

## Benefits of Aronia

- ❖ The fruit of Aronia is valuable for the pharmaceutical perfumery
- ❖ The extracts of leaves and fruits have antioxidant properties and treat many diseases, such as inflammation, heart disease, diabetes etc.
- ❖ Used as a base in cosmetics, fights dandruff, stimulates and moisturizes hair.
- ❖ Cleans and refreshes dry, sensitive skin with mild and safe manner.
- ❖ It has a positive influence on the stomach and prevents problems and diseases of the digestive system.
- ❖ The high antioxidant level also reduces blood clots and cardiovascular diseases.
- ❖ The natural juice has an intense dark color, which owes its high content of anthocyanins (natural pigments).
- ❖ Normalizes blood pressure and reduces levels of stress hormones.
- ❖ Increases the body's vitality, overcome nervous disorders, and fatigue, stimulates the regeneration of muscles and tissue, blood formation and metabolism.
- ❖ It has antiseptic properties and acts as a powerful tool to fight the flu virus.
- ❖ It is beneficial for pregnant women, children, diabetics, athletes and patients undergoing complex treatments.
- ❖ Treats urinary tract infections.
- ❖ Is hypoallergenic and results used in gastritis, bleeding, anemia, rheumatism.
- ❖ It contains vitamins: A, B1, B2, B3, B5, B6, B9, C, E, K, P.
- ❖ The specific content of the plant pectin (a natural polysaccharide ethyl abundant apples, quinces and oranges) helps absorb and protect organizations from radioactivity.



(From Wikipedia, the free encyclopedia)  
https://en.wikipedia.org/wiki/Aronia

*Aronia*, the **chokeberries**, are [deciduous shrubs](#) in the family [Rosaceae](#), native to eastern [North America](#) and most commonly found in wet woods and swamps.<sup>[2][3][4]</sup> The genus is usually considered to contain two<sup>[5]</sup> or three<sup>[4][6]</sup> species, one of which is [naturalized](#) in Europe.<sup>[7]</sup> A fourth form that has long been cultivated under the name *Aronia*<sup>[6]</sup> is now considered to be an intergeneric hybrid, [Sorbaronia mitschurinii](#).

Chokeberries are cultivated as ornamental plants and as food products. The berries can be eaten raw off the bush but are more frequently processed. Chokeberries can be found in wine, jam, syrup, juice, soft spreads, tea, salsa, chili starters, extracts, beer, ice cream, gummies and [tinctures](#).<sup>[8]</sup> The name "chokeberry" comes from the [astringency](#) of the fruits, which create a sensation making your mouth pucker.<sup>[8]</sup>

The chokeberries are often mistakenly called [chokecherries](#), which is the [common name](#) for [Prunus virginiana](#). Further adding to the ambiguity, there is a [variety](#) of *Prunus virginiana* named [melanocarpa](#).<sup>[9][10]</sup> This is easily confused with [Aronia melanocarpa](#), commonly referred to as "black chokeberry" or "aronia berry." Aronia berries and chokecherries are both high in [polyphenolic](#) pigment compounds, like [anthocyanins](#), further contributing to confusion. In fact, the two plants are only distantly related within the Rosaceae family.

## Identification and taxonomy

The [leaves](#) are alternate, simple, and [oblanceolate](#) with [crenate](#) margins and [pinnate](#) venation; in autumn the leaves turn a bold red color. Dark [trichomes](#) are present on the upper midrib surface. The [flowers](#) are small, with 5 petals and 5 sepals, and produced in [corymbs](#) of 10-25 together. Hypanthium is urn-shaped. The fruit is a small [pome](#), with a very [astringent](#) flavor.

*Aronia* has been thought to be closely related to [Photinia](#), and has been included in that genus in some classifications,<sup>[11]</sup> but botanist Cornelis Kalkman observed that a combined genus should be under the older name *Aronia*.<sup>[12]</sup> The combined genus contains about 65 species.<sup>[13]</sup> In 2004, Kalkman expressed doubt about the [monophyly](#) of the combined group, and new molecular studies confirm this.<sup>[1][14]</sup> They do not place these two genera together or even near one another.

In eastern North America, there are two well-known species, named after their fruit color, red chokeberry and black chokeberry, plus a purple chokeberry whose origin is a natural hybrid of the two.<sup>[13]</sup> A fourth species, *Aronia mitschurinii*, that apparently originated in cultivation, is also known as [Sorbaronia mitschurinii](#).<sup>[15]</sup>

**Red chokeberry**, *Aronia arbutifolia* (*Photinia pyrifolia*), grows to 2–4m tall, rarely up to 6 m. Leaves are 5–8 cm wide and densely pubescent on the underside. The flowers are white or pale pink, 1 cm wide, with glandular sepals. The fruit is red, 4–10 mm wide, persisting into winter.



Black Chokeberry flowers and leaves (*Aronia melanocarpa*)

**Black chokeberry**, *Aronia melanocarpa* (*Photinia melanocarpa*),<sup>[2]</sup> tends to be smaller, rarely exceeding 1 m tall, rarely 3 m, and spreads readily by root sprouts. The leaves are smaller, not more than 6-cm wide, with terminal glands on leaf teeth and a glabrous underside. The flowers are white, 1.5 cm wide, with glabrous sepals. The fruit is black, 6–9 mm wide, not persisting into winter.

