Plant Answer Line

Q&A

from the Miller Library's Plant Answer Line

UNUSUAL EDIBLE ROOTS & RHIZOMES

By Rebecca Alexander

This regular column features Q&A selected and adapted from the Elisabeth C. Miller Library's Plant Answer Line program. If you'd like to ask a plant or gardening question of your own, please call (206) 897-5268 (UW Plant), send it via the library website (www.millerlibrary.org), or email directly to hortlib@uw.edu.

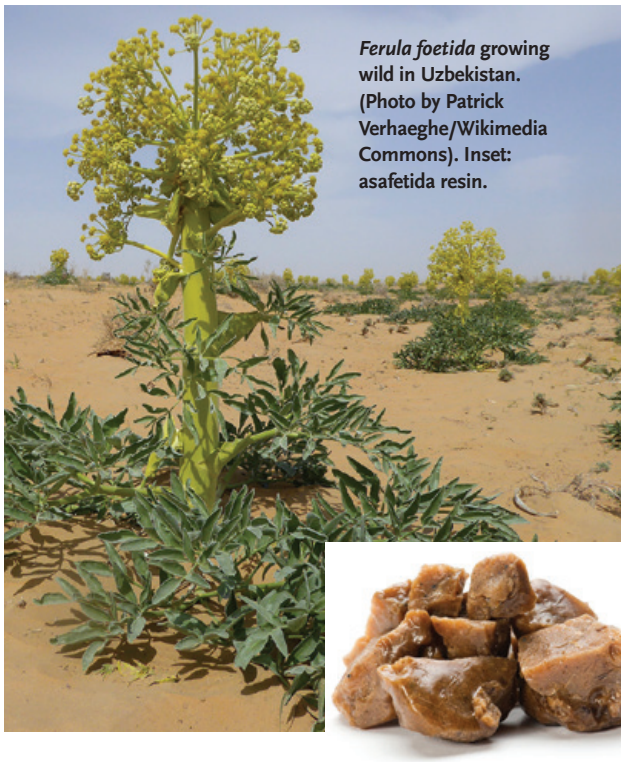
Turmeric root. (Photo by Simon A. Eugster/Wikimedia Commons)

In this issue, I expand upon questions that the Miller Library has answered about plants with edible roots. The focus is on less commonly known species in the carrot, ginger and lizard's tail family, with an added dash of wasabi, from the cabbage family.

ASAFETIDA (*FERULA FOETIDA*)

The primary plant source of the spice asafetida is *Ferula foetida*, a perennial in the Apiaceae (or carrot family) native to eastern Iran, western Afghanistan, and parts of Kashmir. (Other species in the *Ferula* genus are also utilized, depending on their region of origin.) The plant's leaves and shoots are used in cooking in Central and South Asia, but the spice is obtained by extracting sap from the plant's roots and drying it into a resin-like gum, which may then be pulverized into powder. It has a pungent, boiled-egg odor, due to its various sulphur-containing compounds.

The spice has an array of common names in many languages, often variations on "devil's dung," owing to the forceful and foul aroma. However, the taste asafetida imparts to food is much appreciated by those who cannot consume garlic or onions due to religious or health restrictions. It adds an ersatz, onion-family flavor and, at the same time, makes legumes easier to digest.



***Ferula foetida* growing wild in Uzbekistan. (Photo by Patrick Verhaeghe/Wikimedia Commons). Inset: asafetida resin.**

The powdered form most commonly available today is a mix of asafetida resin (about 30 percent) and other ingredients, such as rice flour. In its resin form, asafetida is much more potent and must be used sparingly. According to Gernot Katzer's online "Spice Pages," the pure resin should be fried quickly in hot oil so that the flavor disperses through the food more readily: "A pea-sized amount is considered a large amount, sufficient to flavour a large pot of food."

The plant resin is also used medicinally, including in the Middle East and Europe. In Africa, *Ferula* has been used as a substitute for silphium, an unidentified plant of classical antiquity native to eastern Libya. Silphium's extinction—due to overharvesting for medicinal and contraceptive use—was recorded by Pliny the Elder in 77 C.E.

According to Judith Taylor's "Plants in the Civil War," asafetida came to America with enslaved Africans who had multiple medicinal, magical and apotropaic (protective, warding off evil) uses for it. Among enslaved people in this country, there was a tradition of wearing a red flannel bag containing the plant's roots with additives like red pepper, sassafras and snakeroot.

Colin Fitzgerald's "African American Slave Medicine of the 19th Century" provides a description: "Victoria Adams, of Columbia, South Carolina, recalls using the plant as a preventive measure against diseases on her plantation, '[w]e dipped asafetida in turpentine and hung it 'round our necks to keep off disease'....Asafetida was used as preventive against a number of pulmonary diseases such as whooping cough, bronchitis, small pox, and influenza." Enslaved women also knew of its contraceptive properties.

