, making it difficult, not wanting to waste any, at harvest time. It does, however, extend the season for man and for wildlife.



Harvested berries (they are tiny) showing multiple peduncles and stems which must be removed when processing the berries for use – unripe berries and stems are toxic. It is reported that freezing the berry clusters facilitates removing them from the fine stems. In addition, using the tines of a fork to rake off the berries on fresh or frozen clusters works well.



Side view of the beautiful structure and color of the peduncles and pedicels after the birds have had a feast!



View of an elderberry plant after the harvest season.



© HSA

Elderberry Cultivars

BY KIRTI MATHURA

Selection and breeding of American Elderberry (*Sambucus canadensis* L.) within North America is documented from the early 1900s. William W. Adams made two selections from native plants in New York in 1926 which became 'Adams 1' and 'Adams 2'. 'Ezyoff' came from Samuel H. Graham in New York in 1938, the result of unknown parentage. Breeding at the research station in Kentville, Nova Scotia produced several introductions developed from 'Adams 1' and 'Adams 2', including 'Johns' in 1954, and 'Kent', 'Nova', 'Scotia', and 'Victoria' in 1960. In 1964 the New York Agricultural Experiment Station provided 'York', a cross of 'Ezyoff' and 'Adams 2' (Byers and Thomas, 2005).

Cultivar evaluations have since occurred at the University of Illinois and the State Fruit Experiment Station at Southwest Missouri State University (SMSU-SFES). In 1997 the Elderberry Improvement Project developed as collaboration between Patrick Byers of SMSU-SFES, Andrew Thomas of the University of Missouri Southwest Research and Education Center (UMC-SWREC), and Alan Erb, previously of Kansas State University (KSU). The project has also received private sector support from John Brewer of Wyldeewood Cellars in Kansas. In 2000 Chad Finn of the USDA-ARS laboratory in Corvallis, Oregon began participation. Eventually Lincoln University, Eridu Farm, MU Agroforestry Center, North Carolina State University, and Agri-Food Canada also joined. The Project focuses on collection of native elderberry germplasm and evaluation of superior germplasm, as well as cultural studies (Byers and Thomas, 2005).

In 2003 the Elderberry Cultivar Evaluation was established to study ten selections and two commercial cultivars ('Adams 2' and 'Johns') in Mt. Vernon and Mountain Grove in southwest Missouri and Corvallis, Oregon (Byers and Thomas, 2005). A second planting occurred in 2008 with six selections and three commercial cultivars ('York', 'Wyldeewood', and 'Bob Gordon') in Mt. Vernon, Mountain Grove and Lincoln University (Byers, 2011).

As of 2010 the germplasm included 68 cultivars and native selections from Arkansas, Kansas, Missouri, North Carolina, Oklahoma, and Tennessee, as well as six selections of the European Elder (*S. nigra* L.). Evaluations recorded phenology, plant development, panicle size, berry size and quality, harvest date and yield, and disease and insects associated with the plants (Byers, 2011).

AMERICAN ELDERBERRY CULTIVARS

Several American Elderberry cultivars (*S. canadensis*) are available through a variety of growers. They are generally hardy in USDA Zones 3 to 8. Below some are listed alphabetically by cultivar name.

'Adams'

Vigorous plants develop 8 to 10 feet tall and wide. 'Adams' produces large clusters of large purplish-black fruit, which are late maturing. Sturdy branches hold the fruit upright. 'Johns' is a good pollination companion. Fruit is used for making jam, jelly, juice, and pie.

Some growers distinguish between 'Adams 1' and 'Adams 2', but there is not a great deal of difference. 'Adams 2' reliably performed in trials of the Elderberry Improvement Project, with slightly smaller fruit but greater overall harvest. Selected sports of 'Adams 2' have developed into other productive cultivars.



'Aurea'

This cultivar grows 8 to 12 feet in height and spread and is rounded in form. It offers deep yellow to yellow-green foliage, which is best maintained with full sun exposure. Fruit contrasts brilliantly with the leaves. 'Aurea' is more productive when grown with another cultivar to effect pollination.

'Bob Gordon'

This extremely high yielding, medium to large-fruited cultivar has pendulous cymose corymbs, helping to protect the harvest from birds. It produces best on first-year shoots. A wonderful selection for growing in the Midwest, this elderberry originated near Osceola, MO in 1999 and the cultivar was released in 2011.

'Eridu'

This selection was found at the Elderberry Life Nursery in the Missouri River region in 1968. Vigorous plants produce medium-sized sweet fruits.

'Gordon B'

This cultivar from Collins, Missouri, produced very high yields in trials of the Elderberry Improvement Project.

'Johns'

Vigorous, 8 to 12 feet tall, productive plants develop large fruit clusters slightly earlier than 'Adams' varieties. Although it is somewhat self-fertile, 'Adams' is a good pollinator for ensuring the best harvest from 'Johns'. It is a good ornamental for home gardens.

'Magnolia Hill'

This vigorous selection originated in North Carolina, collected by Roger Lenhardt. It is early to bloom and set fruit, generally a couple of weeks before other related cultivars.

'Marge'

This hybrid (a cross of *S. nigra* and *S. canadensis* var. *canadensis*) is prolific, with good resistance to eriophyid mites, leaf blight, and other diseases. It was named after Marge Millican from Wyldewood Cellars.

'Maxima'

A cultivar from Nova Scotia with huge flower clusters up to 18 inches across, atop attractively rosy-purple pedicels (flower stems).

'Nova'

Smaller plants, to 6 feet in height, have early maturing, larger and sweeter berries than the 'Adams' varieties. 'Nova' can self-pollinate, but is more productive with another elderberry such as 'York' growing in proximity. This compact plant does well even in southwest high desert areas. Often grown commercially, 'Nova' fruit is good for making pies, jam, jelly, juice, and wine.

'NY21'

These moderately vigorous plants produce large clusters and berries.

'Scotia'

'Scotia' plants are comparatively small, with sweet fruit. This cultivar was developed from 'Adams 2'.

'Victoria'

This moderately vigorous cultivar has medium-sized clusters and berries.



Photo by Rena & Sam Barnett *S. nigra* 'Albopunctata'
Chanticleer, PA

'Votra'

This high yielding selection was discovered by Doris Votra in Wheatland, Missouri.

'Wyldeewood'

This cultivar produced high yields in trials of the Elderberry Improvement Project and became the program's first release in 2010. It has a large, vigorous upright habit. Fruits mature late and are usually larger than 'Adams 2', held upright on the branches. It is generally most productive on first-year growth. Jack Millican collected this elderberry near Eufaula, Oklahoma, in 1995. Early in the evaluations this was listed as 'Brush Hill 1' and 'Wyldeewood 1'. 'Wyldeewood' is a very good selection for growing in the Midwest region.

'York'

This is a 6 to 8 feet tall, vigorous, sometimes late maturing cultivar producing large clusters of very large sweet berries. The creamy-white flower heads of 'York' can self-pollinate, but plants are typically more productive with a pollinator such as 'Nova' or other cultivars. Fruits are delicious in pies, jelly, or wine. 'York' provides colorful yellow fall foliage. It is quite hardy and also does well in southwest high desert areas. 'York' comes from a cross between 'Adams 2' and 'Ezyoff'.

Other cultivars that might be available are 'Competition 5', 'Golden', 'Gordon E', 'Harris 4', 'Highway O', 'Kent', 'Netzer', and 'Walleye'.



Photo by Rena & Sam Barnett *S. racemosa*
'Sutherland Gold', Chanticleer, PA

EUROPEAN ELDERBERRY CULTIVARS

Several cultivars of European Elderberry (*S. nigra* L.) are available. These are often larger in stature than the American elderberries, perhaps reaching up to 20 feet in height, and generally bloom approximately a month earlier in the season. Some have been bred for great ornamental value in addition to fruit quality. European cultivars tend to be less hardy (USDA Zones 4 to 8) than American elderberry selections, but can often re-sprout from the ground in Zone 3.

'Allesso'

This cultivar originated in Denmark and is grown commercially in some European countries. It grows to 10 feet tall with dark green foliage, producing large flower clusters and bountiful fruit.

Black Beauty™ (*S. nigra* 'Gerda')

This selection provides stunning blackish-purple foliage and large pink flower clusters that offer a delightful lemon scent, followed by dark purple berries. Plants develop to 6 to 10 feet tall and wide, with fullness greatly enhanced by pruning the first few years. This selection is best suited for cooler climates rather than hot dry gardens where leaf spotting can occur with insufficient water. Black Beauty™ was bred at the East Malling Research Station in England.

Black Lace™ (*S. nigra* 'Eva')

The deeply divided blackish-purple leaves of this variety somewhat resemble a Japanese Maple. Lightly scented pink flowers contrast boldly with the colorful lacy foliage, fading to creamy-white and finally producing dark purplish-red fruit. Plants can attain a size of 6 to 8 feet tall and wide. Black Lace™ performs better than Black Beauty™ in hotter regions. This selection is also from East Malling Research Station in England.

Emerald Lace™ (*S. nigra* 'Laciniata')

This selection of fern-leaved elderberry has highly divided leaves making the plant a lovely textural ornamental. The large flower heads develop into blackish-purple fruits.

'Goldbeere'

From a German experiment station, this cultivar has more of an upright growth habit with light green foliage. The unusual large golden fruits set this elderberry apart from others, making it a unique ornamental for landscapes.

'Guincho Purple'

Spring growth on this selection brings wine-colored leaves, which transition to dark green later in the summer. The pale pink flower clusters contrast beautifully with the purplish foliage. 'Guincho Purple' was developed in Northern Ireland from the earlier cultivar 'Purpurea'.

'Haschberg'

A leading producer in Austria and Germany, 'Haschberg' develops large bluish-black berries from numerous clusters of white flowers. It develops into a spreading 10 feet tall shrub.

'Korsor'

'Korsor' grows to 8 feet in height and spread. This highly productive selection comes from Denmark, and is noted for the medicinal properties of the large clusters of big, dark blue fruit. 'Korsor' is grown commercially in Europe. It does well in USDA Zones 4 to 9.

'Marginata'

The attractive foliage of this cultivar (also sold as 'Albo-variegata') is variegated with an irregular golden yellow margin that eventually ages to a cream color. Plants can attain a height and spread of 10 to 20 feet. It is hardy in USDA Zones 5 to 7.

'Samdal'

This is another Danish cultivar noted for its large, flavorful, black fruits. Annually, large new shoots develop from the ground and bear fruit the following year.

'Thundercloud'

This selection has a vigorous upright growth habit and provides deep pink flowers that are very attractive against the dark red to purplish foliage. The bluish-black fruit stands out from the colorful leaves as well.

'Variegated'

This is a medium-sized shrub to 8 feet tall and wide, with irregular creamy-white margins on dark green leaves. It produces large clusters of fragrant white flowers that develop into bluish-black fruit.

Other ornamental selections that might be found include 'Aurea' (yellow-foliaged), 'Aureo-marginata' (yellow leaf margins), 'Dart's Greenlace' (finely-cut leaves), 'Madonna' (yellow-edged leaves), 'Pendula' (weeping foliage), 'Plena' (sterile with double flowers), 'Albopunctata' (syn. 'Pulverulenta') (white-blotched leaves), 'Pygmy' (2 feet tall), 'Pyramidalis' (clustered, erect stems), 'Roseiflora' (pink-flowered), 'Roseiplena' (sterile, pink, double flowers), and 'Witch's Broom' (only 1.5 feet tall).

EUROPEAN RED ELDERBERRY CULTIVARS

Cultivars of European Red Elderberry (*S. racemosa* L.) offer brilliant red fruits and interesting foliage. The red-berried forms of elderberry are more toxic than blue forms, and were mostly used medicinally. Most grow in the range of 8 to 12 feet in height and spread. They are quite hardy, performing well in USDA Zones 3 to 7.

'Moerheimii'

This cultivar takes 'Laciniata' a step further, with leaves even more finely cut, creating a very lacy texture for the garden.

'Sutherland Gold'

This Canadian selection from 'Plumosa Aurea' is more tolerant of full sun conditions without the leaf burn, but it is safest to locate either in partial sun exposure. 'Sutherland Gold' produces a spring flush of copper-red growth which transitions to highly divided golden-yellow leaves through the summer, finally turning lime-green by fall. Ripened red berries contrast vividly with the leaves. This shrub will reach 5 to 10 feet in height, and serves as a fern-like textural delight in the landscape. Fruits must be cooked before eating.

'Golden Locks'

Another selection out of Canada, this is a dwarf form that is slow to mature to 3 feet in height, with bright golden leaves.

'Tenuifolia'

This cultivar produces fern-like, finely divided foliage. It has a low mounding habit, with somewhat weak growth.

Some growers might also offer 'Aurea' (yellow foliage), 'Laciniata' (finely divided leaves) or 'Plumosa' (purple lacy foliage fades to green).

Cultivars of the different elderberries are still being evaluated and growers continue to provide plants for both production and ornamental value.



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Kirti Mathura



Kirti Mathura grew up in Michigan, gardening with her mother as a youngster. Plant fever followed her from school at the University of Montana, to Costa Rica as a Peace Corps volunteer, finally to the Sonoran Desert in Arizona where she has played in the dirt since 1987. Kirti worked at the Desert Botanical Garden in Phoenix for several years. She is involved in various local and national plant organizations and enjoys sharing gardening information in many different formats. As a member of The Herb Society of America she is currently active on the Native Herb Conservation and Promising Plant Committees, previously served on the Grant Selection Committee, and was the recipient of The Society's Helen de Conway-Little Medal of Honor in 2009.

Kirti has also written or contributed to landscaping and gardening publications, including *The Arizona Low Desert Flower Garden* (Gibbs Smith, Publisher) and *Desert Landscaping for Beginners* (Arizona Master Gardener Press).

Use of Elderberry in Garden Design

BY SANDY HELSEL



The herb elderberry is enjoyed across America in hedgerows and along fences, near streams and in meadows, along rural roads and in boggy areas—in short, in natural areas. Unfortunately, few people think of the elderberry as an ornamental shrub or understory tree that would bring beauty to their property. Today there are numerous cultivars with attractive foliage in green, near black, or yellow and flowers in white, pink or gold. All can be attractive additions to the garden. Even the common *Sambucus canadensis*, if thoughtfully pruned and sited, can be a stand-out in the back of the garden or as a foundation plant.

A couple of years ago I saw a *Sambucus nigra* 'Eva' (also known as Black Lace™) elderberry for sale at an herb society fundraiser, and I fell in love with it. As soon as I saw the black cutout leaves, I knew that I would put it in the center of a section of fence that gets sun until about 3 p.m. Then I read that they produce more berries if there is more than one plant within about six feet. So a new idea was born; I would put different cultivars on either side. *S. nigra* 'Gerda' (also known as Black Beauty™) went on the left and this spring I planted a baby *S. canadensis* on the right side. We have heavy clay under lots of organic matter—bad drainage, and we are in a drought. Elderberries need lots of water and good drainage. So our baby on the right has not survived our Virginia summer. The *S. nigra* 'Eva' is alive but languishing. However, *S. nigra* 'Gerda' is thriving, so I am on the lookout for two more *S. nigra* 'Gerda' plants for my fence! Now I am excited to try the new design. Pictures are included of my *S. nigra* 'Gerda' and the little *S. nigra* 'Eva'. I am going to keep growing these plants in my landscape because I love their grace and beauty as well as their usefulness.

The following are pictures of elderberries in different gardens, taken by Herb Society of America members. The pictures are included to illustrate a variety of ways that the herb elderberry is being used in garden design.

WHY NOT GIVE IT A TRY!



S. nigra 'Eva' by S. Helsel



Black Lace™ (*S. nigra* 'Eva') by Gail Seeley



S. nigra 'Gerda' by S. Helsel



At Colonial Williamsburg by S. Helsel



S. nigra 'Eva' at Chanticleer (PA) by Rena and Sam Barnett





Benefits to the Ecosystem and Wildlife

BY PAT KENNY

"When one tugs at a single thing in nature, he finds it attached to the rest of the world."

John Muir

INTRODUCTION

Twenty years ago, at the United Nations Conference on Environment and Development in Rio de Janeiro, a 12-year-old girl spoke on behalf of ECO, the Environmental Children's Organization that she herself had founded at age nine. Severn Suzuki told the assembled world leaders that they had failed her and the world's other children. She spoke of the hole in the ozone layer, the pollution of our air, water, and soil, the on-going extinction of animals and plants, the inequality and poverty among human children – "all going on before our eyes... Did you have to worry about these things when you were my age?" she asked. "If you don't know how to fix it, please stop breaking it" (Suzuki, 1992).

Artist Edward Koren, in a cover for *New Yorker* magazine, depicts the individual human's awesome responsibility with respect to wildlife. Surrounded by a panoply of biodiversity, as he goes about his mundane "summer chore," it becomes apparent that it is he himself who wields the instruments of extinction, which in its present course will inevitably shred the fabric of life of which he is but a single thread.

Extensive habitat destruction and fragmentation has put increasing pressure on wildlife populations already in crisis. But anyone with access to a patch of land can make a significant contribution to sustaining biodiversity by planting native species (Tallamy, 2009). Severn Suzuki, Doug Tallamy and Edward Koren bear witness to these challenges and opportunities.

Though elderberries have been with us for some time and are easily picked, the plant may be neglected (Angier, 1974) in part because the *raw* fruits are tiny, seedy and a bit toxic. Let's just say, unrewarding. Prepared berries are another matter. Some of us have memories of our grandmothers making jelly, our uncles making wine, or, more recently, our brothers making vinegar, all from elderberries. Jellies have been popular for years, wines are delicious when we can get them, and there is an increased availability of elderberry vinegar with the advent of gourmet berry vinaigrettes.

The focus in this text is upon *Sambucus canadensis* L. and *Sambucus nigra* L. in general. Much has been written about elderberry's benefits to a considerable variety of wildlife. In these few words we can only hope to provoke some interest in how this shrub fits into its environment.

Though we have separated information on elderberry's relationships into categories, of course most such connections are complex or indirect. Many associations of the elderberry have been described (Eastman, 1992; Eastman, 1995; Common Elderberry, 2012; Stevens, 2001).

