



The Common Thread of Anthocyanins

Part 1 of 2



Anthocyanins are everywhere in nature,
even in the purple colors of flower petals

[follow the [Wikipedia](#) links]

- Anthocyanins (Greek: "anthos" = flower; "cyanin" = blue) belong to a parent class of molecules called [flavonoids](#) which in turn are members of the [polyphenol superfamily](#).
- Anthocyanins occur in all tissues of higher plants, including leaves, stems, roots, flowers, and fruits.
- Anthoxanthins are their clear, white to yellow counterparts occurring in plants (carotenoids also provide orange-yellow-red pigments to plants).
- Anthocyanins (linked to a sugar molecule) derive from [anthocyanidins](#) which are not bonded with sugars.



Black chokeberries (*Aronia melanocarpa* L.), the most anthocyanin-enriched fruit in North America

Superfruit Anthocyanins

The top anthocyanin sources among superfruits (or candidate superfruits) are

1. black chokeberry (aronia) -- 1480 mg per 100 g
2. black elderberry
3. concord grape
4. wild blueberry
5. saskatoon berry
6. black raspberry -- 589 mg per 100 g

Read the [Wikipedia article on anthocyanins](#) with a list of data showing anthocyanin content per gram

Purple beets and cabbage are also great dietary sources of anthocyanins!

Most commonly found anthocyanins across fruit species

each in the form of a glycoside, that is, with an attached sugar molecule

- cyanidin
- delphinidin
- malvidin
- pelargonidin
- peonidin
- petunidin

It does not matter from which plant food these anthocyanins come. In nature, chemical structure is preserved across species -- flowers, berries, tree fruits, vegetables -- anthocyanins from all these plants are the same

Recent Advances in Anthocyanin Research

- **Anthocyanins are linked to improved blood cholesterol levels - human pilot study**

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- Trends Plant Sci. 2009 May;14(5):237-41.

Purple as a tomato: towards high anthocyanin tomatoes.

click for research abstract!

Feature Finding

Anthocyanins are naturally occurring pigments ubiquitously present in plants and, as such, part of the human diet. Owing to their biological activity, anthocyanins have beneficial health effects but, unfortunately, are not present in some important crop plants, such as tomatoes. Recently, a 'purple' tomato, highly enriched with anthocyanins, was produced.

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- Curr Opin Biotechnol. 2008 Apr;19(2):190-7.

Seeing is believing: engineering anthocyanin and carotenoid biosynthetic pathways.

click for research abstract!

Feature Finding

In order to achieve a specific color by accumulating a corresponding compound, it is necessary to upregulate the pathway leading to the compound and downregulate the competing pathway.

Previous Berry Doctor coverage of anthocyanins, an 8-part series (2007), *click!*



Anthocyanins account for the colors of all these berry species.

*Check out the
new Archives just for superfruit essays, [click!](#)*

Twitter for Superfruits News

We're starting a new online update feature using [Twitter](#), a free micro-blogging service where we can periodically broadcast news updates on berries and superfruits.

Twitter is simply a "short message service" ([SMS](#)), just 140 characters for quickly broadcasting a message to our educational network of subscribers for the Berry Doctor's Journal. SMS is the same technology as cell phone texting, short messages being used by over 2 billion people. It's the fastest growing network service on the internet.

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