The **Purple chokeberry**, *Aronia prunifolia* (*Photinia floribunda*)<sup>[3]</sup> apparently originated as a hybrid of the black and red chokeberries but might be more accurately considered a distinct species than a hybrid<sup>[13]</sup> (see also [nothospecies](#)). Leaves are moderately pubescent on the underside. Few to no glands are present on the sepal surface. The fruit is dark purple to black, 7–10 mm in width, not persisting into winter. There are purple chokeberry populations which seem to be self-sustaining independent of the two parent species – including an introduced one in northern [Germany](#) where neither parent species occurs – leading botanist Alan Weakley to consider it a full [species](#) rather than a hybrid.<sup>[13]</sup> The range of the purple chokeberry is roughly that of the black chokeberry; it is found in areas (such as [Michigan](#) and [Missouri](#)) where the red chokeberry is not.<sup>[16]</sup>

## Products and uses



Red chokeberry (*Aronia arbutifolia*)

The chokeberries are attractive [ornamental plants](#) for gardens. They are naturally understory and woodland edge plants, and grow well when planted under [trees](#). Chokeberries are resistant to drought, insects, pollution, and disease. A number of [Cultivars](#), including *A. arbutifolia* 'Brilliant' and *A. melanocarpa* 'Autumn magic', have been selected for their striking fall leaf color.

The Voruta label exports a Chokeberry wine from [Lithuania](#). In [Poland](#) they are dried to make a herbal [tea](#) which may be blended with other more flavorful ingredients including [blackcurrant](#).<sup>[17]</sup> Aronia is also used as a [flavoring](#) or [colorant](#) for beverages or yogurts.<sup>[17]</sup> Juice from the ripe berries is [astringent](#), semi-sweet (moderate sugar content), sour (low [pH](#)), and contains a low level of [vitamin C](#).<sup>[18]</sup> The berries have their own unique [flavor](#) and in addition to juice they can be baked into soft breads.<sup>[17]</sup> In the United States and Canada, aronia berries are used in juice blends for color and marketed for their antioxidant properties.

## Polyphenol content

*Aronia melanocarpa* (black chokeberry) has attracted scientific interest due to its deep purple, almost black [pigmentation](#) that arises from dense contents of [polyphenols](#), especially [anthocyanins](#). Total polyphenol content is 1752 mg per 100 g in fresh berries,<sup>[19]</sup> anthocyanin content is 1480 mg per 100 g, and [proanthocyanidin](#) concentration is 664 mg per 100 g.<sup>[20][21]</sup> These values are among the highest measured in plants to date. The black aronia species contains higher levels of anthocyanins than purple (*Aronia prunifolia*) or red aronia (*Aronia arbutifolia*), whereas the order of total polyphenols was reported as purple = red > black.<sup>[22]</sup>

The plant produces these pigments mainly in the leaves and skin of the berries to protect the pulp and seeds from constant exposure to [ultraviolet radiation](#) and production of [free radicals](#).<sup>[23][24][25]</sup> By absorbing [UV](#) rays in the [blue](#)-purple spectrum, leaf and skin pigments filter intense sunlight, serve antioxidant functions and thereby have a role assuring regeneration of the species. Brightly colorful pigmentation also attracts birds and other animals to consume the fruit and disperse the seeds in their droppings.<sup>[26]</sup>

Analysis of polyphenols in chokeberries has identified the following individual chemicals (among hundreds known to exist in the plant kingdom): [cyanidin-3-galactoside](#), cyanidin-3-arabinoside, [quercetin-3-glycoside](#), [epicatechin](#), [caffeic acid](#), [delphinidin](#), [petunidin](#), [pelargonidin](#), [peonidin](#), and [malvidin](#).<sup>[20][27][28]</sup> All these except caffeic acid are members of the [flavonoid](#) category of phenolics.

For reference to phenolics, flavonoids, anthocyanins, and similar plant-derived phytochemicals,<sup>[19]</sup> Wikipedia has a [list of phytochemicals and foods in which they are prominent](#).

## ORAC Score

In a standard measurement of antioxidant strength, the [oxygen radical absorbance capacity](#) or ORAC, demonstrates aronia to have one of the highest values yet recorded for a fruit — 16,062 micromoles of [Trolox Eq.](#) per 100 g.<sup>[20]</sup> The components contributing to this high measurement were both anthocyanins and proanthocyanidins, with the proanthocyanidin level "among the highest in foods, which may explain their potent astringent taste."<sup>[20]</sup>

While no relationship between the ORAC value of a food and its health benefit has been determined, it is speculated that foods higher on the ORAC scale are more effective at

neutralizing free radicals [in vitro](#), and so may be effective [in vivo](#) at slowing oxidative processes, providing cellular signals or supporting prosurvival mechanisms.<sup>[29][30]</sup>

However, no relevant correlation between ORAC score and human health has been demonstrated, and some scientists consider it biologically irrelevant to human nutrition.<sup>[29]</sup>

## **Preliminary research**

[Basic research](#) on aronia has addressed potential mechanisms for reducing risk of disease. Models under evaluation include:

- reduction of blood [cholesterol](#)<sup>[31]</sup>
- [colorectal cancer](#)<sup>[32]</sup>
- [cardiovascular disease](#)<sup>[33]</sup>
- chronic [inflammation](#)<sup>[34]</sup>
- gastric mucosal disorders ([peptic ulcer](#))<sup>[35]</sup>
- eye inflammation ([uveitis](#))<sup>[36]</sup>
- [liver failure](#)<sup>[37]</sup>
- [anti-adhesion](#) properties<sup>[38]</sup>
- [breast cancer](#)<sup>[39]</sup>
- [arterial hypertension](#)<sup>[40]</sup>
- [cervical cancer](#)<sup>[41]</sup>
- [immunomodulation](#)<sup>[42]</sup>