WILDLIFE CORRIDORS, PROTECTION OF RIPARIAN ZONES

Elderberry grows in a wide variety of locations and conditions, notably including riparian zones (along waterways). Because of the fragmentation of wildlife habitat, riparian areas are critical to the survival of numerous plant and animal species. Many such strips are damaged by construction, dams, livestock, logging, and pollution. Elderberry bushes have dense root systems which can hold soil in place, preventing erosion. That feature and their multiple roles in supporting a wide variety of wildlife (Martin, 1997) make them uniquely suited to playing a vital role in the maintenance of wildlife corridors (Wildlife Corridors, 2004; Lerche, 2009).

The hardiness of both American and European species in the wild makes them ideal candidates for establishing more stable wildlife habitat along waterways, providing food and shelter for many species of animals. Elderberry plants have become known in many states for their role in maintenance and restoration of biological corridors. Their role in

checking soil erosion on steep stream banks, providing deeper aquatic habitats for fish, is surprising given the shallowness of their dense root systems.

BERRIES AND BIRDS

If you have an elderberry on your land, you will have noticed that the most frequent visitors to the wealth of fruits are birds. Many birds do not even need them to be ripe. As we know, the elderberry is the perfect attractant for dozens of songbirds. At least 42 species of fruit-eating birds eat elderberries, and for many the fruit is their preferred food (Martin, 1997; Angier, 1974).

But are native berry-producing plants essential for sustaining bird populations? Surely, if birds eat copious amounts of berries of successful alien plants such as Multiflora Rose, Autumn Olive and Oriental Bittersweet, why can't we just plant more of *those* easy-to-grow species? Read on.

INSECTS AND BIRDS

Doug Tallamy, Professor of Entomology and Wildlife Ecology at the University of Delaware, had an epiphany while still in graduate school: most native insects cannot, or will not, eat alien plants. During periods of reproduction, most bird species depend upon proteins and fats from caterpillars and other insect forms as nutrients to make eggs and to feed themselves and their young. When native plant species disappear, the insects disappear as well (Tallamy, 2009). Numerous insects regard the elderberry as a plant essential to their life cycle (Martin, 1997).



Few people are aware of plant extrafloral nectaries, nectar-producing glands located on leaves, petioles or other structures separate from flowers. They have been identified in over 2,000 species, including *Sambucus nigra* (Mizell, 2009). Their function is not entirely understood (Capinera, 2008). This gardener has sought them on her elderberry bushes, without success.

The elder borer, *Desmocerus palliatus*, spends most of its life on elderberry. The adult eats pollen, notches out leaves, and lays eggs on stems close to the ground. The larvae burrow into stems, work down into roots, and finally pupate in the soil, sometimes causing dieback of branches. The elder bud gall gnat, *Asphondylia sambuci*, the elder stem midge, *Neolasioptera sambuci*, the elder flower midge, *Youngomyia umbellicola* and the elder shoot borer moth/spindle worm (Eastman, 1995) seem to have evolved with the elderberry. Other insects and arachnids associated with elderberry include the northern caddis fly, various crickets, wolf spider, dog ticks, and the stinkbug (Ecotanjim, 2012).

Considering just one class, Insecta, the Atkinsons (2002) recorded from *Sambucus nigra* L.: twelve species of Lepidoptera (butterflies and moths); two of Hemiptera-Heteroptera; two of Hemiptera-Homoptera (pity this poor deprecated suborder); four of Hymenoptera-Symphyta; six of Coleoptera (meet the beetles); five of Thysanoptera (thrips); four of Diptera-Cecidomyiidae; and one species of Diptera-Agromyzidae. When you see a hole in an elderberry leaf, you are looking at evidence of a possible birdy snack bar.

WINDBREAKS, PREDATOR PROTECTION, PERCHING AND NESTING HABITAT

Their natural tendency to grow densely makes elderberry useful as a windbreak and winter cover along fields and roadsides. Several species of mammals are known to depend upon windbreaks in farmed areas, including the cottontail, squirrel and white-footed mouse. As many as 108 species of birds are known to use windbreaks, with at least half deriving substantial benefit (Martin, 1997).

Elderberry provides protection from predators, perching and nesting sites, and nest building materials for birds (Lerche, 2009), and nesting materials and structure for native bees (Native plant database, 2012).

FORAGE AND COVER FOR LARGE AND SMALL ANIMALS

Although the leaves and twigs are toxic to humans, the elder rates as fair-to-good browse for wild game such as white-tail deer, mule deer, moose, elk, sheep, bear, and large game birds such as turkey, grouse, pheasant, quail, bobwhite, and mourning dove. Twigs are eaten by mammals, and bark is a favorite of rabbits and woodchucks (Angier 1974).

At least one author advocates creating thickets including shrubs such as elderberry in addition to Highbush Cranberry and Red-Osier Dogwood to attract deer, less for their sentimental value than for the venison (Spratt, 2011). Such thickets can also provide cover for small mammals such as mice, voles, chipmunks, squirrels, rabbits, raccoons, and foxes. Combinations of fruiting plants such as Spicebush, native Wild Rose, Blackberry, Blueberry and Elderberry provide food and cover for amphibians and reptiles including frogs, toads, snakes, and turtles (Elderberries, 2012; Common Elderberry, 2012).

FUNGI

Fungi don't get a lot of respect. It's understandable, actually. When we see a fungus, well, something's rotten. They're anti-Beethovens, nature's decomposers. The Jelly Ear Mushroom specializes in recycling dead elder wood (Phillips, 2012).

ELDERBERRY IN THE HOME LANDSCAPE

Whatever encourages home cultivation of elderberry is a benefit to wildlife. The following notes are offered in that spirit.

The appearance, attractive flowers, and beneficial fruits of elderberry plants, the ease with which they grow, and their numerous cultivars have made them popular ornamentals. Berries are available in summer and fall; foliage is present from spring to the frost dates. They can be established singly or in clumps or thickets and when controlled to shrub-heights some consider them a hedge plant. The colors and shapes of the foliage are appreciated, with various cultivars commercially available. Their hardiness makes them suitable as ornamentals well outside their natural distribution range (Charlebois, 2010).

Elderberry shrubs have multiple stems and can rapidly become ideal understory trees to 8'-15' tall with a similar horizontal spread. There are cultivars of *S. nigra* that can reach to 12'-20'. *S. nigra* 'Laciniata', Cut Leaf Elderberry, is distinctly showy yet is a heavy fruit-producer for the home landscape. When planted in rich garden soil, it requires lots of room. If it has to compete with grasses and ground covers, it will stay smaller. Cut Leaf and several other varieties of elderberry are available from many nurseries (see *Edible Landscaping* in References).

There is also a suggestion that these plants can be grown along with non-native plants in a garden that does not have much positive support for the native web of life (Schroeder, 2012). Elderberry plants can tolerate most disturbances, except for regular mowing or plowing (Hilty, 2012).

Though elderberry bushes prefer moist rather than wet soil, they have been used to help limit water accumulation near homes where a yard slopes toward the house.

An excellent guide to working with nature in home landscaping is available from the U.S. Botanic Garden and the Lady Bird Johnson Wildflower Center (Marinelli, 2012).

CONCLUSION

People sometimes destroy elderberries on their property because they consider them too weedy. Perhaps with renewed education about the benefits to songbirds and other wildlife this practice will change, especially along fences, in riparian areas, farm country, and residential areas.

Severn Suzuki is now Severn Cullis-Suzuki, married and the mother of two sons. In 2012, she returned to the Earth Summit in Rio de Janeiro. She suggests that consideration for our children is a strong moral argument for global stewardship (Cullis-Suzuki, 2012).

Help change the world. Plant something that benefits wildlife.

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Pat Kenny

Pat Kenny received her Bachelor of Science in Biology from Mary Washington College of the University of Virginia and her Master of Art in Medical and Biological Illustration from the Johns Hopkins University School of Medicine Department of Art as Applied to Medicine. During her thirty years as a medical illustrator at the National Institutes of Health she developed her basic interests in gardening and herbal plants as her interest in healthful living progressed. She's been a volunteer in the National Library of Medicine Herb Garden, the National Herb Garden, the Green Pharmacy Garden, and now curates the Potomac Unit's *Salvia* Collection at Willow Pond Herb Farm in Fairfield, PA. During the past thirty years as a member of The Herb Society of America, she has given talks and workshops about all kinds of herbs; she considers herself an Herb publicist. The Herb Society recognized her with a Certificate of Achievement in 1993.



Photo By Joyce Brobst





Prior to, but particularly since retirement from the USDA, Dr. James Duke's passion and specialty has been to bring about a broader recognition of the important role of herbal medicine, and specifically to suggest that "herbs are better than pharmaceuticals." It has been a huge challenge in a world where pharmaceuticals are so highly promoted. However, with Dr. Duke's determination, publications, and development of "the green pharmacy garden" at his Maryland home great strides have been made. We express high admiration and appreciation to Dr. Duke for sharing his extensive database on the medicinal uses of elderberry with our readers. While this article does not include all of the material Dr. Duke submitted for use in our guide to elderberry, his entire submission is available on The Herb Society of America's website during 2013, while elderberry is the "Herb of the Year," and from our HSA Library into the future.

J. BROBST, EDITOR

Sambucus:

AMERICAN AND EUROPEAN ELDERBERRY

Family: ADOXACEAE

BY JAMES A. DUKE, Ph.D.

With acknowledgements to Judi Snyder, Mary Jo Bogenschutz-Godwin and Helen Metzman for their great help along the way. Thanks as always.

Can it be that Europeans are more interested in their elderberry than we are in our American Elderberry? Last time I checked, early in 2012, there were 536 PubMed citations for the European, only 12 for the American. This is clearly a well-studied species. But I still seem to dig up more new activities and indications from earlier literature I had ignored. Let me mention one reference in particular, MAD, for Madaus, an excellent three-volume book, first published in 1936 in Leipzig, Germany. This is an especially rich source which I temporarily misplaced. Having recently located it again, I have added several MAD entries. Most of the other three-letter abbreviations found in my database are listed in many of my recent CRC books.

When using my database the **indications** and **activities** paragraphs are my most important compilations of medicinal properties. In parentheses, following the name of the indication, will be an *f* for folk lore, and/or a *1*, for low level proof (epidemiological, *in vitro*, *in vivo*, or phytochemical), and/or a *2* for higher level proof (clinical proof or approval by Germany's esteemed Commission E). I stridently maintain that any herb attaining level 2 evidence is probably as good as a somewhat poisonous synthetic pharmaceutical for the same indication or activity and often much safer to boot.



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MEDICINAL BENEFIT

The tables below are a visual representation of some of the information from my database. Please note the large number of medicinal uses mentioned in folklore (f), and then from more recent research the low (1) and high (2) levels of evidence suggested for medicinal benefit from the elderberry. When reviewing these tables it quickly becomes evident that the folklore and high-level contemporary indications are directly correlated for the respiratory, and digestive system; and that the osmotic regulatory processes, probably at the cellular level, are supported in the high-level contemporary activities.

Analyzing Aggregated Indications and Activities

(AMERICAN AND EUROPEAN ELDER)

-TABLE 1: INDICATIONS -

INDICATIONS	CONTEMPORARY	FOLKLORE	INDICATIONS	CONTEMPORARY	FOLKLORE
Abrasion		f	Chill		f
Abscess		f	Cold	1, 2	f
Ague		f	Colic		f
Arthrosis		f	Condyloma		f
Asthma		f	Conjunctivosis		f
Bleeding		f	Constipation		f
Blepharosis		f	Cough	1, 2	f
Blindness		f	Cramp		f
Boils		f	Cytosis		f
Bronchosis	1, 2	f	Dermatosis		f
Bruise		f	Diphtheria		f
Burn		f	Dropsy		f
Cancers	1	f	Dyslactea	2	f
Catarrah	1	f	Dysmenorrhea		f
Chafing		f	Dyspepsia	1, 2	f
Chest Cold		f	Earache		f
Childbirth		f	Eczema		f

INDICATIONS	CONTEMPORARY	FOLKLORE	INDICATIONS	CONTEMPORARY	FOLKLORE
Edema	1	f	Myalgia		f
Epilepsy		f	Mycosis		f
Erysipelas		f	Neuralgia		f
Exanthema		f	Neurosis	2	f
Fever	1, 2	f	Nightmare		f
Flu	1, 2	f	Nipple		f
Fungus		f	Obesity	1	f
Gastrosis		f	Oliguria		f
Gonorrhea	1	f	Ophthalmia		f
Gout		f	Osteoarthritis		f
Headache		f	Pain	1	f
Head Cold	2		Pharyngosis		f
Hemorrhoids		f	Pneumonia	1	f
Hepatitis		f	Psoriasis		f
Herpes	1	f	Pulmonosis		f
Hoarseness		f	Rash		f
Hypochondria		f	Respirosis	2	
Induration		f	Retinosis		f
Infection	1	f	Rheumatism		f
Inflammation	1, 2	f	Rhinositis		f
Ischia		f	Scabies		f
Jaundice		f	Scarlatina		f
Laryngitis		f	Scarlet Fever		f
Mastosis		f	Sclerosis		f
Measles		f	Scrofula		f
Metabolic Syndrome		f	Sinusitis		f
Migraine		f	Sinusosis	1	f
Smallpox		f	Toothache		f

INDICATIONS	CONTEMPORARY	FOLKLORE	INDICATIONS	CONTEMPORARY	FOLKLORE
Sore		f	Urolithiasis		f
Sore Throat	1	f	Uterosis		f
Splenosis		f	Varicosity		f
Sprain		f	Venereal Disease	1	f
Stomachache		f	Wart		f
Stomatosis		f	Water Retention	1	f
Stone		f	Wen		f
Swelling		f	Worm		f
Syphilis		f	Wounds		f

-TABLE 2: ACTIVITIES -

ACTIVITIES	CONTEMPORARY	FOLKLORE	ACTIVITIES	CONTEMPORARY	FOLKLORE
Alterative		f	Demulcent		f
Analgesic		f	Depurative		f
Antiasthmatic		f	Diaphoretic	1, 2	f
Antidiabetic		f	Discutient		f
Antiinflammatory	1	f	Diuretic	1, 2	f
Antimethanogenic		f	Emetic		f
Antirheumatic		f	Emollient		f
Antiseptic	1	f	Expectorant	1	f
Antiviral	1	f	Febrifuge	1	f
Anodyne		f	Fungicide		f
Aperient		f	Hemostat		f
Astringent		f	Hydragogue		f
Carminative		f	Intoxicant		f
Cathartic		f	Lactagogue	2	f
Cicatrizant		f	Laxative	1	f
Collyrium		f	Litholytic		f
Phagocytotic	1, 2		Stimulant		f

ACTIVITIES	CONTEMPORARY FOLKLORE	ACTIVITIES	CONTEMPORARY FOLKLORE
Poison		f	
Purgative		f	1
Refrigerant		f	
Secretagogue	1, 2	f	
Sedative		f	

Elderberry has been used historically to treat respiratory problems (colds, flu, coughs, tonsillitis, etc.). The medicinal benefit comes from the antiviral qualities of *Sambucus*. Bioflavonoids in the extracts of elderberry may prevent viruses from entering cells. More research will identify the value of synergistic phytochemicals within the plant, and undoubtedly provide more answers to its value as a medicinal herb.

TAXONOMY

Optimistically I submit a tentative key to the European, *S. nigra* and the American, *S. canadensis*. It will help sometimes but definitely not always.

Leaflets mostly 5.....*S. nigra* (European)

Leaflets mostly 7.....*S. canadensis* (American)

Steven Foster and I are updating the Foster/Duke Peterson *Field Guide to Eastern Medicinal Plants* which should see light late this year or early next year. Foster and I agree that the European and American taxa differ in leaflet number (almost always five in *S. nigra*, almost always seven in *S. canadensis*), fruit color, and pubescence. "There seems little justification for uniting them." (S. Foster, personal communication, 2012). I agree! Both good medicinal species!!

COMMON NAMES FOR ELDERBERRY

Elderberry has a very wide distribution (European and American), and therefore based on its locale has well over one hundred common names in multiple languages. (Please go to the HSA website during 2013 or to the HSA Library for a copy of my database on elderberry).

SOME LOCAL FOLK USAGES

Most American Indian tribes were well aware of the benefits of elderberry and used various parts of the plant for medicinal purposes (see previous article about American Indian uses of elderberry in this guide). In addition, numerous other folk uses have been recorded. Some of these usages follow:

- Danish use for catarrh and rheumatic pain (Madaus, 1976).
- Dominican Caribs use leaf decoction for cold and fever (Beauvoir et al., 2001).
- Dominicans use the flora infusion in ocular catarrh ("ceguera") (Liogier, 1974).
- Europeans use fruit (in red wine), or decoction of leaves and twigs for sclerosis and tumors (Hartwell, 1982).
- Germans suggest young sprouts for condylomata, juice mixed with honey for tumors (Hartwell, 1982).
- Haitians compress the leaves on the head for headache and migraine (Liogier, 1974).
- Haitians use diaphoretic flower infusion for chest cold, fever, and sore throat (Liogier, 1974).

- Haitians use the leaf infusion for measles, scarlet fever and smallpox (Liogier, 1974).
- Hungarians use for gout (Madaus, 1976).
- Polish use the flowers as diaphoretic (Madaus, 1976).
- Turks suggest the leaf decoction for prostatitis (Fujita et al., 1995).

SOME TECHNICAL COMMENTS

If antineuraminidase activity of berry extracts can be confirmed, this might be viewed as a potential competitor for the 1999 drug Relenza. The berry extracts have long been recommended for flu. Working with a University of Florida team, my late colleague and friend, Randy Alberte, found that elderberry extracts inhibited Human Influenza A (H1N1) infection in vitro (IC₅₀ = 252 ug/ml); 5,7,3',4'-Tetra-O-methylquercetin was antiviral (IC₅₀=0.13ug/ml or 0.36 uM); cf Tamiflu at 0.32 and Amantidine at 27uM. Dihydromyricetin was antiviral at IC₅₀=2.8 ug/ml (8.7 uM). The antiviral activities of the elderberry flavonoids compare favorably to those of Tamiflu (0.32 uM) and Amantidine (27 uM) (X19682714).

Both cultivated *S. nigra* and wild *S. canadensis* fruits demonstrated significant anticancer chemopreventive potential as inducers of quinone reductase and inhibitors of COX-2, with anti-initiation and antipromotion implications, respectively. American Elderberry extracts also inhibited ornithine decarboxylase.

