



# Concord Grape Juice

## *Helping to Promote a Healthy Heart*

The juice, jam and jelly made from Concord grapes are deliciously familiar products to almost all of us. What you may *not* know, however, is that medical researchers have been studying Concord grape juice for almost a decade now, and the published clinical research suggests that drinking juice made from Concord grapes helps promote a healthy heart and arteries.

Here are some important facts:

**Juice from Concord grapes is packed with potent natural antioxidant compounds — ranks the #1 beverage as reported in the new USDA Proanthocyanidin Database**

- Consumption of foods rich in polyphenols (natural bioactive plant compounds often called phytonutrients) has long been linked to cardiovascular benefits, and higher consumption of fruits and vegetables has been linked to reduced incidence of cardiovascular disease and its associated risk factors.<sup>1,2</sup> Grape juice made from Concord grapes, much like red wine, and other darkly colored fruits and vegetables, is especially rich in polyphenols.
- Many researchers attribute one source of these cardiovascular benefits to the potent antioxidant effects provided by a specific class of polyphenols called flavonoids. Cardiovascular disease, as well as cancer and diseases associated with aging, are thought to be caused, in part, by oxidant stress. The presence of antioxidants helps to counteract this stress by neutralizing free radicals that could otherwise damage cell molecules.

- One of the most common sources of dietary antioxidants are flavonoid compounds called proanthocyanidins. Of all the beverages reported in the new USDA Proanthocyanidin Database,<sup>3</sup> grape juice made from Concord grapes had the highest level of proanthocyanidins per serving, exceeding red wine, brewed tea, cranberry juice cocktail and apple juice.
- This isn't surprising. Several years ago, USDA researchers published a study that measured the antioxidant capacity of several popular fruit juices purchased from retail locations.<sup>4</sup> They found grape juice made from Concord grapes to have more than two times the antioxidant capacity of orange, apple, grapefruit or tomato juice.

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*Consumption of grape juice made from Concord grapes can help promote a healthy heart and may help prevent heart disease and other chronic diseases by improving the body's ability to deal with oxidative stress.*

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**Clinical findings suggest potent *in vivo* antioxidant activity. Concord grape juice has been shown to slow oxidation of LDL cholesterol — a contributor to atherosclerosis**

- While the flavonoid components of Concord grape juice are potent antioxidants *in vitro*,<sup>5</sup> researchers found in a number of preliminary clinical studies that drinking Concord grape juice increased plasma antioxidant capacity and slowed the oxidation of LDL cholesterol—the so-called “bad cholesterol”.<sup>6,7,8</sup> Slowing the oxidation of LDL is thought by many researchers to be an important way to inhibit the atherosclerotic process. During normal circumstances, LDL molecules will pass through the endothelium, lodge for a period of time within the inner wall of the artery, then re-enter the bloodstream. While the LDL is inside the arterial wall, it is particularly prone to oxidation. If the LDL oxidizes within the arterial wall, it may initiate a chain of events that can lead to atherosclerosis.<sup>9</sup> Thus, when LDL is slower to oxidize there is less likelihood that the oxidation will occur in the arterial wall.

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*Slowing the oxidation of LDL cholesterol by Concord grape flavonoids supports the body's natural system for promoting healthy clear arteries, so blood can flow freely to where it is needed.*

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**Concord grape juice may provide an anti-clotting effect**

- Beyond its potent antioxidant effect, one of the additional ways Concord grape juice appears to act to promote a healthy heart is similar to that of aspirin. Through an antithrombotic or anticlotting effect, clinical research suggests that Concord grape juice inhibits the tendency of blood platelets to aggregate and potentially form harmful blood clots.
- Folts and colleagues, publishing in *Circulation* one of the first pre-clinical studies on Concord grape juice, showed that drinking Concord grape juice had an effect on platelet activity similar to aspirin's.<sup>10</sup> Confirmatory clinical studies have since been performed on the platelet-inhibitory properties of Concord grape juice, with most observing platelet inhibition.
- Subsequent clinical studies by the same group also showed that while Concord grape juice is a potent platelet inhibitor, orange and grapefruit juice do not inhibit platelet aggregation. This is attributed to differences in flavonoid content between the juices.<sup>11,12</sup>

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*Consumption of juice made from Concord grapes may help promote a healthy heart by reducing the tendency of blood platelets to stick together and form harmful clots.*

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**Promoting Healthy Arteries: Enhancing arterial flexibility and endothelial function**

- Concord grape juice flavonoids have also been shown to have a vaso-relaxant effect. In a study of 15 patients with coronary artery disease, published in *Circulation*, Stein and colleagues used ultrasound technology to measure the brachial artery's ability to respond to sudden increases in blood flow.<sup>6</sup> This group found that the subjects had significantly more flexible arteries after drinking Concord grape juice than before. Healthy, flexible arteries enable the arteries to expand, allowing greater blood flow where and when it is needed.
- This group did a second study on endothelial function with 22 patients and found that daily consumption of Concord grape juice improved the flow-mediated vasodilation of the brachial artery in participants with cardiovascular disease.<sup>13</sup>