CANBY'S LOVAGE (*LIGUSTICUM CANBYI*)

Ligusticum is another genus in the Apiaceae with roots that have edible and medicinal uses. Numerous species of lovage grow in various parts of the world; here, I focus on a plant that can found in the wild on either side of the Cascade Crest: *Ligusticum canbyi*, or Canby's lovage. (Sometimes called licorice-root, it should not be confused with *Glycyrrhiza glabra*, in the Fabaceae, or legume family.)

Canby's wild lovage. (Photo by Robert Carr/ inside.ewu.edu/ewflora)

According to "Edible & Medicinal Plants of Canada," by MacKinnon et al., all parts of *Ligusticum canbyi* are fragrant and edible. However, be careful not to mistake it for its toxic look-alike relatives, poison hemlock and water hemlock! The plant typically has thick taproots. When dried, the roots may be chewed to relieve colds and sore throats. Chewing the roots is thought to enhance the strength of singers' voices.

The Native American Ethnobotany Database (http://naeb.brit.org) confirms these uses as part of Crow tribe tradition in Montana, where root shavings may also be smoked with tobacco and kinnikinnick, or sprinkled over hot coals as incense. Root infusions and their steam are said to help with congestion. The Okanagan-Colville tribe of British Columbia uses the roots to settle an upset stomach, and the smoke from burning roots is used to bring singers out of a trance state.

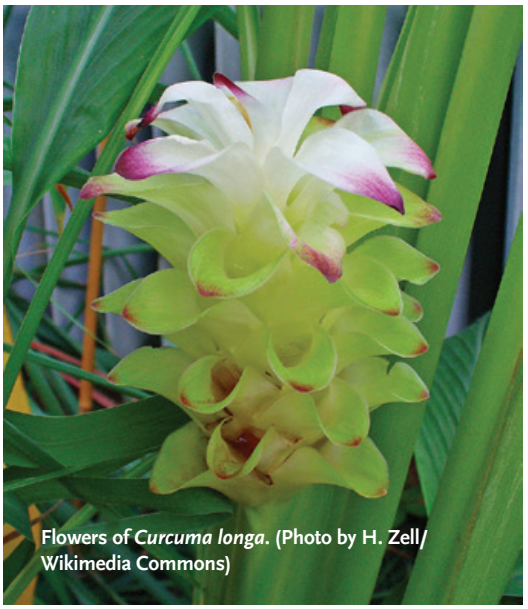
GALANGAL (VARIOUS SPECIES)

Galangal is the common name applied to the aromatic rhizome of four different herbaceous

Alpina galanga. (Photo courtesy powo.science.kew.org). Inset: galangal root. (Photo courtesy cabidigitallibrary.org)

perennial species in the Zingiberaceae, or ginger family: *Alpinia galanga*, *Alpina officinarum*, *Kaempferia galanga* and *Boesenbergia rotunda*. (Confusingly, galingale—a variant name of galangal—refers to the rhizome of an unrelated sedge from Europe and Africa, *Cyperus rotundus*.) All these species grow in tropical rainforests and wetland regions in South and Southeast Asia. The rhizomes, which resemble those of ginger, are commonly used in both fresh and dried form in Southeast Asian cooking to flavor curries, tea and syrup.

"Galangal" is probably derived from the Chinese *gao liang jiang*, meaning "high good ginger," and similar-sounding names exist in Arabic, Farsi and Hindic languages. According to "The Herb Book" (co-authored by Heronswood Director Ross Bayton), the rhizome is even used in traditional—from the 16th century—Polish spiced vodka, a kind of digestive aid. The drink's Polish name *Żołądkowa Gorzka*, translates to "bitter stomach vodka."



Flowers of *Curcuma longa*. (Photo by H. Zell/ Wikimedia Commons)

TURMERIC (*CURCUMA LONGA*)

The familiar yellow-gold turmeric rhizome is well-known for its uses in cooking, medicine and plant-based dye. It comes from the herbaceous perennial *Curcuma longa*, also a member of the ginger family. Both the plant's leaves and rhizomes are used, imparting an earthy, pleasantly bitter taste to food. The rhizomes are typically harvested, boiled, and then dried and pulverized into powder.

Native to South Asia, the species is a tropical, dry-forest plant, adapted to months of dry weather followed by heavy rains. Traces of turmeric have been found in cookware from an Indus Valley archaeological site, dating between 2600–2200 BCE. Its presence in a merchant's tomb in Megiddo, Israel—dating from the Second Millennium BCE—is evidence of ancient trading between the two regions.

Most of us know about litmus paper, but there is also turmeric or curcuma paper, created by saturating paper with a solution of turmeric and allowing it to dry. It is used in chemical analysis to detect pH, turning yellow in acidic or neutral solutions, and reddish brown in alkaline ones.

ZEDOARY (*CURCUMA ZEDOARIA*)

A less familiar spice is zedoary, or white turmeric, *Curcuma zedoaria*, native to India and Indonesia. It was an ancient food plant of the Austronesian peoples, a large group including inhabitants of Polynesia and Micronesia. The odor is said to be like that of green mango, and its flavor profile is gingery, with a bitter aftertaste. The spice is almost never used today, having been replaced with actual ginger.