With modern chemical analyses, the chemical components of elderberry have been identified in bark, plant, leaf, flower, fruit, and seed. Further research has identified the benefit of each chemical component when elderberry is consumed for medicinal reasons. While research has not proved every folklore remedy attributed to the elderberry plant, it is interesting to note how many early uses have been proved at a high level for contemporary use with modern research technology. Following is a list of some of the phytochemicals with some of their proven biological activities in the more completely studied and analyzed European Elder. Other chemicals which have been identified and indicate "no activity" can be obtained from the more complete database from my research found on the HSA website, or from the HSA Library.

PHYTOCHEMICAL AND ETHNOBOTANICAL DATABASES

Chemicals and their Biological Activities in *Sambucus nigra* L. (Adoxaceae)

Common Names - Black Elder, Elder, European Alder, European Elder, European Elderberry

ALPHA-AMYRIN Bark: Leaf: Analgesic; Antiedemic IC₄₃=40 mg/kg ipr rat;

Antiinflammatory IC₇₁=1,000 ppm orl; Antinociceptive; Antitumor; Antiulcer; Cytotoxic

50-400; Gastroprotective; Hepatoprotective; Insectifuge

ALPHA-AMYRIN-PALMITATE Leaf: Antianemic; Antiarthritic 56-66 mg/kg orl rat;

Antifeedant; Antihepatotoxic; Antiinflammatory

ASTRAGALIN Plant: ACE-Inhibitor ID₅₀=180 ug/ml rat (24 hr.); Aldose-Reductase-Inhibitor IC₃₀=1 uM IC₆₂=10 uM; Antileukemic; Expectorant; Hypotensive; Immunostimulant

BEHENIC-ACID Plant: Cosmetic

BETA-AMYRIN Flower: Analgesic; Antiedemic IC₂₇=40 mg/kg ipr rat; Antiinflammatory; Antinociceptive; Antiulcer; Gastroprotective; Hepatoprotective; Larvicide; Mosquitocide

BETA-AMYRIN-PALMITATE Plant: Antidepressant; Antihepatotoxic; Sedative

BETA-CAROTENE Fruit 100 - 150 ppm Leaf 150 ppm; Allergenic; Androgenic?; Antiacne; Antiaging; Antiarthritic; Antiasthmatic; Anticancer; Anticarcinomic; Anticervicaldysplastic; Anticoronary 50 mg/man/2 days; Antihyperkeratotic; Antiichthyotic; Antileukoplakic; Antilipoperoxidant IC71=50 ug/ml; Antilupus 150 mg/man/day/2 mos; Antimaculitic; Antimastitic; Antimutagenic; Antioxidant; Antiozenic; Antipapillomic; Antiphotophobic 30-300 mg/man/day; Antipityriasis; AntiPMS; Antiporphyrin; Antiproliferant; Antipsoriasis; Antiradicular; Antirheumatic; Antistress; Antitumor; Antitumor (Breast) IC45=60 ug/ml; Antitumor (CNS) IC43=45 ug/ml; Antitumor (Colon); Antitumor (Lung) IC30=60 ug/ml; Antitumor (Prostate); Antitumor (Stomach) IC26=45 ug/ml; Antiulcer 12 mg 3x/day/man/orl 15,000-25,000 IU/day; Antixerophthalmic; Cancer-Preventive 22 ppm; Chemopreventive; Colorant; COX-1-Inhibitor IC78=50 ug/ml; COX-2-Inhibitor IC82=50 ug/ml; Gastroprotective; Immunostimulant 180 mg/man/day/orl; Interferon-Synergist; Mucogenic; Phagocytotic; Prooxidant 20 ug/g; Thymoprotective; Ubiquit

BETA-SITOSTEROL Bark: Androgenic; Angiogenic; Anorexic; Antiadenomic; Antiandrogenic; Antibacterial; Anticancer (Breast); Anticancer (Cervix); Anticancer (Lung); Antiedemic IC54=320 mg/kg orl; Antiestrogenic; Antifeedant; Antifertility; Antigonadotrophic; Antihyperlipoproteinaemic; Antiinflammatory; Antileukemic; Antilymphomic; Antimutagenic 250 ug/ml; Antiophidic 2.3 mg mus; Antioxidant IC44=10 uM; Antiprogestational; Antiprostaglandin 30 mg/day/12 wks; Antiprostataadenomic; Antiprostatic 10-20 mg 3 x/day/orl man; Antipyretic; Antitumor (Breast); Antitumor (Cervix); Antitumor (Lung); Antiviral; Apoptotic; Artemicide LC50=110 ppm; Cancer-Preventive; Candidicide; Caspase-8-Inducer; Estrogenic; Febrifuge; Gonadotrophic; Hepatoprotective; Hypocholesterolemic 2-6 g/man/day/orl 9-3,330 mg/man/day/orl; Hypoglycemic; Hypolipidemic 2-6 g/day; Pesticide; Spermicide; Ubiquit; Ulcerogenic 500 mg/kg ipr rat

BETULIN Bark: Plant: Anticarcinomic; Antifeedant; Antiflu; AntiHIV 6.1 uM; Antiinflammatory; Antitumor; Antiviral; Aphidifuge; Cytotoxic 600 ppm 8.6 uM; Hypolipemic; Prostaglandin-Synthesis-Inhibitor IC50=119 uM; Topoisomerase-II-Inhibitor IC50=38.6 uM

BIOTIN Fruit 0.007 - 0.009 ppm: Antiallopecic; Antidermatitic 3 mg/2x/day; Antineuralgic; Antiseborrheic

CAFFEIC-ACID Plant: Aldose-Reductase-Inhibitor 4 ug/ml (weak activity); Allergenic; Analgesic; Antiadenoviral; Antiaggregant; Antiaging; Antiatherogenic; Antibacterial; Anticancer; Anticarcinogenic; Antidepressant; Antiedemic; Antielastase IC50=86 ug/ml (475 uM) IC50=93 um/l; Antiescherichic; Antiflu; Antigonadotropic; Antihemolytic 25 uM; Antihepatoadenomic 200 ppm diet orl mus; Antihepatotoxic; Antiherpetic 50 ug/ml EC50=>50 ug/ml; Antihistaminic; AntiHIV EC50=200 ug/ml; Antihypercholesterolemic; Antihyperthyroid; Antiinflammatory; AntiLegionella; Antileukemic; Antileukotriene; Antimelanogenic; Antimutagenic; Antinitrosaminic; Antiophidic; Antioxidant 1.3 x Vit. E 1/2 BHA 1/3 quercetin 30 mM 50 uM IC57=30 ppm; Antiperoxidant IC35=200 ug/ml IC50=44 uM IC85=100 ug/ml; Antiproliferant; Antiprostaglandin; Antiradicular 1/3 quercetin 10 uM 30 mM IC50=32-35 uM; Antiseptic; Antispasmodic EC50=3.4-15 uM; Antistaphylococcic; Antistomatitic; Antisunburn; Antithiamin; Antithyroid; Antitumor 200 ppm diet orl mus; Antitumor (Skin); Antitumor-Promoter IC42=10 uM; Antiulcerogenic; Antivaccinia; Antiviral IC50=62.5 ug/ml; Anxiolytic; Calcium-Antagonist IC50=1.2 uM rbt; Cancer-Preventive; Carcinogenic 2% (diet); Chemopreventive; Cholagogue; Choleric; Clastogenic; CNS-Active; Co-carcinogenic; Collagen-Sparing; COX-2-Inhibitor IC32=100 uM; Cytoprotective; Cytotoxic TC50=200 ug/ml; Diuretic; DNA-Active; DNA-Protective; Fungicide MIC=0.4 mg/ml; Hepatocarcinogenic 400 ppm diet orl mus (in the absence of alcohol); Hepatoprotective; Hepatotropic; Histamine-Inhibitor; Immunostimulant; Insectifuge; Leukotriene-Inhibitor; Lipoxygenase-Inhibitor IC27=5 mM IC50=62-148 uM; Lyase-Inhibitor IC50=94-164 uM; Metal-Chelator; Ornithine-Decarboxylase-Inhibitor; Pesticide; Prooxidant; Prostaglandigenic; Sedative 500 mg; Sunscreen IC50=2.5 mg/l IC91=5 mg/l IC98=25 mg/l; Tumorigenic; Vulnerary; Xanthine-Oxidase-Inhibitor IC50=39.21 uM

CALCIUM-OXALATE Plant: Emetic; Inflammatory; Laxative; Lithogenic

CAMPESTEROL Leaf: Antioxidant IC37=10 uM; Hypocholesterolemic

CAPRYLIC-ACID Seed: Antiseptic; Candidicide 300 mg/man/12 x/day; Fungicide; Irritant; Pesticide

CHLOROGENIC-ACID Flower: Aldose-Reductase-Inhibitor IC50=1.8 uM rat (strong activity); Allelochemic; Allergenic; Analgesic; Antiatherosclerotic; Antibacterial; Anticancer (Colon); Anticancer (Forestomach); Anticancer (Liver); Anticancer (Skin); Anticarcinogenic; Antidiabetic; AntiEBV; Antifeedant; Antigenotoxic; Antigonadotropic; Antihemolytic 10 uM; Antihepatotoxic; Antiherpetic; Antihistaminic; AntiHIV; Antihypercholesterolemic; Antihyperthyroid; Antiinflammatory; AntiLegionella; Antileukotriene; Antimelanogenic; Antimutagenic; Antinitrosaminic; Antioxidant IC50=54.2 uM IC53=200 ppm IC80=12 uM; Antiperoxidant IC50=36 uM; Antipolio; Antiradicular 10 uM 9 x quercetin; Antiseptic; Antisunburn; Antithyroid; Antitumor; Antitumor (Colon); Antitumor (Forestomach); Antitumor (Liver); Antitumor (Skin); Antitumor-Promoter IC25=10 uM; Antiulcer; Antiviral; Autotoxic; Cancer-Preventive; Cardioprotective; Chemopreventive; Cholagogue; Choleric; Clastogenic; CNS-Active; CNS-Stimulant 1/6 Caffeine; Collagen-Sparing; Diuretic; Fungicide; Hepatoprotective; Histamine-Inhibitor; Hypoglycemic; Immunostimulant; Insectifuge; Interferonogenic; Juvabional; Larvostat; Leukotriene-Inhibitor; Lipoxigenase-Inhibitor IC23=5 mM; Metal-Chelator; NO-Genic; Ornithine-Decarboxylase-Inhibitor; Oviposition-Stimulant; Pesticide; Sunscreen; Sweetener; Vulnerary

CHOLESTEROL Hh: Antioxidant IC43=10 uM

CHOLINE Bark: Flower: Leaf: Antialzheimeran 5-16 g/man/day; Antichoreic; Anticirrhotic 6,000 mg/man/day; Anticystinuric; Antidementia; Antidiabetic; Antidyskinetic 150-200 mg/kg/man/day; Antihomocysteine; Antimanic 15-30 g/man/day/orl; Antinociceptive; Antisteatotic; Cardiodepressant; Cerebrotonic; Cholinergic; Hepatoprotective; Hypotensive; Ileorelaxant; Lipotropic; Memorigenic; Parasymphomimetic (1/1,000th acetylcholine)

CONIINE Leaf: Emetic; Paralytic

CYANIN Fruit: Antipolio; Antiviral; Emetic; Pesticide; Pigment

CYCLOARTENOL Flower: Antibacterial; Antiinflammatory; Antirheumatic 2-5 mg/man; Antistaphylococcic; Hypocholesterolemic; Pesticide; Ubiquit

DEXTROSE Fruit 25,000 - 30,000 ppm: Sweetener 0.74 x sucrose

FERULIC-ACID Plant: Allelopathic; Analgesic; Antiaggregant; Antiallergic; Antiarrhythmic; Antibacterial; Anticancer (Colon); Anticancer (Forestomach); Anticancer (Liver); Anticancer (Skin); Anticarcinogenic; Antidysmenorrhic; Antiestrogenic; Antihepatotoxic; Antiherpetic; Antiinflammatory; Antileukemic IC50=25-56 ug/ml; Antimitotic; Antimutagenic; Antineoplastic (Stomach); Antinitrosaminic; Antioxidant 1/2 BHA 1/3 quercetin 3,000 uM EC50=9-15 ug/ml IC51=200 ppm; Antiradicular EC50=9-15 ug/ml IC50=116-124 uM; Antiserotonin; Antispasmodic; Antithrombic; Antitumor; Antitumor (Colon); Antitumor (Forestomach); Antitumor (Liver); Antitumor (Skin); Antitumor-Promoter IC46=10 uM; Antiviral; Arteriodilator; Cancer-Preventive; Candidicide; Cardiac; Cholagogue; Choleric; Fungicide; Hepatoprotective; Hepatotropic; Herbicide; Hydrocholerectic; Hypolipidemic; Immunostimulant; Insectifuge; Metal-Chelator; Ornithine-Decarboxylase-Inhibitor; Pesticide; Phagocytotic; Preservative; Prostaglandigenic; Prostaglandin-Synthesis-Inhibitor 0.58-3.2 mM; Sunscreen; Uterosedative 30-100 mg/kg ivn rat

FIBER Fruit 63,000 ppm; Angiotensin-Receptor-Blocker; Antidiabetic; Antihypertensive; Antiobesity; Antitumor; Antiulcer; Beta-Blocker; Cancer-Preventive; Cardioprotective; Diuretic; Hypocholesterolemic; Hypotensive 10 g/man/day/orl; Hypouricemic; Laxative; Vasodilator

ISOQUERCITRIN Flower: ACE-Inhibitor ID50=300 ug/ml rat (24 hr.); Aldose-Reductase-Inhibitor; Antibacterial; Anticancer; Antielastase IC50=0.7 ug/ml; Antifeedant; Antiinflammatory; Antinociceptive; Antioxidant 1/4 quercetin IC50=9.0 uM; Antiradicular 1/4 quercetin; Antitumor; Antitumor-Promoter; Cancer-Preventive; Capillarigenic; Diaphoretic; Diuretic 10 ppm; Hypotensive; Insectiphile; Pesticide; TNF-alpha-Inhibitor; Topoisomerase-II-Inhibitor 550 ug/ml

KAEMPFEROL Flower: 11B-HSD-Inhibitor; 5-Lipoxygenase-Inhibitor IC₅₀ (uM)=20; Aldose-Reductase-Inhibitor 100 uM; Antiaflatoxin IC₅₀=3.28 ppm IC₅₀=8.73 uM; Antiaggregant 30 uM; Antiallergic; Antibacterial 20 ug/ml; Anticancer; Antifertility 250 mg/kg/day/60 days/orl rat; Antigingivitic 20 ug/ml; Antiherpetic 23-92 ug/ml; Antihistaminic; Antiimplantation; Antiinflammatory 20 mg/kg 200 mg/kg ipr rat; Antileukemic IC₅₀=3.1 ug/ml; Antilymphocytic; Antimutagenic ID₅₀=10-40 nM; Antioxidant 3/4 quercetin IC₅₀=1.2 ug/ml IC₅₀=40 uM; Antiperiodontic 20 ug/ml; Antiplaque; Antiradicular 7 x quercetin; Antiseptic 20 ug/ml; Antiserotonin 200 mg/kg ipr rat; Antispasmodic; Antistaphylococcic; Antitumor; Antitumor-Promoter; Antiulcer 50-200 mg/kg ipr rat; Antiviral 23-92 ug/ml; Apoptotic 60 uM; Aromatase-Inhibitor IC₁₂=1 uM/l; cAMP-Phosphodiesterase-Inhibitor; Cancer-Preventive; Carcinogenic; Choleric; Copper-Chelator; COX-2-Inhibitor; Cyclooxygenase-Inhibitor IC₅₀ (uM) =20; Cytotoxic; Diaphoretic?; Diuretic; Estrogenic EC₅₀=0.1-25 uM/l EC₅₀=0.56 uM; Fungicide 20 ug/ml; Hepatoprotective IC₅₀=1.30 ppm IC₅₀=5.46 uM; HIV-RT-Inhibitor IC₅₀=50-150 ug/ml; Hypotensive; ICAM-1-Inhibitor; iNOS-Inhibitor IC₅₀=13.9 uM IC₅₀<15 uM; Inotropic; Iodothyronine-Deiodinase-Inhibitor; JNK-Inhibitor; Lipoxygenase-Inhibitor; MAO-Inhibitor; Mutagenic; Natriuretic; Neuroprotective; NO-Inhibitor IC₅₀=13.9 uM; PAF-Inhibitor; Pesticide; Protisticide; Quinone-Reductase-Inducer 3 uM; Teratologic; TNF-alpha-Inhibitor IC₅₀=3.99 uM; Topoisomerase-I-Inhibitor; Topoisomerase-II-Inhibitor IC₅₀=8.1 ug/ml; Tyrosinase-Inhibitor ID₅₀=230 uM; Uterotrophic EC₅₀=0.1-25 uM/l; Vasodilator

LAURIC-ACID Seed: Antibacterial; Antioxidant IC₇₁=60; Antiviral; Candidicide; COX-1-Inhibitor IC₄₀=100; COX-2-Inhibitor IC₂₀=100; Hypercholesterolemic

LEVULOSE Fruit 21,000 - 29,000 ppm: Sweetener 1.73 x sucrose

LINOLEIC-ACID Flower: 5-Alpha-Reductase-Inhibitor; Antiacne; Antiallopecic; Antianaphylactic; Antiandrogenic; Antiartherosclerotic; Antiarthritic; Anticoronary; Antieczemic; Antifibrinolytic; Antigranular; Antihistaminic; Antiinflammatory IC₅₀=31 uM; Antileukotriene-D₄; Antimenorrhagic; AntiMS; Antiprosthetic; Cancer-Preventive; Carcinogenic; Comedolytic; Hepatoprotective; Hypocholesterolemic; Immunomodulator; Insectifuge; Metastatic; Nematicide; Propepic

LUPEOL Flower: Antiangiogenic 30-50 ug/ml; AntiEBV; Antiedemic; Antiflu; Antihyperglycemic; Antiinflammatory 1/3 Indomethacin; Antilithic 25 mg/kg/day; Antimalarial IC₅₀=46.8 ug/ml; Antioxalate 25 mg/kg/day; Antioxidant; Antiperoxidant; Antiprostaglandin; Antirheumatic; Antitumor; Antiurethrotic; Antiviral; Cytotoxic 50-500 ppm; FPTase-Inhibitor IC₅₀=65 ug/ml; Hypotensive; Pesticide; TOPO-2-Inhibitor IC₅₀=10.4 uM