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*A healthy endothelium is one of the first lines of defense against vascular disease like atherosclerosis. There is a growing body of research that shows that compounds in Concord grape juice contribute to a healthy, flexible endothelium.*

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**Concord grape juice may help promote healthy blood pressure – preliminary studies point to possible blood pressure reduction**

- It has been found in two preliminary studies that drinking Concord grape juice lowered blood pressure in the hypertensive study participants.<sup>14,15</sup> Both studies were conducted on a small scale, so it is premature to draw strong conclusions about the benefits of Concord grape juice in this area until completion of a larger study using more robust blood pressure monitoring.

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*Because of its positive effect on endothelial function and arterial health, a number of researchers in this field believe that drinking Concord grape juice may also contribute to healthy blood pressure. Additional studies are under way.*

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**Concord grape juice promotes production of nitric oxide – thought to be a possible mechanism of action for healthy endothelial function**

- Nitric oxide is a potent vasodilator and a vital contributor to healthy arteries in many ways. One of the most important is the enhancement of endothelial function, which leads to more flexible arteries, and may contribute to lower blood pressure.

- Freedman and colleagues showed that production of platelet-derived nitric oxide was increased *ex vivo* by consumption of Concord grape juice.<sup>16</sup> The same study showed that the production of superoxide, a free radical that stimulates potentially harmful oxidation in the body, was reduced *ex vivo* by consumption of Concord grape juice.

*A potential mechanism for the beneficial effects of Concord grape juice may be the increase in nitric oxide production coupled with the decrease of superoxide production.*

#### **Some common questions:**

**How much do you have to drink? What about sugar? Does grape juice have the same benefits as red wine?**

- Drinking a glass of juice made from Concord grapes every day as part of a balanced diet is a heart-healthy and delicious choice for both adults and children. A 6 oz. glass counts as a serving of fruit toward your recommended 5-9 servings of fruits and vegetables a day,<sup>17</sup> and contains no fat or cholesterol. The Produce for Better Health Foundation reports that the blue/purple category of fruits and vegetables is significantly underrepresented in the American diet.<sup>18</sup> Drinking grape juice is a great way to remedy this problem.
- Concord grape juice clinical research has been conducted with consumption ranging from 4 mL/kg<sup>13</sup> of body weight per day of 100% Concord grape juice to as high as 10 mL/kg.<sup>7</sup> Folts and colleagues found that a group of subjects drinking 4 mL/kg of 100% Concord grape juice achieved similar flow-mediated vasodilation (a measure of endothelium flexibility) to that of a group drinking 8 mL/kg.<sup>13</sup> For the average woman (152 lbs.) or man (180 lbs.), 4 mL/kg equates to drinking about 9-11 ounces of Concord grape juice.
- 100% grape juice made from Concord grapes has no added sugar, is a rich source of natural antioxidant compounds, and may be cardio-protective in a variety of ways. Limiting intake of foods and beverages with added sugars and low nutrient and micronutrient density may easily allow the daily consumption of Concord grape juice as part of a healthy diet.
- A recent study in *JAMA* noted that, unlike sugar-sweetened beverages, fruit juice consumption was not associated with diabetes in young and middle-aged women.<sup>19</sup>

*Drinking juice made from Concord grapes is a heart-healthy choice that provides a welcome alternative to daily red wine consumption for many. It provides many of the same flavonoid-derived benefits without the concerns of alcohol. Both beverages are rich in polyphenols; both are made from antioxidant-rich, deeply colored grapes.*

#### **Benefits may extend beyond heart disease**

- The flavonoids found in Concord grapes may have health benefits that extend well past heart disease because of their potent antioxidant capability and possible effect on human health in a variety of ways. Researchers have seen preliminary, yet positive, effects in pre-clinical studies in the areas of cancer,<sup>20</sup> cognitive function and aging.<sup>21</sup> While these areas of research have barely been tapped, they hold promise. More researchers are now studying these possible benefits.

#### **Research Highlights**

*There are a number of potential benefits to drinking Concord grape juice:*

- High in antioxidants
- High in flavonoid phytonutrients
- Platelet inhibition
- Healthy endothelial function
- Slowed oxidation of cholesterol
- Healthy blood pressure
- Possible benefits in chronic diseases such as cancer and aging.



#### **Easy Lifestyle Fit**

Grape juice made from Concord grapes is a great choice for those with heart-health on their mind. Health care professionals often despair at their inability to change their patients' unhealthy lifestyles. Invariably, big lifestyle changes are hard to make, and even harder to keep. For consumers looking for easy ways to live a heart-healthy lifestyle, drinking juice made from Concord grapes is one of those incremental changes that just may stick, and yield benefits for years to come. It's never too early to start being good to your heart.

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