Curiously, the plant makes an appearance as "cetewale" in Chaucer's late-14th-century "The Canterbury Tales," along with other Indonesian

spices, such as cloves and nutmeg:

Ther spryngen herbes grete and smale, [There spring herbs large and small,]

The lycorys and the cetewale, [The licorice and the zedoary,]

And many a clowe-gylofre; [And many a clove-gillyflower;]

And notemuge to putte in ale, [And nutmeg to put in ale,]

Wheither it be moyste or stale, [Whether it be new or old,]

Or for to leye in cofre. [Or to lay in a clothes press.]

Houttuynia cordata. (Photo by Nova Agnieszka Kwiecien/Wikimedia)

FISH MINT (*HOUTTUYNIA CORDATA*)

Houttuynia cordata is a perennial herb in the Saururaceae, or lizard's tail family. (The family name comes from the eastern U.S. wetland plant, lizard's tail, *Saururus cernuus*, which has a tail-like inflorescence.) Known as fish mint, hot tuna and chameleon plant, it is commonly used in gardens as a groundcover for its heart-shaped leaves; pretty, white-bracted flowers; and adaptability to shade. That said, if you ever plant one, you might ending up regretting it: The plant's vigorous rhizomes help it spread quickly and also make it hard to eradicate.

In its native range of the Himalayas to temperate East Asia and Indo-China, it is considered an edible and medicinal plant, with both the leaves (which have a sour, citrusy, or fishy taste) and the roots being consumed. The Chinese name for the rhizome is *zhé'ěrgēn* ("broken ear-root"), and the leaves are called *yúxīngcǎo* ("fish-smelling grass"). The aromatic roots may be chopped and used in salad dressed with a spicy sauce. Northeastern Indian cuisine also uses the roots in salads and chutneys, as a garnish, or cooked with fish in curry.

If you find yourself wrestling with this plant in your garden, you could carefully uproot it (all the bits of rhizome are viable and can produce new seedlings, which is why the plant is so tenacious) and bring some into the kitchen!

Anemopsis californica. (Photo courtesy sageacre.com)

YERBA MANSA (*ANEMOPSIS CALIFORNICA*)

Another plant in the lizard's tail family, *Anemopsis californica* is native to the western and central regions of North America, from Oregon south to Mexico. The roots (as well as the bark and leaves) have traditionally been used medicinally by Indigenous people—especially in California and the Southwest—for a wide range of conditions. For example, the raw root has an astringent flavor when chewed and is said to help with colds and coughs.

The roots are also used fresh or cooked to lend a spicy, aromatic flavor. In addition, the seeds are eaten and taste similar to black pepper. *Yerba mansa* is the Mexican Spanish common name for this plant, meaning "mild herb" or "tame herb." However, this doesn't make much sense—given its pungency—and some sources say the name is derived from *Yerba del remanso*, meaning "herb of the backwater," which reflects the plant's preferred habitat of saline seeps, swamps and hot springs.

Wasabia japonica. (Photo by Qwert1234/Wikimedia Commons)

WASABI (*EUTREMA JAPONICUM*)

Use of wasabi has a long history in Japan. Wooden writing strips mentioning wasabi were discovered in the archaeological exploration of an herb garden site from the Asuka period (mid-6th to early 8th century), and the first formally published reference to its use appears in a medicinal encyclopedia, "Honzo-Wamyo," published in 918 C.E. Wasabi's culinary use as an accompaniment to sushi probably dates from the 19th century.

The scientific name for wasabi is *Eutrema japonicum*—though there is some taxonomic disagreement over the species name, and the genus is sometimes listed as *Wasabia*. The species is in the Brassicaceae, or cabbage family—as is horseradish (*Armoracia rusticana*)—and sometimes fake wasabi on the market is made mostly with horseradish, mustard and food coloring. Both wasabi and horseradish are spicy, due to their production of the essential oil allyl isothiocyanate, which affects our sinuses rather than our tongues as it vaporizes.

Cultivation of wasabi in North America is a relatively new endeavor, and anecdotal evidence says that wasabi is a notoriously difficult-to-grow plant because it requires cold running water throughout the year. That would make it challenging to grow in a climate that has freezing conditions in winter, unless you are able to protect the plants from frost damage.

Washington State University's publication, "Growing Wasabi in the Pacific Northwest," by Carol Miles and Catherine Chadwick discusses micropropagation (tissue culture) as the preferred method here. Stem offshoots are more prone to disease, and growing from seed is possible but complicated by the fact that "wasabi flowers are self-incompatible," that is, they cannot produce seeds when the flowers are pollinated by pollen from plants that are genetically the same.

Rebecca Alexander is the manager of Reference and Technical Services at the Miller Library, located in the UW Botanic Gardens' Center for Urban Horticulture (3501 NE 41st Street, Seattle). She is also a contributing editor to the "Bulletin."

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