MALIC-ACID Fruit 9,000 - 19,000 ppm: Antiatherosclerotic; Antibacterial; Antifibromyalgic 300 mg 3x/day; Antioxidant Synergist; Antiseborrheic; Antiseptic; Antitubercular; Antitumor; Bacteristat; Bruchiphobe; Hemopoietic; Laxative?; Mycobactericide; Pesticide; Sialogogue

MYRISTIC-ACID Seed: Antioxidant IC₇₁=60; Cancer-Preventive; Cosmetic; Hypercholesterolemic; Lubricant; Nematicide

N-HENTRIACONTANE Leaf: Antiinflammatory; Cosmetic; Diuretic

N-HEXACOSANE Leaf: Bacteristat; Pesticide

N-NONACOSANE Leaf: Antimutagenic

NIACIN Fruit 4 - 7 ppm: Allergenic; Antiacrodynic; Antiallergic 50 mg/2x/day; Antialzheimeran; Antiamblyopic; Antianginal; Anticataract; Antichilblain; Anticonvulsant 3 g/day; Antidementia; Antidermatitic; Antidiabetic; Antidysphagic; Antiepileptic; Antihangover 50 mg; Antihistaminic 50 mg 2x/day; Antihyperactivity 1.5-6 g/day; Antiinsomnic 1 g/day; AntiLyme 50 mg/day; AntiMeniere's; Antineuralgic; Antiparkinsonian 100 mg/day; Antipellagic; AntiRaynaud's 1,500-4,000 mg/day; Antiscotomic; Antispasmodic 100 mg 2x/day; Antivertigo; Cancer-Preventive; Cardioprotective; Circulotonic; Fibrinolytic; Hepatoprotective; Hepatotoxic; Hypocholesterolemic 50-100 mg 3x/day; Hypoglycemic; Hypolipidemic; Sedative; Serotonergic; Vasodilator

NICOTINIC-ACID Fruit: Antichilblain 50 mg/3x/day; AntiCrohn's; Antidote (pesticides); Antischizophrenic; Antithyrotic; Choleric; Hypocholesterolemic 1-6 g/man/day; Hypoglycemic; Insulinase-Inhibitor; Insulinotonic; Lipolytic

OLEANOLIC-ACID Bark: Leaf: Abortifacient; Antiallergic; Antiarrhythmic 40 mg/kg; Antiatherosclerotic; Antibacterial MIC=625-1,250 ug/ml; Anticarcinomic; Anticariogenic; Anticomplement IC40-50 0.01 mM/l gpg IC80-90 0.05 mM/l gpg; Antiedemic IC36=40 mg/kg ipr rat; Antifertility; Antigingivitic MIC=625-1,250 ug/ml; Antihepatotoxic; AntiHIV EC50=1.7 ug/ml IC50=21.8 ug/ml; Antihyperlipidemic; Antiinflammatory 40 mg/kg ipr; Antiischemic 40 mg/kg; Antileukemic; Antileukotriene IC50=17 uM; Antimalarial IC50=70-89 ug/ml; Antinephritic IC50=19-24 uM; Antioxidant IC46=10 uM; Antiperiodontic MIC=625-1,250 ug/ml; Antiperoxidant IC30=200 ug/ml; AntiPGE2 IC50=24 uM; Antiplatelet MIC=625-1,250 ug/ml; Antiplasmodial IC50=70-89 ug/ml; Antisarcinomic; Antiseptic MIC=625-1,250 ug/ml; AntiTGF-beta IC50=19-24 uM; Antitumor; Antitumor (Breast); Antitumor (Colon); Antitumor (Kidney); Antitumor (Lung); Antitumor (Pancreas); Antiulcer >carbenoxolone; Antiviral EC50=1.7 ug/ml IC50=21.8 ug/ml; Aromatase-Inhibitor; Beta-Blocker; Beta-Glucuronidase-Inhibitor ~100 mg/kg; Cancer-Preventive; Cardioprotective 40 mg/kg; Cardiotonic; COX-2-Inhibitor IC50=295 uM; Cyclooxygenase-Inhibitor; Diuretic; Elastase-Inhibitor IC50=~15 uM; Hepatoprotective; Hypolipemic; Hypotensive; Immunomodulator; Leucocytogenic; NF-kB-Inhibitor; Phagocytotic; Piscicide; Prostaglandin-Synthesis-Inhibitor iqs mus; Sedative; Uterotonic; Vasopressor

OLEIC-ACID Leaf: 5-Alpha-Reductase-Inhibitor; Allergenic; Alpha-Reductase-Inhibitor; Anemiagenic; Antiallopecic; Antiandrogenic; Antiinflammatory IC50=21 uM; Antileukotriene-D4; Cancer-Preventive; Choleric 5 ml/man; Dermatitogenic; FLavor FEMA 1-30; Hypocholesterolemic; Insectifuge; Irritant; Percutaneostimulant; Perfumery; Propecic

P-COUMARIC-ACID Flower: Aldose-Reductase-Inhibitor 4 ug/ml (weak activity); Allelopathic; Antibacterial; Anticlastogen; Antifertility; Antihepatotoxic; Antileukemic IC50=25-56 ug/ml; Antinitrosaminic; Antioxidant 1/3 BHA IC24=30 ppm; Antiperoxidant IC50=>100 uM; Antiseptic; Antispasmodic; Antitumor; Cancer-Preventive; Chemopreventive; Choleric; Cytotoxic; Diaphoretic?; Fungicide; Lipoxygenase-Inhibitor IC11=5 mM; Pesticide; Prostaglandinogenic; Prostaglandin-Synthesis-Inhibitor; Tyrosinase-Inhibitor ID50=3,650 uM

PALMITIC-ACID Seed: 5-Alpha-Reductase-Inhibitor; Antiallopecic; Antiandrogenic; Antifibrinolytic; Antioxidant IC40=60; FLavor FEMA 1; Hemolytic; Hypercholesterolemic; Lubricant; Nematicide; Pesticide; Propecic; Soap

PALMITOLEIC-ACID Seed: 5-Alpha-Reductase-Inhibitor; Soap

PECTIN Leaf 2,300 ppm; Antiatheromic 15 g/man/day; Antibacterial; Antidiabetic 10 g/man/day/orl; Antidiarrheic; Antienteritic; Antigallstone; Antigastric; Antilithic; Antimetastatic; Antimutagenic; Antiobesity; Antitumor (Colon); Antitumor (Prostate); Antitussive; Antiulcer; Cancer-Preventive; Chemopreventive; Demulcent; Fungicide; Hemostat; Hypocholesterolemic; Hypoglycemic; Peristaltic; Pesticide

QUERCETIN Leaf: 11B-HSD-Inhibitor; 5-Lipoxygenase-Inhibitor IC50 (uM)=4; Aldehyde-Oxidase-Inhibitor IC70-96=10 uM; Aldose-Reductase-Inhibitor 100 uM 4 ug/ml IC50=0.344 uM IC50=0.84 ug/ml cow; Allelochemic IC82=1 mM; Allergenic; Analgesic; Antiaflatoxin IC50=25 uM IC50=7.5 ppm; Antiaggagant 30 uM IC50=55 uM; Antiaging; Antiallergic IC50=14 uM; Antialzheimeran; Antianaphylactic; Antiangiogenic; Antiarthritic; Antiasthmatic; Antiatherosclerotic; Antibacterial; Anticarcinomic (Breast) IC50=1.5 uM; Anticariogenic ID50=120 ug/ml; Anticataract; Anticolitic 400 mg/man/3x/day; Anticomplementary; AntiCrohn's; Anticystitic 1,000 mg/day/4 weeks; Antidepressant; Antidermatitic; Antidiabetic; Antielastase IC50=0.8 ug/ml; Antiencephalitic; Antiescherichic; Antiestrogenic; Antifeedant IC52=<1,000 ppm diet; Antifibrosarcomic; Antiflu; Antigastric; Antigonadotropic; AntiGTF ID50=120 ug/ml; Antihepatotoxic; Antiherpetic 48-150 ug/ml; Antihistaminic IC50=<10 uM; AntiHIV; Antihydrophobic; Antihypertensive; Antiinflammatory 20-150 mg/kg; Antileishmanic IC50=64; Antileukemic 5.5-60 uM IC50=10 uM IC50=>10 ug/ml; Antileukotriene; Antilipoperoxidant IC67=50; Antimalarial IC50=1-6.4 ug/ml; Antimelanomic; Antimetastatic; Antimutagenic

ID50=0.62 ug/ml ID50=2-5 nM; Antimyocarditic; Antinitrosaminic; Antinociceptive; Antioxidant 4.7 x Vit. E ED50=2.3 uM IC47=10 uM IC96=300 ppm; Antipancreatic; Antiperiodontal; Antiperistaltic; Antipermeability; Antiperoxidant; Antipharyngitic; Antiplatelet; Antiplasmodial IC50=13-64; AntiPMS 500 mg/2x/day/wmn; Antipodriac; Antipolio; Antiproliferant 10 nM; Antiprostanoid; Antiprostatic; Antipsoriac; Antiradicular IC50=4.6 uM; Antispasmodic; Antistreptococcic ID50=120 ug/ml; Antithiamin; Antithrombic; Antitrypanosomic IC50=13; Antitumor 10 uM; Antitumor (Bladder); Antitumor (Breast); Antitumor (Colon); Antitumor (Lung); Antitumor (Ovary); Antitumor (Skin) 20 uM;

Antitumor-Promoter; Antiulcer; Antiviral 48-150 ug/ml IC50=10 uM; Apoptotic 20-60 uM; ATPase-Inhibitor; Bacteristat 10 mg/ml; Bradycardiac; Calmodulin-Antagonist; cAMP-Phosphodiesterase-Inhibitor; Cancer-Preventive; Candidicide; Capillari-protective; Carcinogenic 40,000 ppm (diet) mus; Catabolic; COMT-Inhibitor; Copper-Chelator; COX-2-Inhibitor <40 uM; Cyclooxygenase-Inhibitor; Cytochrome-P450-1A2-Inhibitor; Cytotoxic ED50=70 ug/ml IC82=100 ug/ml; Deiodinase-Inhibitor; Diaphoretic?; Differentiator 5.5 uM; Estrogenic 10% genistein; Fungicide; Glucosyl-Transferase-Inhibitor ID50=120 ug/ml; Hemostat; Hepatomagenic 5,000 ppm (diet) rat; Hepatoprotective; HIV-RT-Inhibitor IC50=<1 ug/ml; Hypoglycemic 100 mg/kg orl rat; iNOS-Inhibitor IC50=20 uM; Inotropic; Insulinogenic; Juvabional; Larvostat 8,000 ppm diet; Lipooxygenase-Inhibitor IC11=1.25 mM IC50=0.1-5 uM; MAO-A-Inhibitor; Mast-Cell-Stabilizer; Metal-Chelator (Copper); Metalloproteinase-Inhibitor IC50=>42 uM; MMP-9-Inhibitor 20 uM; Mutagenic; NADH-Oxidase-Inhibitor; NEP-Inhibitor IC50=>42 uM; Neuroprotective 5-25 uM; NF-kB-Inhibitor; NO-Inhibitor IC50=20 uM IC>50=125 uM; NO-Synthase-Inhibitor 5-50 uM; Ornithine-Decarboxylase-Inhibitor <10 uM; P450-Inducer 5 uM; P450-Inhibitor 50-100 uM; Pesticide; PGE2-Inhibitor; Phospholipase-Inhibitor; Plasmodicide; Proliferant; Prostaglandin-Synthesis-Inhibitor 40 ug/ml; Protein-Kinase-C-Inhibitor; PTK-Inhibitor 0.4-24 uM; Quinone-Reductase-Inducer 13 uM 6 uM; Teratologic; TNF-alpha-Inhibitor IC50=3.11 uM; Topoisomerase-I-Inhibitor IC50=12.8 ug/ml IC50=42 uM; Topoisomerase-II-Inhibitor IC50=1-6.9 ug/ml IC50=23-40 uM; Tumorigenic 0.1% diet orl rat/yr; Tyrosinase-Inhibitor ID50=70 uM; Tyrosine-Kinase-Inhibitor; Vasodilator; VEGF-Inhibitor; Xanthine-Oxidase-Inhibitor 3.1 uM IC50=10.6 ug/ml IC50=>0.4 ug/ml

RIBOFLAVIN Plant 0.6 - 0.7 ppm: Antiarabiflavinotic 2-10 mg/day orl; Anticarpal-Tunnel 50 mg/day; Anticataract 15 mg/day; Anticephalagic; Anticervicaldysplastic 1.6-10 mg/day; Anticheilitic; Antidecubitic; Antiglossitic; Antikeratitic; AntiLyme 50 mg/day; Antimigraine; Antioxidant; Antipellagic; Antiphotophobic; Cancer-Preventive

RUTIN Flower: Leaf 210 - 9,200 ppm: 5-HT-Inhibitor; Aldehyde-Oxidase-Inhibitor IC27-52=10 uM; Aldose-Reductase-Inhibitor 100 uM 4 ug/ml; Allelochemic; Antiaggregant ED50=33 nmol/kg iv; Antiallergic; Antiapoplectic; Antiatherogenic; Antiatherosclerotic; Antibacterial; Anticancer; Anticapillary-Fragility 20-100 mg orl man; Anticataract; Anticlastogen; Anticonvulsant; AntiCVI 270 mg/man/day; Antidementia; Antidermatitic; Antidiabetic; Antiedemic 270 mg/day orl man; Antierythemic; Antifeedant; Antiglaucomic 60 mg/day; Antihematuric; Antihemorrhoidal; Antihepatotoxic; Antiherpetic; Antihistaminic; Antihypertensive; Antiinflammatory 20 mg/kg; Antimalarial IC50=>100 ug/ml; Antimelanomic; Antimetastatic; Antimutagenic ID50=2-5 nM; Antinephritic; Antinociceptive; Antioxidant IC28=30 ppm IC50=120 uM IC54=10 uM; Antiperoxidant IC50=10-20 uM; Antiplatelet; Antiproliferant 50-75 uM/l; Antiprotozoal; Antipurpuric; Antiradicular 9 x quercetin; Antispasmodic; Antisunburn; Antithrombogenic EC50=500 nM; Antithyroid IC50=68 uM; Antitrypanosomic 100 mg/kg; Antitumor; Antitumor-Promoter; Antiulcer; Antivaricose; Antiviral; Apoptotic 75 uM/l; cAMP-Phosphodiesterase-Inhibitor; Cancer-Preventive; Capillari-protective; Catabolic; Chemopreventive; Cytoprotective IC50=3 uM; Estrogenic?; Hemostat; Hepatomagenic 20,000 ppm (diet) rat; Hepatoprotective 20 mg/kg rat; Hypocholesterolemic; Hypotensive; Immunomodulator; Insecticide; Insectiphile; Juvabional; Larvostat IC95=4,000-8,000 ppm diet; Lipooxygenase-Inhibitor IC75=2.5 mM; Mutagenic; Myoprotective; Myorelaxant; Oviposition-Stimulant; PAF-Inhibitor; Pesticide; Protisticide; Radioprotective; Sunscreen; Topoisomerase-II-Inhibitor IC50=1 ug/ml; Vasodilator; Vasopressor

SAMBUNIGRIN Leaf 420 ppm; Aldose-Reductase-Inhibitor 0.1 mM/l rat (weak activity); Cyanogenic

SHIKIMIC-ACID Plant: Analgesic; Anticancer; Anticonvulsant; Antioxidant 7 x quercetin; Antiradicular; Antispasmodic; Antitumor; Antitumor-Promoter; Bruchifuge; Cancer-Preventive; Carcinogenic; Ileorelaxant; Mutagenic; Pesticide

STEARIC-ACID Plant: 5-Alpha-Reductase-Inhibitor; Cosmetic; FLavor FEMA 2-4,000; Hypocholesterolemic; Lubricant; Perfumery; Propecic; Suppository

STIGMASTEROL Leaf: Antihepatotoxic; Antiinflammatory; Antinociceptive; Antiophidic 2.3 mg ipr mus; Antioxidant IC33=10 uM; Antiviral; Artemicide LC50=110 ppm; Cancer-Preventive; Estrogenic; Hypocholesterolemic; Ovulant; Sedative

TANNIN Leaf 4,400 - 30,000 ppm: Anthelmintic; Antibacterial; Anticancer; Anticariogenic; Antidiarrheic; Antidysenteric; Antihepatotoxic; AntiHIV; Antihypertensive; Antilipolytic; Antimutagenic; Antinephritic; Antiophidic; Antioxidant 1/3 quercetin IC50=1.44 ug/ml; Antiradicular 1/3 quercetin 500 mg/kg/day orl mus; Antirenitic; Antitumor; Antitumor-

Promoter; Antiulcer; Antiviral; Cancer-Preventive; Carcinogenic; Chelator; Cyclooxygenase-Inhibitor; Glucosyl-Transferase-Inhibitor; Hepatoprotective; Immunosuppressant; Lipoxygenase-Inhibitor; MAO-Inhibitor; Ornithine-Decarboxylase-Inhibitor; Pesticide; Psychotropic; Xanthine-Oxidase-Inhibitor

THIAMIN Plant 1 ppm; Analgesic 1-4 g/day; Antialcoholic 50-100 mg/day; Antialzheimeran 100-3,000 mg/day; Antianorectic; Antibackache 1-4 g/day; Antiberiberi; Anticancer; Anticardiospasmic; Anticataract; Anticolitic; Antidecubitic; Antideliriant; Antidementia; Antidyspeptic; Antiencephalopathic; Antifatigue; Antigastritic; Antihangover 50 mg; Antiheartburn; Antiherpetic; AntiLyme; Antimigraine; Antimyocarditic; Antineuralgic 1-4 g/day; Antineurasthenic; Antineuritic; Antineuropathic 50 mg; Antipoliomyelitic; Insectifuge 75-150 mg/man/day; Neuroprotective; Pesticide

TYROSINE Fruit 2,200 - 2,900 ppm: Antidepressant?; Antiencephalopathic; Antiparkinsonian 100 mg/kg/day; Antiphenylketonuric; Antiulcer 256 mg scu 400 mg/kg ipr rat; Cancer-Preventive; Monoamine-Precursor

UNDECYLENIC-ACID Seed: Deodorant; Fungicide; Pesticide

URSOLIC-ACID Bark: Flower: Leaf: Analgesic; Antialzheimeran; Antiarrhythmic; Antiarthritic; Antibacterial; Anticancer; Anticancer (Colon); Anticarcinomic; Anticariogenic; Anticholestatic 28-100 mg/kg orl; Anticomplement IC100 0.1 mM/l gpg IC80-90 0.05 mM/l gpg; Antidiabetic; AntiEBV; Antiedemic; Antiescherichic; Antifibrosarcomic IC80=10 uM; Antihepatotoxic 5-20 mg/kg ipr; Antihistaminic; AntiHIV 6.7 uM EC50=2.0 ug/ml IC50=6.5 ug/ml IC85=18 ug/ml; Antihyperlipidemic; Antiinflammatory 1/3 indomethacin IC24=500 mg/kg; Antileishmanic ED50=20 uM; Antileukemic IC50=2.5-17.8 ug/ml; Antilymphomic; Antimalarial IC50=28-37 ug/ml; Antimetastatic IC80=10 uM; Antimutagenic IC57-80=80 mg/kg; Antinephritic IC50=6-7.5 uM; Antiobesity?; Antioxidant IC50=10 uM; Antiperoxidant IC35=200 ug/ml; Antiplasmodial IC50=28-37 ug/ml; Antiproliferative IC50=15-20 uM; Antistaphylococcic; AntiTGF-beta IC50=6-7.5 uM; Antithromboxane IC50=50 uM; Antitrypanosomic; Antitumor; Antitumor (brain); Antitumor (Breast) 0.5% diet IC50=15-20 uM; Antitumor (Cervix); Antitumor (Colon); Antitumor (Lung); Antitumor (Ovary); Antitumor (Stomach); Antitumor-Promoter; Antiulcer; Antiviral IC85=18 ug/ml; Aromatase-Inhibitor; Beta-Blocker; Beta-Glucuronidase-Inhibitor ~100 mg/kg; Cancer-Preventive; Candidicide; Cardioprotective; Cardiotonic; Choleric 5-20 mg/kg orl; CNS-Depressant; COX-2-Inhibitor IC50=130 uM; Cyclooxygenase-Inhibitor; Cytotoxic 50 ppm 7.2 uM ED50=3.75 ug/ml; Diuretic; Elastase-Inhibitor IC50=~15 uM; Hepatoprotective 1-100 ug/ml 10 mg/kg; Hypoglycemic; Hypotensive; Immunomodulator; Leucocytogenic; Lipoxygenase-Inhibitor IC50=0.18 mM; MMP-9-Inhibitor IC80=10 uM; Ornithine-Decarboxylase-Inhibitor; Pesticide; Piscicide; Potassium-Sparing 3 mg/rat; Protease-Inhibitor IC85=18 ug/ml; Protisticide; Quinone-Reductase-Inducer 5 ug/ml; Sodium-Sparing 3 mg/rat; TOPO-2-Inhibitor; Trypanocide; Vasopressor

VALERIANIC-ACID Fruit: Antispasmodic

WATER Fruit 791,000 - 819,000 ppm

(Note: Source of information - my phytochemical database online at USDA)

CONCLUDING STATEMENT

I have observed, over a thirty-year research period, that the use of medicinal plants is generally more economic than the use of pharmaceuticals, presents fewer side effects, and supplies the body with a combination of synergistic phytochemicals which it may need; these would never be available with a purified extract found in a pharmaceutical product. I have seen medicinal herbs treat cases that high-tech pharmaceuticals could not. In the case of elderberry, as evidenced in my research, there are over fifty beneficial chemicals from which the body can select and use if they are needed. Elderberry is one of the most important medicinal species to be featured as an "Herb of the Year."

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Dr. James Duke

James Duke, A.B., M.A., Ph.D. (all from the University of North Carolina, Chapel Hill) is a world-renowned, award-winning, economic botanist and ethnobotanist. While working for the U.S. Department of Agriculture, Dr. Duke directed a USDA program collecting plants from China, Ecuador, Panama and Syria, in collaboration with the NCI Cancer-Screening Program. It was at that time that he began developing his phytochemical database and later expanded it to embrace a special crop diversification program for medicinal plants. His database continues to grow online at USDA.

Dr. Duke retired from the USDA in 1995 after 27 years of service. He may have retired from the USDA, but he has not stopped working. In 1995, he wrote *The Green Pharmacy*, Rodale's best-selling book in 1997 (over 1 million copies sold)—just one of over 30 books he has published. In retirement, Dr. Duke has worked as a consultant with AllHerb and Nature's Herbs and developed his famous "Green Farmacy Garden," where he regularly hosts garden tours and lectures, including the Tai Sophia Institute's teaching tours. He has led numerous ecotours to tropical regions of the world, the most recent being to Cuba in the spring of 2012. Currently he is working on a new book, *Herbistatins: Green Farmacy Herbal Alternatives to Synthetic Statin Drugs*.

Dr. Duke served as Honorary President of The Herb Society of America (2006-2008) and received The Society's Gertrude B. Foster Award for Excellence in Herbal Literature in 2011.



Photo By Joyce Brobst





Household Uses



Gastronomic Delights, Decorating, & Crafts Using Elderberry

BY SUSAN ROUNTREE

CULINARY USES

As children, my cousins and I loved visiting our grandparents at their New Hampshire farm in the summer. Our grandfather would pack us in the rumble seat and fill the front of the car with vegetables and gladiolas for the neighbors. One day, at our first stop, the lady of the house was making elderberry jelly. She was thrilled that the bushes (*Sambucus canadensis*) all along the road were covered with the dark purple berries. I will always remember my first taste of elderberry jelly— it was delicious!

Betty Rea, former president of The Herb Society of America, remembers sitting under the trees with her grandfather removing every tiny stem from the juicy berries so her grandmother could make Betty's favorite elderberry pie. She has always called it "purple-fingers pie." Her recipe follows:

ELDERBERRY OR PURPLE-FINGERS PIE

One 9-inch pie

Pastry for 9-inch double crust pie
 3 tablespoons cornstarch
 2 tablespoons grape juice
 3½ cups elderberries, stems removed*
 ¾ cup sugar
 ¾ cup seedless grapes, cut into quarters
 1 tablespoon lemon juice
 1 tablespoon elderberry honey**
 ¼ teaspoon salt
 1 tablespoon butter
 1 to 2 tablespoons milk



Preheat the oven to 450 degrees F.

Line the pan with a bottom crust.

In a saucepan, mix the cornstarch with a little bit of grape juice and add the elderberries and sugar. Cook, stirring constantly, until the mixture thickens. Add more cornstarch if it is not thick enough. Add the grapes, lemon juice, elderberry honey, and salt.

Put the cooked mixture into the crust and dot with butter.

Moisten the edge of the bottom crust.

Add the top crust and trim to ½ inch larger than the pie pan. Press the edges firmly together, flute, and slash vents in the center of the crust.

Brush the top with milk. Place on a cookie sheet for baking as it may bubble over.

Bake at 450 degrees F for 10 minutes then reduce the heat to 350 degrees F and bake for 45 minutes or until the crust is golden brown.

*If you plan to freeze berries for later use, carefully remove all the stems, as it is difficult to take the stems off after they are frozen.

**Elderberry honey can be purchased at a health food store.

APPLE-ELDERBERRY PIE

One 9-inch pie

In the following recipe I have combined the berries with apples in a pie that is our family favorite.

Pastry for 9-inch double crust pie

3 tablespoons all-purpose flour

¾ cup sugar

¼ teaspoon salt

¾ teaspoon cinnamon

½ teaspoon nutmeg

¼ teaspoon allspice

½ teaspoon ginger

½ teaspoon ground cloves

6 cups peeled and sliced apples (6 to 8 tart apples)

1 cup elderberries

Juice and rind, grated, of ½ lemon

1 tablespoon elderberry honey*

1 tablespoon butter

1 to 2 tablespoons milk

Preheat the oven to 350 degrees F.

Line the pan with the bottom crust.

Mix 2 tablespoons of flour with the other dry ingredients in a large bowl.

Add sliced apples and mix to coat.

Place apple slices in the pan, laying slices first along the outside and then working toward the center until the bottom of the pastry is covered. Add more apple slices to make a mound in the center.

Combine the elderberries with the remaining flour and spread over and around the apple slices.

Sprinkle with lemon juice and zest.

Drizzle the elderberry honey over the apple slices and elderberries.

Dot with butter.

Moisten the edge of the bottom crust.

Add the top crust and trim to ½-inch larger than the pie pan. Press the edges firmly together, flute, and slash vents in the center of the crust.

Brush the top with milk. Place on a cookie sheet for baking, as it may bubble over.

Bake at 350 degrees F for about 1 hour and 15 minutes until the crust is golden brown.

Note: The berries need to cook a long time to maximize their flavor. Oven temperatures can vary so check to see if the top has browned after 60 minutes.

*Elderberry honey can be purchased at a health food store.

FROZEN ELDERBERRY MOUSSE

8 servings

1½ cups elderberries
Zest from ½ orange
½ cup water
⅔ cup sugar, divided
2 eggs
½ teaspoon vanilla
Pinch of salt
1 cup whipping cream
Elderberry cordial or crème de cassis
Crème fraîche
8 mint leaves



Photo By Susan Rountree

Combine the elderberries and grated orange zest in the water and heat slowly until the water simmers and the berries begin bursting. Keep the berries at a slow simmer and stir in ⅓ cup of the sugar. Continue simmering the mixture for 5 minutes.

Drain the elderberries, reserving the juice, and puree them in a food processor.

Press the berry mixture through a fine sieve. If it is too thick, thin with some of the reserved juice. The seeds will be small, so a fine sieve should be used. Try to get as much pulp as possible.

Beat the eggs in a bowl until they are light and fluffy, and then gradually beat in the rest of the sugar.

Combine the eggs with the strained elderberry mixture, vanilla, and salt.

Whip the cream until stiff.

Fold the elderberry mixture into the cream and place in demitasse cups or other small containers. Cover with plastic wrap and freeze until firm.

Remove the mixture from the freezer a few minutes before serving.

Top each serving with elderberry cordial or cassis and garnish with a bit of crème fraiche and a mint leaf.

Note: This mousse can be made ahead and kept in the freezer until a few minutes before serving.

ELDERBERRY ICE CREAM

2 pints

After looking through some old cookbooks, hoping to find elderberries mentioned (other than for a pie), I found two recipes for ice cream. I incorporated parts from each and added the elderberries for a different and good taste.

2 cups elderberries, stems removed
1 cup water
1 cup sugar
1 tablespoon lemon juice
2 cups heavy cream
1½ cups milk
1 teaspoon vanilla
5 egg yolks
4 tablespoons buttermilk
3 tablespoons elderberry honey*
2 tablespoons elderberry cordial or crème de cassis liqueur

To make the syrup put the elderberries in a pot and pour the water over them. Heat slowly until the water simmers and the berries begin to burst. Keep the berries at a slow simmer and slowly stir in the sugar, ½ cup at a time, to taste. Add the lemon juice.

Continue simmering the syrup for 5 minutes.

Let the syrup cool and then puree it in a food processor.

Press the syrup through a fine sieve. The seeds are small, so a fine mesh that prevents them from getting through should be used. Try to get as much pulp as possible.

Combine the cream, milk, and vanilla over medium heat in a saucepan. Add 2 cups of the syrup and bring the mixture to a low simmer, then reduce the heat.

Beat the egg yolks in a separate bowl. Slowly add ½ cup of the hot cream and syrup mixture to the egg yolks, whisking continuously.

Continue whisking and slowly add the rest of the hot cream and syrup mixture, a little at a time.

Return the mixture to the saucepan and whisk in the buttermilk and elderberry honey.

Bring the mixture to a slow simmer, remove from the heat, and let cool for 15 minutes.

Add the elderberry cordial or crème de cassis liqueur and chill the mixture overnight.

Pour the mixture into the ice cream maker and follow the directions.

*Elderberry honey can be purchased at a health food store.

ROAST DUCK WITH ELDERBERRY SAUCE

2 to 4 servings

Here elderberry jam and fresh thyme gives a nice tangy finish to a sauce that has been paired with roast duck stuffed with lemon and orange sections and seasoned with salt and pepper and thyme. This sauce is equally good served with any game.

1 (5 to 6-pound) farm-raised duck, thawed
 1 teaspoon salt
 $\frac{3}{4}$ teaspoon freshly ground black pepper
 $\frac{1}{2}$ lemon, cut into slices
 2 Clementines or other small oranges
 8 sprigs fresh thyme or 2 teaspoons dried
 1 medium onion, sliced
 $\frac{3}{4}$ cup red wine
 2 tablespoons elderberry jam



By Susan Rountree

Preheat the oven to 400 degrees F.

Remove the neck and livers from the cavity of the duck. Trim away the excess fat from the remaining neck and tail of the duck. Rinse the duck thoroughly under cold water and pat dry.

Combine the salt and $\frac{1}{2}$ teaspoon of black pepper in a small dish. Rub the duck, inside and outside, with the salt and pepper mixture. Tuck the wing tips back and place the duck on a rack inside a medium roasting pan.

Finely grate an orange and set aside the zest. Slice the orange and fill the cavity of the duck with the citrus (orange and lemon) slices and 4 sprigs of thyme or 1 teaspoon dried thyme.

Place the onions and 1 cup water into the roasting pan. Place the duck on a rack in the pan, and sprinkle with the orange zest. Roast the duck with the legs toward the back of the oven.

After 1 hour, reduce the heat to 350 degrees F and cook the duck for an additional 30 to 40 minutes, or until the internal temperature of the thigh is 180 degrees F.

Remove the duck from the roasting pan and cover it with foil. Allow it to rest 15 to 20 minutes before carving.

Elderberry Sauce (for roast duck)

Remove the onions from the pan and the citrus slices from inside the duck and pour the pan juices into a measuring cup. Let the fat come to the top. Siphon off the fat with a baster and return the juices to the pan. Add the wine to the pan juices and set over medium heat. Loosen any pan drippings with a wooden spoon or spatula as soon as the wine begins to boil and reduce by half.

Finely grate the zest from the second orange and add the zest and its juice to the pan juices and wine along with the remaining pepper and thyme and the elderberry jam. Continue to reduce the sauce for 5 minutes. Serve with the duck garnished with fresh thyme.

ELDERBERRY JAM

3 pints

Bobbie Champaign, long time member of The Herb Society of America and a noted cook, kindly provided me with the following recipe from the *Ball Canning Company Blue Book* for 1969. It sold for 35 cents!

2 quarts crushed elderberries

¼ cup white vinegar

6 cups sugar

Combine the berries, vinegar, and sugar and bring slowly to a boil, stirring occasionally until the sugar dissolves.

Cook rapidly until the mixture thickens, stirring frequently to prevent sticking.

Pour the jam, boiling hot, into sterilized Ball jars. Remove any of the jam that has gotten onto the rims of the jars.

Adjust caps.

ELDERBERRY JELLY

7½ pint jars

Mary-Jane Bernstein, who happily spends summers in a cabin on the shores of Bauneg Beg in Maine, crafting, gardening, reading, and paddling, shared this recipe with me. Elderberries grow wild near the water.

3¼ cups elderberry juice

Cheesecloth

2 ounce package of fruit pectin

4½ cups sugar

To make the juice, remove the stems from the berries and place the berries in cheesecloth, put berries (in the cheesecloth) in a canner and cover with water.

Cover the canner and cook the fruit for 15 to 20 minutes or until it is soft.

Suspend the cheesecloth and let the juices drip into a large saucepan. Do not squeeze the bag or the jelly will become cloudy.

Mix the juice and pectin and bring to a boil.

Add the sugar and boil one minute, stirring constantly. Remove the mixture from the heat.

Skim off the foam and pour the mixture into sterilized jars. Remove any of the mixture that has gotten onto the rims of the jars.

Seal and process the jars for twelve minutes in a bath of boiling water.

Place the jars on a towel to seal.

Check the lids after 15 minutes to see if they have sealed. If not, any jar that has not sealed can be put back in the water bath or after it has cooled can be refrigerated for immediate use.

CRAFTS AND DECORATING

Years ago, as was mentioned previously in this guide, elder branches were used to make flutes, whistles, and other musical instruments because the soft pith in the branches was easy to hollow out. Some craftsmen today caution against handling any part of the plant without gloves, including the flowers and berries. Cooking the flowers and berries does, however, make them safe to eat and sweeter.

On the plus side, elder bushes attract native butterflies and birds. A neighbor uses dried elderberry leaves in his garden as a non-chemical insecticide. The leaves are strong smelling and when summer ants become a problem leaves or branches can be placed along the foundation of your house to discourage ants from entering.

Always be sure to wear gloves when handling this plant.

FLOATING ARRANGEMENT OF ELDER FLOWERS AND FERNS

Gloves and clippers
2 heads of elder flowers
8" to 10" long fern fronds
Large shallow glass bowl

Wearing gloves, cut 2 heads of elder flowers 8 inches below the flowers. Place in a narrow-topped container of water overnight to condition.

Cut 8 to 10 fern fronds, stripping them of all leaflets below 7 inches, and place in a tall narrow-topped container of water overnight.

To assemble the arrangement, fill the bowl with water.

Trim the bottom of the fern fronds so the fern tips are over the edge of the bowl and the stripped ends overlap in the center to make a "raft".

Cut the prettiest flower heads so they will rest on the ferns and be in the water. Fill in with the remaining flowers as needed.

This arrangement will be attractive on your table or on a stand outside near chairs to discourage insects. While making this arrangement out of doors, I realized that the myriad of black flies that had been my constant and unpleasant companions suddenly disappeared.

The arrangement should last several days and can be made using many flowers and foliage such as camellia leaves and blooms.



Photo By Susan Rountree

DYEING WITH ELDERBERRIES

Elderberries can still be found growing along the side of country roads, especially in wet areas. They are easy to find in the late spring or early summer when blossoms cover their branches. However, if you want to find the berries later in the summer remember where the plants are! Surveyors' tape maybe?

Approximately 6-ounce ball of woolen yarn, off white or natural

Scissors

Cotton string

Large stainless steel or enamel pot, not used for cooking

Liquid soap

Long-handled wooden spoon or chopsticks

Colander

½ cup salt

Surgical gloves

Cheesecloth

4 cups elderberries, stems removed

3 teaspoons white vinegar



Photo By Susan Rountree

Natural dyeing with plant materials can be both complicated and surprising. Several steps are needed using a chemical fixative called a mordant to make the yarn accept the dye. However, dyeing with berries involves only a direct dye process rather than the use of a chemical mordant. Salt is used as a fixative. This makes the dyeing easier but the result is a color that is fugitive, not colorfast.

To prepare the yarn, start with a ball of yarn, hold 1 strand in your hand, wind it around your elbow and back to your hand 20 times. Cut the strand from the ball, remove from your hand, and tie this skein loosely in 4 places with the cotton string. This will prevent the yarn from getting tangled when it is dyed. Repeat until all the skeins have been prepared from the ball of yarn.

Fill the pot with water and a small amount of soap. Swish the yarn around with a spoon or chopsticks and let it soak overnight. The next day drain it in a colander, pressing out as much water as possible, and then rinse repeatedly to remove the rest of the soap.



To fix the yarn to accept the dye, combine salt and 8 cups of water in the pot and mix thoroughly. Return the yarn to the water and bring to a simmer. Simmer the yarn for 1 hour, then remove it and drain it in the colander. Rinse the wool in tepid water and squeeze out most of the water. You can leave the damp yarn in the colander.

To make the dye solution, put on gloves while you are handling the berries. Put a square of cheesecloth large enough to hold the berries in a bowl with the ends of the cheesecloth draped over its side, add the elderberries, and gather the ends of the cheesecloth together and secure with a clothespin.

Transfer the cheesecloth filled with berries to the dye pot. Crush the berries with the spoon. Cover with water.

Bring the mixture to a boil and simmer for 1 hour. From time to time press the berries with the wooden spoon as they simmer. Use a fine sieve and strain the

Photo By Susan Rountree

liquid into another container. Remove the cheesecloth and crushed berries, and return the liquid to the dye pot. Add enough water to make 2 quarts.

Add the yarn and simmer on low heat for 1 hour. Do not let the yarn boil. Rinse the yarn until the water is clear. It can be left overnight in the dye bath to reach a darker color but be sure to rinse it the next day.

Remember that the wool will be a lighter color after it is rinsed and dried. Your yarn will probably be in the heather brown to lavender or purple range. Nature decides the color!

Note: When you gather the elderberries always leave two thirds for wildlife.

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Susan Rountree

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Preserving Elderberry

BY PAT CROCKER



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dates back

have led Andrew Martindale and Irena Jurakic to conclude that elderberry preservation dates to 1500 and earlier in Canada's northwest coastal region.

Elderflowers and berries, gooseberries and currants—I tend to think of these fruits as being old-time summer preserving and drink ingredients, popular when my grandmother was a child. Indeed, they're fruits that were either gathered up from the wild or grown in rows at the edges of the family vegetable plot. And through the work of Eleanour Sinclair Rohde, we learn that preserving both elderflowers and elderberries in England and Europe

at least 350 years. Seed and floral remains in native Tsimshian communities

Writing *A Garden of Herbs* in 1936, Rohde advises that, "However tiny the herb garden, there should be at least one elder in it, for all herbs are under the protection of the spirit of the Elder." She goes on to cite traditional uses, resources (and dates) for using elder such as, *To Take Away Freckles in the Face* (1655); *The Lady Thornburgh's Syrup of Elders*; *To Pickle Elder Buds* (1723); *To Pickle Elder Tops*; *Elder Vinegar*; *Elder Flower Fritters*; *Elder Wine*; *Elder Leaf Tea*; and *Elder Rob*.

With the same magic shrub growing in many parts of Canada, Europe, and the United States today, we have an abundant source of flowers and berries to use in recipes that have survived the centuries to reflect an ancient and enduring practice. The recipes that follow offer ways to preserve fresh elder (*Sambucus nigra* or *S. canadensis*) flowers and berries* for use in beverages and other food dishes.

* Be sure to identify *S. nigra* or *S. canadensis* correctly and cook the berries because uncooked berries are mildly poisonous. Do not eat the roots, bark, leaves, twigs, berry stems, or seeds of elderberries, because they contain a cyanide-producing glycoside. Only the blue or purple elderberries are edible; the red berry from *S. racemosa* is poisonous.

ELDERFLOWERS

Depending on the year and your location, you can look for elder flowers just before they are fully open in late spring. You can use the flowers (stems removed) fresh in salads, fritters and preserves or dry for later use in teas.

To Dry Elderflowers: Harvest early (before 10 a.m.) on a dry day; hold each flower head by the stem and swish in cool water; tap dry on a kitchen towel and lay face down on a cooling rack or screen; let dry in a warm, dry, dark place. Store dried flower heads in a box, separating the layers with parchment paper, or in a large, wide-mouth jar. Keep in a dry cupboard for up to 1 year.



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RED GOOSEBERRY AND ELDERFLOWER JELLY

Makes 8 cups

5 pounds red gooseberries

About 4 cups granulated sugar

¼ cup freshly squeezed lemon juice

10 to 12 fresh elderflower heads

1. In a canning kettle or large saucepan, combine gooseberries with 2 cups water. Bring to a boil over high heat, reduce heat and simmer for about 45 minutes, or until the fruit is very soft.



Photo By Pat Crocker

2. Line a cone strainer with cheesecloth or use a jelly bag or clean cotton pillowcase to extract the juice. Place the strainer over a large bowl and tip the gooseberries and liquid into the strainer. Let the pure juice drip into the bowl overnight or at least 12 hours. If you force the fruit or squeeze the strainer, the juice and resulting jelly will be cloudy.

3. In a canning kettle, stand 4 pint (2-cup) or 8 half-pint (1-cup) Mason-style jars upright and cover with hot water. Cover and bring to a boil.

4. Meanwhile, measure the strained juice and for every 2 cups of juice, measure 1 cup of sugar. In a canning kettle or large saucepan, combine the juice, sugar and lemon juice. Bring to a boil over low heat, stirring to dissolve the sugar. Tie the elderflowers in a cheesecloth bag and add the bag to the juice mixture. Boil until the mixture reaches the jelly stage, 103-105°F on a thermometer or a drop jells when dropped onto a frozen plate. (Place a saucer or small plate in the freezer for 5 to 10 minutes. Remove and drop some of the mixture from the spoon onto the plate. If the mixture wrinkles and appears stiff, it has reached the jelly stage.)

5. Remove elderflowers and fill hot jars with hot jelly, leaving a ¼-inch headspace. Clean the rim of each jar. Cap the jars with flat lids and separate screw bands. Return filled, capped jars to the hot water, making sure that the water level is 2 inches above the tops of the jars. Cover and bring to a rolling boil over high heat. Process jars in boiling water for 10 minutes.

6. Remove jars from hot water to a cooling rack and let cool completely. Test the seal by pressing lightly on the flat jar lid with your index finger. If it springs when touched, the lid didn't seal properly and you must refrigerate and use the jelly within 2 weeks. Sealed jars may be kept in a cool dry place for 6 months to 1 year.

PICKLED ELDER BUDS

Makes 6 cups

Inspired by the recipe from *The Receipt Book of John Nott, Cook to the Duke of Bolton, 1723* (Rohde, 1936). For this recipe, pick elderflower heads in the spring before they open to flowers. Use as you would capers, on smoked salmon, or as a garnish for meat or vegetable dishes.

6 cups elderflower buds (see above)

2 cups white wine vinegar

1½ cups granulated sugar
2 tablespoons classic pickling spice
2 tablespoons pickling salt
2 cups thinly sliced onions

1. Remove and discard stems from flower buds. Rinse, drain and pat dry.
2. In a preserving kettle, stand 3 pint (2-cup) or 6 (1-cup) Mason-style jars upright and cover with hot water. Cover the pot and bring to a boil.
3. Meanwhile, in a canning kettle or large saucepan, combine vinegar and sugar. Slowly bring to a boil over medium-high heat, stirring frequently. Reduce to a simmer and add pickling spice, salt, buds and onions. Simmer for 1 minute.
4. Fill hot jars with buds and brine, leaving a ¼-inch headspace. Clean jar rims. Cap the jars with flat lids and separate screw bands. Return filled, capped jars to the hot water, making sure that the water level is 2 inches above the tops of the jars. Cover and bring to a rolling boil over high heat. Process jars in boiling water for 10 minutes.



Photo By Joyce Brobst

5. Remove jars from hot water to a cooling rack and let cool completely. Test the seal by pressing lightly on the flat jar lid with your index finger. If it springs when touched, the lid didn't seal properly and you must refrigerate and use the pickled buds within 2 weeks. Sealed jars may be kept in a cool dry place for 6 months to 1 year.

ELDERFLOWER ELIXIR

Makes 2 cups

If you wish to use fresh elderflowers in this tea, measure 2 tablespoons fresh instead of the one tablespoon of dried.

1 tablespoon dried elderflower
1 teaspoon freshly grated ginger root
Pinch ground cinnamon
Pinch ground coriander

In a teapot or tea strainer, combine elderflower, ginger, cinnamon and coriander. Pour 3 cups boiling water over and let steep for 5 minutes. Strain tea through a fine mesh strainer and serve hot.



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ELDERBERRIES

Depending on the year and your location, you can start to look for elderberries from mid-August onwards. Be sure to correctly identify them to verify that they are an edible variety before using. Since they are unpalatable raw, elderberries must be cooked before they are used. Gather them early on a dry day; strip off the stems; rinse and pat dry.

Salt, sugar, vinegar and alcohol are ingredients that have long been used as preservatives. In addition, freezing, drying and canning (the most recent preserving technique) are a few processes that protect food from spoiling. Mrs. Grieve devotes 13 pages to elder in *A Modern Herbal* (1931). What follows are elderberry recipes inspired by or based on older versions that use salt, sugar, vinegar and alcohol to preserve these precious berries.

DOUSING IN ALCOHOL

You can use any spirit—vodka, gin, rum—to preserve fruit, as long as it is 40% alcohol or 80 proof. Adding sugar reinforces the preservative effect of the mixture and thickens the mixture to syrup consistency. A good rule of thumb is to use ½ cup granulated sugar to 1 pound of fruit to 2 cups alcohol. You can mash the berries by covering the bottom of a pie plate with berries and mashing with a potato masher. Remove to a bowl and repeat until all of the berries are crushed. What follows is an easy method of layering fruit and sugar with alcohol to make a sweetened tincture of elderberries.

DOUSED ELDERBERRY TINCTURE

2 pounds elderberries, mashed (about 4 cups berries, see above)
1 cup granulated sugar
4 cups 80-proof spirits (gin, vodka or rum)

1. In a large, wide-mouth jar (you may need more than one) with a tight-fitting lid, spread 1 cup of elderberries over the bottom. Sprinkle ¼ cup sugar over. Keep layering berries and sugar until finished. Slowly drizzle the alcohol over the fruit. Cover with a lid and set in a warm place. Shake and turn the jar every day for 2 weeks, making sure that the sugar is dissolved.

2. Store the jar in a cool, dark place for at least 1 month and preferably for over 1 year before using.

3. Before using, strain off and discard the solids. Taste and if desired, add a quantity of simple syrup (2 cups water and 2 cups granulated sugar, boiled for 1 minute and cooled) to sweeten, starting with ¼ cup and tasting before adding more until the desired sweetness is achieved.

Use the mixture as a topping for desserts including ice cream, cake and pie or in sauces or as a base for elder cough syrup.

Store in a dark glass jar with tight-fitting lid in a cool cupboard indefinitely.

ELDERBERRY JUICE

If you need a quantity of pure juice for making jelly, rob, cordial or syrup, this method will give you bright, clear unsweetened juice. Look for cone strainers at garage sales or in hardware stores or use the old method of hanging a pillowcase filled with crushed berries from the legs of an upturned stool. The rungs of the stool support a large bowl so that the juice can drip into it for collection.

Makes 4 cups fresh juice

4 pounds elderberries (about 8 cups)*
2 cups water

1. In a canning kettle or large saucepan, combine elderberries and water. Bring to a boil over high heat, reduce heat and simmer for about 45 minutes, or until the fruit is very soft. Let cool, to room temperature.

2. Line a cone strainer with cheesecloth or use a jelly bag or a clean cotton pillowcase to extract the juice. Place the strainer over a large bowl and tip the elderberries and liquid into the strainer. Let the pure juice drip into the bowl overnight or for a minimum of 12 hours. If you force the fruit or squeeze the strainer, the juice and resulting jelly will be cloudy. **

* A good rule of thumb is that 2 cups of berries will produce about 1 cup of juice.

**If you are making syrup, rob or cordial from the juice, you can press and strain the juice if you wish because those products do not have to be shimmering clear as does jelly.

ROBS, SYRUPS AND CORDIALS

Mrs. Grieve (*A Modern Herbal*, 1931) explains that, "Almost from time immemorial, a Rob has been made from the juice of Elderberries simmered and thickened with sugar, forming an invaluable cordial for colds and coughs" (p. 273). She gives the recipe using the juice and sugar (my version follows) and has this to say about the Rob, "It is cordial, aperient and diuretic. One or two tablespoonsful mixed with a tumblerful of hot water, taken at night, promotes perspiration and is demulcent to the chest. The Rob when made can be bottled and stored for the winter. Herbalists sell it ready for use" (p. 273).

Robs, syrups, cordials: they all take advantage of sugar to preserve fresh juice, which would spoil in a few days without refrigeration. They are all made from the same ingredients—soft berries or tree fruit, water and sugar—so what makes them different? Wikipedia defines "cordial" as referring to liqueur, an alcoholic beverage; squash, a non-alcoholic fruit drink concentrate; elderflower cordial, a non-alcoholic beverage; and cordial or medicine, a medicinal beverage, so there is a degree of confusion surrounding these terms.

For me, it comes down to the intended use of the mixture. I have come to refer to a *rob* as a medicinal herb or fruit or vegetable syrup, a *syrup* as a simple fruit juice-sugar-water mixture used widely in recipes, and a *cordial* as a fruit-alcohol-sugar mixture that is used as an aperitif or after-dinner drink.

ELDERBERRY ROB

You can take this to ease congestion in the chest and as a cold preventative or you can combine it with ¼ cup of one or a combination of any of the following dried herbs: coltsfoot flowers or leaves, thyme leaves, hyssop leaves and flowers, horehound leaves and flowers. Boil the rob and herbs with ½ cup honey for 5 minutes or until it thickens to desired texture, pour into sterilized jars, cool and refrigerate for up to 1 year. Processing of the jars in step 3 is a modern precaution for food safety. You can double the recipe if desired.

Makes 2 cups

2 cups elderberry juice (see Elderberry Juice recipe above)

1½ cups granulated sugar

1. In a canning kettle or large saucepan, combine juice and sugar. Bring to a boil over medium-high heat. Continue to boil, stirring frequently for 30 to 45 minutes or until the syrup is the consistency of honey.

2. Meanwhile, in a preserving kettle or large saucepan, stand 2 half-pint (1-cup) Mason-style jars upright and cover with hot water. Cover the pot and bring to a boil.

3. Fill hot jars with hot rob, leaving a ¼-inch headspace. Clean jar rims. Cap the jars with flat lids and separate screw bands. Return filled, capped jars to the hot water, making sure that the water level is 2 inches above the tops of the jars. Cover and bring to a rolling boil over high heat. Process jars in boiling water for 10 minutes.

4. Remove jars from hot water to a cooling rack and let cool completely. Test the seal by pressing lightly on the flat jar lid with your index finger. If it springs when touched, the lid didn't seal properly and you must refrigerate and use the rob within 6 to 10 weeks. Sealed jars may be kept in a cool dry place for 6 months to 1 year.

ELDERBERRY SYRUP

If you wish to keep the syrup without refrigerating it, follow steps 3 and 4 for processing the syrup and jars in Elderberry Rob recipe).

Makes 1½ cups

1 cup elderberry juice (see Elderberry Juice recipe above)

1 cup granulated sugar

1. In a large saucepan, combine juice and sugar. Bring to a boil over medium-high heat. Boil, stirring constantly for 1 minute and remove from the heat. Let cool and pour into 1 pint (2-cup) or 2 (1-cup) Mason-style jars, cap and refrigerate. Use within 1 week.

2. Meanwhile, if you plan to keep the syrup for more than a week, store it in sterilized jars. Here's how to sterilize jars: in a large saucepan, stand 2 (1-cup) Mason-style jars upright and cover with hot water. Cover the pot and bring to a boil. Boil jars for 15 minutes. Fill hot jars with hot syrup, clean the rims, cap and let cool. Refrigerate for up to a month.

ELDERBERRY CORDIAL

This makes a smooth, fruity-tasting aperitif. I like to use gin or vodka or straight unflavored alcohol, but you can use whiskey or rum for a stronger tasting drink.

Makes 5 cups

2 cups elderberry juice (see Elderberry Juice recipe above)

2 cups granulated sugar

2 tablespoons freshly squeezed lemon juice

¼ teaspoon ground nutmeg

1/8 teaspoon ground allspice

2 cups 80-proof alcohol (see above)

1. In a large saucepan, combine elderberry juice, sugar, lemon juice, nutmeg and allspice. Bring to a boil over medium-high heat. Boil, stirring frequently for 30 to 45 minutes or until the consistency of honey. Remove from the heat and let cool.

2. Stir in alcohol. Pour into bottles, cap and store in a cool cupboard indefinitely.

VINEGAR

Of course, wine and vinegar are among the oldest foods (and medicine) used by humans and there are two ways to use vinegar and elderberries: to make elderberry vinegar and to preserve elderberries in vinegar. My recipe for Elderberry Vinegar follows and if you wish to preserve elderberries in vinegar, simply follow the Doused Elderberry Tincture recipe above and substitute red wine vinegar for the alcohol.

In North America, before refrigeration, a popular way to preserve the unique taste of raspberries was to make vinegar from the macerated fresh berries. Stored in stoneware crocks or green glass jars, the vinegar was mixed with cool spring water or carbonated water for a refreshing summer drink called a *shrub*. It takes a couple of days to make but this fruit vinegar is easy and quite a delicious condiment to have in your pantry. In the recipe below, I have substituted fresh elderberries for raspberries.

ELDERBERRY VINEGAR

Adapted from the Sweet Raspberry Vinegar recipe in *Preserving: The Canning and Freezing Guide for All Seasons* (Crocker, 2012). If you boil the mixture too hard for too long, it will set up like syrup. When this happened to me, I used the sweetly concentrated gel as a glaze for barbequed meats and grilled vegetables.

Makes 3 cups

6 cups fresh or frozen elderberries, divided
1½ cups red or white wine vinegar, divided
3½ cups granulated sugar



Photo By Pat Crocker



Photo By Pat Crocker

1. In a large, non-reactive bowl or crock, combine 3 cups elderberries with 1¼ cups vinegar. Cover and let stand at room temperature for 24 hours.
2. Using a potato masher, mash the elderberries to a pulp. Add remaining elderberries and remaining vinegar to container. Cover and let stand 24 hours at room temperature. Mash with a potato masher.



Photo By Pat Crocker

3. Strain the mixture through a coarse sieve into a large saucepan, pressing on solids with the back of a wooden spoon to release as much juice as possible. Discard pulp and seeds.

4. Bring the strained juice to a boil over high heat, stirring frequently. Add sugar, one cup at a time, stirring until the sugar has been dissolved before adding the next cup. Lightly boil, stirring occasionally, for about 10 to 15 minutes, or until the mixture is thickened and reduced to about 3 cups. Do not over boil or the mixture will turn to a sticky syrup.

5. Meanwhile, if you plan to keep the vinegar for more than a week, store it in sterilized jars. Here's how to sterilize jars: in a large saucepan, stand 3 (1-cup) Mason-style jars upright and cover with hot water. Cover the pot and bring to a boil. Boil jars for 15 minutes. Fill hot jars with vinegar, clean the rims, cap and let cool. Refrigerate for several months.

Note: to store Elderberry Vinegar at room temperature, you must process the vinegar and jars in boiling water. To do this, follow steps 3 and 4 in Elderberry Rob recipe (above).

Use: Substitute elderberry vinegar for rice vinegar in stir-fry dishes and fruit salad dressings. Combine with applesauce and use to marinate chicken or beef.

To make Elderberry Shrub: In a tall glass, combine 2 tablespoons Elderberry Vinegar with ice and stir in mineral water for a refreshing summer drink.

WINE

Fermenting fruit with sugar and yeast is as old as vinegar making. In fact, vinegar is the natural extension of wine if nature is allowed to take its course, so the two products are intertwined throughout history. Of all the fruit used to make *country* or homemade wines, elderflower or elderberry is one of the most commonly found in older books. I have made elderflower wine with white grape juice and fresh elderflowers and found it to be light with a faint floral bouquet.

ELDERBERRY WINE

This recipe is a reprint from *The Book of Herb Cookery* by Irene Botsford Hoffmann. Here is what she writes:

Gather the berries on a dry day, clean from the stalks and put them into an earthenware pan. Pour 2 gals. boiling water to every 3 gals. of berries. Press the berries into the water. Cover them closely and leave them till the next day. Then strain the juice from the fruit through a sieve, and when this is done, squeeze from the berries any remaining juice.

Measure the juice and add to every gallon 3 lbs. sugar, 6 cloves, and 1 Tbs. ginger. Boil it for 20 minutes, removing the scum as it rises. Put it when cool into a well-washed and dry cask. Entirely fill the cask, and pour very gently into the bung-hole a large spoonful of new yeast, mixed with a very small quantity of the wine. Have at least a quart of extra juice in reserve in order to fill up the cask as the wine evaporates. This improves with age. Excellent mulled (p. 175).

ELDERBERRY FLAVORED PINOT NOIR

I recommend using a light wine, such Pinot Noir; however, if you like Merlot, you can use it in place of the Pinot Noir. A headier red such as Cabernet Sauvignon, Malbec or Burgundy will be more robust and will not allow as much of the berry flavor to permeate through.

1½ cups fresh or frozen elderberries (thawed if frozen)

2 cups Pinot Noir

1. In a large jar or crock, combine elderberries and wine. Using a potato masher, mash the berries into the wine. Cover and refrigerate for at least 2 weeks before testing the flavor.

2. Before using, strain off and discard the solids. Taste and if desired, add a quantity of simple syrup (2 cups water and 2 cups granulated sugar, boiled for 1 minute and cooled) to sweeten, starting with 2 tablespoons and tasting before adding more until the desired sweetness is achieved.

Bibliography

Botsford Hoffmann, I. (1957). *The book of herb cookery*. New York: Gramercy Publishing Company.

Crocker, P. (1999). *The healing herb cookbook*. Toronto: Robert Rose.

Crocker, P. (2011). *Preserving*. Toronto: HarperCollins.

Crocker, P. (2012). *Preserving: The canning and freezing guide for all seasons*. Toronto: HarperCollins.

Grieve, M. (1931). *A modern herbal*. London: Harcourt, Brace & Company.

Jurakic, I., & Martindale, A. (2004). Northern Tsimshian elderberry use in the late pre-contact to post-contact era Canadian. *Journal of Archaeology/Journal Canadien D'Archéologie*, 28, 254-280.

McVicar, J. (2011). *Jekka's herb cookbook*. Buffalo, NY: Firefly Books.



Pat Crocker

Pat Crocker, Professional Home Economist (B.A.A. and B.Ed.) and culinary herbalist (she coined the term), is an award-winning author and photographer. From her teaching garden and wild herb walks in the 1990s to her lectures and food articles on radio and in print, Pat knows about food and herbs from the ground up. Her recent books include *Preserving: The Canning and Freezing Guide for All Seasons*, *150 Best Tagine Recipes*, and *Everyday Flexitarian*. Pat's lifework embraces food, her spirit is entwined with plants, and she nourishes audiences with her knowledge and love of both. Pat is a member of The Herb Society of America and received The Gertrude B. Foster Award for Excellence in Herbal Literature in 2009 from The Society.

Elderberry Hard Candy

BY TINA SAMS

When my daughter was getting ready to head off to college, one of my goals was to find ways to be sure she had some of the herb remedies handy that we use at home. We knew that she probably would be reluctant to whip out a tincture bottle in a dorm, so herbal candy was the answer. It looked normal enough to pass the freshman challenge. As it turned out, in her junior and senior years, she found that she enjoyed sharing herb secrets with her friends.

When I was a kid, our Amish neighbors had an in-home business making hard candies. One of the girls was my age, and we played together a lot. Many nights I was able to help with the candy-making at her home. Armed with kitchen shears, the whole family would gather around a repurposed ping-pong table that was powdered with confectioner's sugar. The father would pour the hot liquid candy onto a marble slab at the head of the table, and using putty knives, he would deftly fold the colors and flavors into the sweet, slowly stiffening mixture. Then, he'd cut it into long strips and throw them out to us so that we could snip them into bite-sized pieces before they became too hard. Many pieces were popped into our mouths while still warm and malleable. We had to test each flavor.

Combining that experience with the many available recipes for horehound candies, I came up with lots of different herbal drops. The favorite has been elderberry. The berries can be fresh, frozen, or dried. I have experimented with various other recipes, trying to get rid of the corn syrup, but for the small amount used and consumed per piece of candy, it really is preferable. Honey never reaches the desired consistency. Sucanat in place of sugar scorched well before reaching 300 degrees F. Some use a teaspoon of cream of tartar in place of the corn syrup, but again, considering the moderate amount used, I prefer to stick with the sugar and corn syrup.

EQUIPMENT:

Large (3-quart or larger) heavy pan
Candy thermometer
Kitchen shears
Lined freezer paper
Large glass baking dish
Heatproof trivet

INGREDIENTS:

3 cups elderberries
3 cups sugar
2/3 cup light corn syrup
1 cup water
Juice of one lemon (or lime)
2-3 inches of ginger root, grated
10X sugar for coating

METHOD:

In a small saucepan, heat together lemon juice, water, elderberries, and ginger.

Note: If using dried berries, use about 1/3 - 1/2 cup berries soaked overnight in 3 cups of water. Then proceed as above.



Photo By Joyce Brobst

Simmer gently and mash berries to release juices. After about 15 minutes remove from heat and strain into measuring cup. Give the berries a good squeeze to get all the good juices from them. If there is less than a cup of juice, add water. If there is more than a cup, return to heat and reduce to 1 cup.

In a large, heavy pan, combine juice, sugar, and corn syrup. Stir to dissolve sugar over medium heat. Attach the candy thermometer to the pan so that it is in the liquid, but doesn't touch the bottom of the pan. The mixture will bubble up and try to climb out of the pan. Turn the heat to a temperature that will keep the mixture manageable, but will be high enough to maintain boiling until it reaches 300 degrees F. Stir occasionally. It will take a while to reach 280 degrees F, but after that the last 20 degrees move fast. Be prepared.

Butter the glass baking dish (I use a 10 x 13-inch dish) and place it on a heat proof surface.

Cover the work surface with freezer wrap, shiny side up, and sift 10X sugar on it. Have kitchen shears ready to use.

When the candy mixture reaches 300 degrees F, remove from heat and stir, allowing it to cool somewhat for a minute or two. Pour evenly into the baking dish.

When the edge of the candy can be lifted with a knife and holds together, cut into long strips, working from the edges. Hopefully, you'll have someone helping who will cut those strips into bite-sized pieces. If not, work fast. Cut a strip, then chop that up, cut a strip, chop it, repeat. Sift more 10X sugar over the pieces every so often so they don't stick together while they harden.

Should the mixture harden in the baking dish before you've finished, place it into the oven until it softens again, and then finish cutting the candy.

Keep cooled candy in a sealed container away from heat.

We've used this recipe with lots of variations and different herbs, and always enjoy the results. A spoonful of sugar really does help the medicine go down!



Photos By Tina Sams



Tina Sams

Tina Sams is the editor and publisher of *The Essential Herbal Magazine*. She lives in Pennsylvania on a family tree farm with lots of woodland where wild native herbs and wildflowers are being reintroduced as a hobby. In addition to writing and speaking about herbs and soap making, she has co-owned two herb shops and a wholesale handmade soap company. She is a member at large of The Herb Society of America. Wild edible plants and wild medicinal plants are of particular interest to her. She says, "The learning (and playing) never ends!"





*R*esources

Sources for Elderberry Plants and Seeds

COMPILED BY KATHERINE MONTGOMERY

PLANTS

Accents for Home and Garden. <http://www.accentsforhomeandgarden.com>
Sambucus canadensis 'Adams'

Edible Landscaping Online. 1-800-524-4156 <http://ediblelandscaping.com>
'Nova' elderberry plants

Elderberry Life Nursery. <http://elderberrylife.com/the-nursery/>
16 varieties of elderberry potted plants, cuttings, and bare-root plants

Garden Harvest Supply Inc. 1-888-907-4769 <http://www.gardenharvestsupply.com/>
Black Lace™ and 'Sutherland Gold' elderberry plants

Gurneys Seed and Nursery Co. <http://gurneys.com/>
'York' and 'Nova' elderberry plants

Jung Garden and Flower Seed Company. <http://www.jungseed.com>
Elderberries 'Adams' and 'York'

Miller Nurseries. 1-800-836-9630 <http://www.millernurseries.com>
Elderberries 'Adams' and 'Johns'

Nature Hills Nursery. 1-888-864-7663 <http://www.naturehills.com/>
Sambucus nigra 'Eva' (Black Lace™); *S. canadensis* 'Aurea' ('Golden'); *S. nigra*
'Marginata' (variegated)

New Garden Plants. 1-877-287-5926 <http://www.newgardenplants.com>
Elderberry Black Lace™

One Green World. 1-877-353-4028 <http://www.onegreenworld.com>
S. nigra 'Goldbeere' (golden berries), 'Allesso', Emerald Lace™, 'Guincho Purple',
'Haschberg', 'Korsor', 'Variegated', 'Nova', 'York', 'Sutherland Gold', 'Thundercloud'

Raintree Nursery. 1-800-391-8892 <http://www.raintreenursery.com>
S. nigra 'Haschberg', 'Samdal' (for fruit), 'Variegated', Black
Beauty™, Black Lace™ (ornamental), 'Goldbeere' (golden berries); *S. canadensis*
'Adams', 'Johns', 'Nova', 'Blue Elder' (for fruit); *S. racemosa* 'Sutherland Gold'
(ornamental)

Shady Gardens Nursery. <http://www.shop.shadygardensnursery.com>

Shooting Star Nursery. 502-867-7979 <http://www.shootingstarnursery.com>
Sambucus canadensis and *Sambucus racemosa*

Spring Hill Nursery. <http://www.springhillnursery.com>
Elderberry 'Sutherland Gold'

White Oak Nursery. 315-789-3509 <http://www.whiteoaknursery.biz>
American Elderberry (*Sambucus canadensis*)

SEEDS

EGardenSeed.com. <http://www.egardenseed.com>
Sambucus cerulea

Tree Seeds for Sale. <http://www.treeseedsforsale.com>
American Elder (*Sambucus canadensis*)

Bountiful Gardens. <http://www.bountifulgardens.org>
Sambucus canadensis

Horizon Herbs. 541-846-6704 <http://www.horizonherbs.com>
Blue Elderberry (*Sambucus cerulea*)

Treehelp.com. 877-356-7333 <http://www.treehelp.com>
American Elderberry (*S. canadensis*); Blue Elderberry (*S. cerulea*);
European Elderberry (*S. nigra*)



Katherine Montgomery

Katherine Montgomery, an Herb Society of America member, lives on a farm in western Kentucky where she has a large herb and vegetable garden. She was in charge of the HSA Seed Exchange for eight years. She makes and sells baskets and is a handspinner, using her yarn for weaving and knitting. She loves to travel to select fiber for spinning, and recently returned from the Shetland Islands where she got two fleeces that she sheared herself!



HSA Library

Sambucus Resources

COMPILED BY TARA COULTER, HSA LIBRARIAN

MONOGRAPHS:

Blochwitz, M. (1677). *Anatomia sambuci, or, the anatomy of the elder cutting out of it plain, approved, and specific remedies for most and chiefest maladies: Confirmed and cleared by reason, experience, and history.* (Translated from the Latin, circa 1644, of Dr. Martin Blochwitz by C. de Iryngio in 1651). London: Printed for H. Brome ... and Tho. Sawbridge.

A reproduction of the text from the original book, as printed by the original publisher. An early medical text devoted entirely to the elder, the book contains a history and extensive information on medicinal preparations and uses for various ailments and illnesses.

Bown, D. (2001). *The Herb Society of America new encyclopedia of herbs and their uses.* London: DK Books.

Elder entry primarily discusses *Sambucus nigra*, and offers information on six varieties of the species. Color photos of each variety accompany the entry, as well as cultivation, propagation and harvesting information, medicinal, culinary and economic uses and properties.

Bown, D. (2001). *Herbal: The essential guide to herbs for living.* London: Pavilion Books.

An A-Z herb guide inspired by the plants in the Chelsea Physic Garden. The *Sambucus nigra* entry includes color photographs detailing the flowers and berries, and offers a physical description, history, beauty/cosmetic uses, food uses, healing properties, and gardening notes.

Bruton-Seal, J. & Seal, M. (2009). *Backyard medicine: Harvest and make your own herbal remedies.* New York, NY: Skyhorse Publishing.

Includes folklore and legend of elder in Greek, Pagan and early Christian history. Color photographs of the *Sambucus nigra* tree, flowers, leaves, and berries. It includes recipes for ointments, teas, glycerite, cordials, and syrups.

Cardon, D. (2007). *Natural dyes: Sources, tradition, technology and science.* London: Archetype Publications.

Offers a small section on dyes produced by the berries of two elder species, *Sambucus nigra*, and *S. ebulus*. Cardon discusses dye composition, wool and linen dyeing, and the historical significance of the use of elderberry dyes.

Crocker, P. (1999). *The healing herbs cookbook.* Toronto, ON: Robert Rose.

Profile of *Sambucus nigra* includes physical description, flavor, parts used, growing information, healing properties and cooking uses of bark, berries and flowers, availability, and folklore. Includes a recipe for elderberry-ginger sauce.

Crocker, P. (2011). *Preserving*. New York, NY: HarperCollins.

Comprehensive canning and preserving guide offering information on a wide variety of herbs, fruits and vegetables. Elderberry is suggested in pairings, mentioned alongside berries that were dried and preserved by indigenous groups in the Americas. Medicinal preparations of elderberries and garlic during the Middle Ages are also discussed in a section on canning garlic.

Culpeper, N. (1950). *Culpeper's complete herbal: Consisting of a comprehensive description of nearly all herbs with their medicinal properties and directions for compounding the medicines extracted from them*. London: W. Foulsham & Co., Ltd.

In this classic herbal, Culpeper provides entries for *Sambucus nigra* and *S. humilis*, and offers physical descriptions and growth habits, as well as various remedies and preparations.

Dirr, M. A. (2009). *Manual of woody landscape plants: Their identification, ornamental characteristics, culture, propagation and uses*. Champaign, IL: Stipes Publishing.

Covers *Sambucus canadensis*, *S. cerulea*, *S. nigra*, *S. pubens* (*S. racemosa* subsp. *pubens*) and *S. racemosa* species. Offers physical descriptions, growth characteristics, pests and diseases, cultivars, propagation, landscape value, native habitat and more.

Duke, J. A. (1997). *The green pharmacy: New discoveries in herbal remedies for common diseases and conditions from the world's foremost authority on healing herbs*. Emmaus, PA: Rodale Press.

Organized by ailment, various preparations of *Sambucus nigra* are noted for fever reduction, colds, flu, and tonsillitis. The patented drug Sambucol is briefly discussed in the cold, flu, and cough entries. Additionally, there is quick mention of elderberry research in the treatment of human immunodeficiency virus (HIV).

Duke, J. A., Bogenschutz-Godwin, M. J., duCellier, J., & Duke, P. A. (2002). *Handbook of medicinal herbs* (2nd ed.). Boca Raton, FL: CRC Press.

Entry on *Sambucus canadensis* includes medicinal activities, indications, dosages, contraindications, interactions, and side effects. Black and white illustrations.

Grieve, M. (1935). *A modern herbal: The medicinal, culinary, cosmetic and economic properties, cultivation and folklore of herbs, grasses, fungi, shrubs & trees with all their modern scientific uses*. New York, NY: Harcourt, Brace & Company.

Comprehensive coverage of the history, naming, and use of *Sambucus nigra*. Includes chemical constituents and medicinal actions and uses for each part of the plant. Recipes are provided for wine, jam, vinegar, chutney and ketchup. There is also a brief entry on *S. ebulus*.

Grimes, B. (2012). *Making wines, liqueurs & cordials: 101 delicious recipes using natural ingredients*. London: CICO Books.

Brief coverage of fruit sources and selection, sterilizing, straining and storing techniques. Equipment and ingredient list also included. Ten recipes include elderberry or elderflower in wines, syrups, lemonades and liqueurs.

Howell, P. K. (2006). *Medicinal plants of the southern Appalachians*. Mountain City, GA: BotanoLogos Books.

Provides physical plant descriptions, habitat, medicinal actions, parts used, traditional and current uses, harvesting information, preparation and dosing, and a traditional European remedy recipe for elder rob syrup.

Kane, C. W. (2006). *Herbal medicine of the American Southwest*. Tucson, AZ: Lincoln Town Press.

Sambucus mexicana (*S. cerulea* var. *mexicana*) (Mexican Elder), *S. glauca* (Blue Elderberry), and *S. microbotrys* (Red Elderberry) are discussed briefly. Includes physical descriptions, distribution information, chemistry, medicinal uses, preparation, dosage, and cautions.

Kavasch, E. B. (2002). *The medicine wheel garden: Creating sacred space for healing, celebration, and tranquility*. New York, NY: Bantam Books.

Offers historical overview and growth habits of *Sambucus canadensis*, brief mention of *S. pubens*, *S. callicarpa*, and *S. cerulea*. Includes Native American traditional uses and modern uses of *S. canadensis* and *S. nigra*. Cautions, growth needs and propagation, and companions are included. Specific mention is made of the Onondaga, Illinois and Miami Indians.

Le Strange, R. (1977). *A history of herbal plants*. New York, NY: Arco Publishing Company.

Provides a dense history of *Sambucus*, including *Sambucus nigra* (European Elderberry), *S. ebulus* (Dwarf Elder), *S. canadensis* (Sweet Elder). Cites text from Martin Blockwich's *The Anatomie of the Elder*, Gerard's *Herbal* and Culpeper's *Complete Herbal*.

Loohuizen, R. (2005). *The elder: In history, myth and cookery*. Totnes: Prospect Books.

Entirely dedicated to the elder, the book offers chapters covering botanical information on *Sambucus nigra*, *S. racemosa*, *S. canadensis*, and *S. ebulus*, myths in European traditions, various historical and present day uses, healing properties and preparations and a wide array of culinary recipes. Black and white photographs and illustrations throughout.

Moerman, D. E. (1998). *Native American ethnobotany*. Portland, OR: Timber Press.

Detailed information on food and drug uses of *Sambucus canadensis*, *S. cerulea*, *S. cerulea* var. *mexicana*, *S. cerulea* var. *neomexicana*, *S. cerulea* var. *velutina*, *S. nigra*, *S. racemosa*, *S. racemosa* ssp. *pubens*, *S. racemosa* ssp. *pubens* var. *arborescens*, *S. racemosa* ssp. *pubens* var. *leucocarpa*, *S. racemosa* ssp. *pubens* var. *melanocarpa*, *S. racemosa* ssp. *pubens* var. *microbotrys*, and *S. tridentata*. Each plant species has an entry and lists the tribe, food and drug use, and in some cases, preparation methods.

Moore, M. (2003). *Medicinal plants of the mountain west*. Santa Fe, NM: Museum of New Mexico Press.

Profiles for *Sambucus cerulea*, *S. mexicana*, *S. nigra*, and *S. racemosa*. Habitat, collection, ecological status, constituents, preparations, medicinal and other uses, contraindications, and cultivation information included in entry.

Muller-Ebeling, C., Ratsch, C., & Storl, W. (1998). *Witchcraft medicine: Healing arts, shamanic practices, and*

***forbidden plants*. Rochester, VT: Inner Traditions.**

In a dedicated section, the authors weave together history, lore and use of elder that includes birth, death and mating rituals as well as medicinal and culinary implements in ancient and biblical times and in early modern Europe. Also includes references to modern day use.

Sanford, S. N. F. (1937). *New England herbs: their preparation and use*. Boston, MA: New England Museum of Natural History.

An early publication of the New England Museum of Natural History, this book covers medicinal, food and beverage, flavoring, fragrance and ornamental uses of various herbs common to the New England region of the United States. *Sambucus canadensis* L. (American Elderberry) flowers and berries are mentioned in the medicinal and food sections, offering that elderberry wine has a long history of use as a New England drink, as well for pies, muffins, dumplings, cakes. Also contains a cold remedy recipe that combines elder blossoms and peppermint leaves.

Timbrook, J. (2007). *Chumash ethnobotany: Plant knowledge among the Chumash people of southern California*. Santa Barbara Museum of Natural History, Berkeley, CA: Heyday Books.

Substantial entry on the use of *Sambucus mexicana* (Blue Elderberry) by Chumashan peoples of southern California (in what is now the Santa Barbara Channel area). Food and medicinal use are covered, as well as use for tools and instrument making.

Weaver, W. W. (2001). *Sauer's herbal cures: America's first book of botanic healing*. New York, NY: Routledge.

Taken from the late eighteenth-century work of Christopher Sauer. Entries for *Sambucus ebulus* and *S. nigra* discuss various preparations for an assortment of ailments.

Selected periodical resources:

Brown, D. J. (2004). Standardized elderberry syrup shortens the severity and duration of influenza in adults. *HerbalGram*, 63, 16-17.

Fowler, M. G. (1988). The use of herbs by the South during the War between the States (Part I, medicinal herbs for the military). *The Herbarist*, 54, 68-75.

Houston, L. C. (1980). Some memories of gypsies and tinkers. *The Herbarist*, 46, 23-26.

MacLennan, C. (1975). Wines from Scotland's garden and field. *The Herbarist*, 41, 37-40.

Rady, V. (1981). The dye garden. *The Herbarist*, 47, 9-10.

Roderick, W. (1988). Indian uses of California plants. *The Herbarist*, 54, 4-10.

Vallès, J., Bonet, M. A., & Agelet, A. (2004). Ethnobotany of *Sambucus nigra* L. in Catalonia (Iberian peninsula): The integral exploitation of a natural resource in mountain regions. *Economic Botany*, 58(3), 456-469

Walker, M., Nunez, J., Walkingstick, M., & Banack, S. A. (2004). Ethnobotanical investigation of the Acjachemen clapperstick from blue elderberry, *Sambucus mexicana* (Caprifoliaceae). *Economic Botany*, 58(1), 21-24.

Additional References Associated with Medicinal Benefits of Elderberry

COMPILED BY E. BARRIE KAVASCH FROM ROLF J. MARTIN, Ph.D.

Dr. Rolf J. Martin, Scientific Director, MMT Corporation, Sherman, CT 06784, is former head of Bioinformatics at the Burke-Cornell Medical Research Institute. He currently serves on the Board of Directors of the American Aging Association and has previously served as its vice president.

Tantaquidgeon, G. (2001). Folk medicine of the Delaware and related Algonkian Indians (fourth printing). Harrisburg, PA: Pennsylvania Historical and Museum Commission.

Elderberries are included in her chapters on "Curative Practices and Herbal Remedies" of the Delaware Indians (p. 31) and the Mohegan of Connecticut (p. 75). The Delaware used elder leaves and stems to prepare a blood purifier and also in the treatment of jaundice, and used elder flowers to prepare a tea for treatment of colic in infants. The Mohegan also used tea from the flower for infant colic and used the inner bark to prepare emetic and laxative medications.

The U.S. National Library of Medicine/National Institute of Health. www.ncbi.nlm.nih.gov/pubmed

The "PubMed" online database currently lists elderberry species in 832 reports. Among these are 127 related to cancer or tumors, 33 related to heart and other cardiovascular diseases and stroke, 13 related to diabetes and 3 to osteoporosis (age-associated bone loss). These reports generally confirm the health promoting, antioxidant, and anti-inflammatory effects of elderberries recognized earlier by Native Americans. Among the 48 PubMed listed studies that refer to the liver are reports that elderberry extracts protect liver from oxidative stress caused by excessive consumption of fish oil [Dubey et al. (2012). *Appl. Physiol. Nutr. Metab.*, 37(3): 472-9] and from toxic chemical exposure [Yang et al. (2005). *Zhong Yao Cai*, 28(12): 1085-9; Zhu et al. (2008). *Zong Yao Cai*, 31(8): 1216-9]. Considered together these liver protection results suggest that Native American elderberry preparations for jaundice were effective and have now been confirmed by modern, peer-reviewed scientific research.

Elder extracts of fruit, leaves and roots also provided protection against carrageenan-induced edema [Ebrahimzadeh et al. (2007). *Pak. J. Biol. Sci.* 10(22): 4171-3], with fruit extracts showing greater anti-inflammatory effects in this study than leaf or root. Among the diabetes-related studies are reports that elderberry extracts reduce sugar-damage to blood proteins [Ciocoiu et al. (2009). *J. Physiol. Biochem.*, 65(3): 297-304] and also have insulin-like actions [Gray et al. (2000). *J. Nutr.*, 130(1): 15-20]. Reports that elderberry extracts increase bone mass and strength during experimental osteoporosis [Xie et al. (2005). *Biol. Pharm. Bull.*, 28(10): 1879-85], decrease bone resorption and stimulate bone formation [Zhang et al. (2011). *Osteoporos Int*, 22(2): 703-9], and increase bone cell differentiation [Xiao et al. (2011). *Br. J. Nutr.*, 106(12): 1802-9, Epub. 2011. June, 21] suggest that elderberries resemble blueberries in their ability to strengthen bones, and like blueberries may also help reduce the effects of many different inflammation-associated, age-associated illnesses.

Among the sixteen clinical trials using elderberry listed in PubMed are a number that demonstrate efficacy as treatments for gum inflammation [Samuels et al. (2012). *J. Clin. Dent.*, 23(2): 64-7; and (2012). *Compend. Contin. Educ. Dent.*, 33(3): 204-6, 208-11; and also Grbic et al. (2011). *J. Am. Dent. Assoc.*, 142(10): 1168-75], and as a treatment for influenza [Zakay-Rones et al. (1995). *J. Altern. Complement Med.*, 1(4): 361-9] that certainly merit further study.

Juicy Bits

NOTES ON ELDERBERRY NOMENCLATURE

BY ELIZABETH KENNEL, HSA BOTANY AND HORTICULTURE CHAIR,
AND THE HSA NOMENCLATURE REVIEW PANEL:

DEBRA KNAPKE, KIM LABASH, STEFAN B. LURA, AND KATHERINE SCHLOSSER



By Pat Kenny

As Deni Bown pointed out in her article, “elders have a wide distribution and are variable, with the result that there are many geographical variants,” each having its own species name. She also suggested that “taxonomists tend by nature to be either ‘lumpers’ or ‘splitters.’ The former would probably put the number of species in the genus *Sambucus* at five, grouping variants together under the dominant species, whereas the latter might claim as many as 25 to 30, or at least argue for the recognition of certain variants as subspecies and/or varieties.”

The USDA Germplasm Resources Information Network (GRIN) upon which many of us rely for the currently accepted binomial names of plant species tends to be a lumpers. The authors in this Herb Society guide have described many species of elderberry. The following is a listing of their currently accepted names as listed by GRIN (noted in blue):

American Elderberry: *Sambucus canadensis* L.

American Elderberry: *S. nigra* L. subsp. *canadensis* (L.) R. Bolli (synonym of *S. canadensis* var. *canadensis*) [If you search in GRIN for “American Elderberry” the name listed is *S. canadensis* L.]

American Red Elder, Stinking Elder: *S. pubens* Michaux [syn. of *S. racemosa* subsp. *pubens* (Michx.) Hult ]

Asian Dwarf Elder, East Himalayan Elder: *S. adnata* Wall ex. DC

Synonym: *S. schweriniana* Rehder

Blackberry Elder, Western Elder: *S. melanocarpa* A. Gray [syn. of *S. racemosa* L. subsp. *pubens* (Michx.) House var. *melanocarpa* (A. Gray) McMinn]

Blue Elderberry: *S. cerulea* Raf.

Canary Islands Elder, Sauco: *S. palmensis* Link

Caucasus Red Elder: *S. tigranii* Troitsky (syn. of *S. racemosa* L. subsp. *racemosa*)

Chinese Elder, Sweet Elder: *S. javanica* Reinw. ex. Blume

Chinese Red Elder: *S. chinensis* Lindley (syn. of *S. javanica* Reinw. ex. Blume)

Cut-leaf Elderberry: *S. nigra* f. *laciniata* (L.) Zabel (syn. of *S. nigra* L.)

Dwarf Elder, Danewort: *S. ebulus* L.

Emerald Lace™: (*S. nigra* ‘Laciniata’) (GRIN argues that *S. nigra* f. *laciniata* = *S. nigra* ‘Laciniata’ and that the former is a synonym of *S. nigra* L.)

European Elder: *S. nigra* L.

European Red Elder: *S. racemosa* L.

Florida Elder: *S. simpsonii* Rehder (syn. of *S. canadensis* L. var. *laciniata* A. Gray)

Japanese Red Elder: *S. tigranii* Troitsky (syn. of *S. racemosa* L. subsp. *racemosa*)

Japanese Red Elder: *S. sieboldiana* (Miq.) Blume ex. Graebn. [syn. of *S. racemosa* subsp. *sieboldiana* (Miq.) H. Hara]

Korean Red Elder: *S. latipinna* Nakai

‘Marge’ hybrid: a cross of *S. nigra* and [(*S. nigra* subsp. *canadensis*) (syn. of *S. canadensis* var. *canadensis*)]

***S. melanocarpa*:** [syn. of *S. racemosa* var. *melanocarpa* (A. Gray) McMinn]

Mexican Elder: *S. mexicana* Tapiro (syn. of *S. cerulea* Raf.)

Mountain Red Elder: *S. microbotrys* Rydb. [syn. of *S. racemosa* var. *microbotrys* (Rydb.) Kearney & Peebles]

Synonym: *S. racemosa* L. subsp. *pubens* Michx. House var. *microbotrys* (Rydb.) Kearney & Peebles (conspecific taxon) (ref. GRIN¹)

New Mexico Elder: *S. neomexicana* Wooton; syn. *S. cerulea* var. *neomexicana* (Wooton) Rehder
(synonyms of *S. cerulea* Raf.)

North China Red Elder: *S. williamsii* Hance

Pacific Coast Red Elder, Red Coast Elder: *S. callicarpa* Greene [syn. of *S. racemosa* var. *arborescens* (Torr. & A. Gray) A. Gray] (See discussion below)

Peruvian Elder, Sauco, Rayan: *S. peruviana* Kunth

Red Elder: *S. racemosa* L.

Southern Elder: *S. australis* Cham. & Schltdl.

Velvet Elder: *S. velutina* Durand & Hilg. According to The Plant List this is an unresolved name. [ITIS lists it as a syn. for *S. nigra* subsp. *cerulea* (Raf.) R. Bolli]. GRIN lists *S. nigra* subsp. *cerulea* as a syn. of *S. cerulea* Raf.

Synonym: *S. cerulea* Raf. var. *velutina* (Durand & Hilg.) Schwerin (ITIS: unaccepted name; *S. nigra* subsp. *cerulea* accepted)

***S. wightiana*:** *S. wightiana* Wall. ex. Wight & Arn.

LISTED IN TROPICOS, NOT IN GRIN:

Australian Elder, White Elder: *S. gaudichaudiana* DC.

Madeira Elder: *S. lanceolata* Banks ex. Lowe (According to The Plant List this is an unresolved name.)

Synonym: *S. maderensis* Lowe [syn. of *S. nigra* subsp. *maderensis* (Lowe) Bolli (Tropicos, 50111472)]

Synonym: *S. nigra* var. *lanceolata* (R. Br.) Lowe (syn. of *S. lanceolata* Banks ex. Lowe – Wikipedia – not in Tropicos)

Yellow Elder, Native Elderberry: *S. australasica* (Lindl.) Fritsch

ADDITIONAL NOTE FROM STEFAN B. LURA:

The botanical name often conveys critical information about a plant, its origins, and any associated unique properties. If you know where to dig, anyone can peer into the process of how a given name has arisen. I think that it is always worth looking at the how and why of the process, not only when things actually don't "smell" quite right (very rare), but also just to gain personal understanding of the process and how wonderful it is.

Take *Sambucus callicarpa*, for instance. This taxon (Pacific Red Elder or Pacific Red Elderberry) should be treated fully as *Sambucus racemosa* subsp. *pubens* var. *arborescens*. If you open the record in GRIN, its name in the full list of *Sambucus* names is only *Sambucus racemosa* var. *arborescens*.

Essentially, this is a "lumping" action. Morphology, population studies and molecular genetics all feed into these complex decisions, even though the names and combinations themselves are often quite old. The full combination was published in 1884. Var. *arborescens* (specifying the Pacific Red Elderberry) was published in 1841 under *S. pubens*. Greene didn't publish the name *Sambucus callicarpa* until 1892, arguing that it should be treated as its own species, and left it to other taxonomists to decide whether to accept or reject his arguments. The inclusion of var. *arborescens* within subsp. *pubens* from a taxonomic perspective derives originally from its first publication as *Sambucus pubens* var. *arborescens* Torr. & A. Gray in 1841. When *S. pubens* Michx. is treated as *S. racemosa* subsp. *pubens*, then it follows that subsp. *pubens* remains in the taxonomic hierarchy of *Sambucus racemosa* var. *arborescens* when both are considered as valid infraspecific taxa.

GRIN typically reviews and considers literature regarding name publication and local floras as well as morphological and molecular studies all together. In the end, what it all boils down to is a choice to accept one validly published name over another. These names are fluid and they're meant to be fluid, because each one means a different thing in its own context, and no one name can ever be held up as universally "right" for a particular plant without qualification. The only things that really vary at the user end of name acceptance and use are the grounds for making those choices and the number of other users agreeing and making that same choice at a given time.

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¹<http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?313648#syn>

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