Concord Grapes and Cardiovascular Health

In addition to a produce-rich diet and active lifestyle, Concord grapes may be one important ingredient in maintaining a healthy cardiovascular system by supporting healthy arteries, which helps promote healthy blood flow and blood pressure.

Concord grapes may help support flexible arteries to promote healthy blood flow.²-⁶

- A study by Freedman et al. in 2001 (Circulation) investigated 20 healthy adults who drank Welch’s Purple Grape Juice (7 mL/kg/d) for 14 days. Compared to baseline, after two weeks of juice consumption, platelet aggregation (clotting) was inhibited and superoxide (a free radical) release was decreased. In addition, drinking grape juice stimulated the production of nitric oxide by platelets – which promotes arterial relaxation and allows them to support healthy blood flow. While there was no significant change in the level of certain antioxidants within the plasma, an ORAC assay showed a significant increase in total plasma antioxidant capacity.⁵ See below for more on Concord grape juice’s impact on antioxidant activity and platelet aggregation.

- Concord grape juice consumption appears to help widen arteries when necessary, specifically in individuals with coronary artery disease (CAD). In 1999, Stein et al. studied 15 participants with CAD who consumed Concord grape juice for two weeks (4 mL/kg/d twice daily) and saw increases in flow-mediated dilation of the brachial artery.⁶ Chou and colleagues performed a similar study over a longer time period. These researchers found that in two groups of 11 adults with CAD, supplemented with different levels of Concord grape juice (4 mL/kg/d and 8 mL/kg/d respectively), there were equivalent and significant increases in brachial dilation compared to baseline findings after 28 days.³

- In contrast, a study on grape juice and blood pressure of 64 subjects with pre-hypertension or stage 1 hypertension found that after eight weeks of consuming 100% Concord grape juice and a placebo beverage, there was no benefit of the grape juice on arterial stiffness and endothelial function. The authors suggest that no change was seen perhaps because the subjects were generally healthy and had only modestly elevated blood pressure.⁷

- Early research shows that Concord grape juice may work in a similar fashion to red wine to promote healthy, flexible arteries—but without the confounding effects of alcohol. For example, findings from a 2007 Cardiovascular Research study found that Concord grape juice was shown to stimulate the production of nitric oxide in cells that line the arteries, promoting arterial relaxation. In this laboratory study, Anselm and colleagues examined animal coronary arteries ex vivo to determine arterial endothelium production of nitric oxide following treatment with Concord grape juice. The researchers found nitric oxide production was stimulated more than the control not treated with Concord grape juice.² Additional research has also illustrated that Concord grape juice produces this relaxation effect by stimulating the same reactions in the arteries that are activated by red wine.
Concord grapes may help promote healthy, clear arteries.6,8-11

- Although there is no evidence from human studies to suggest that Concord grape juice will lower total cholesterol levels, it may help manage the effects of LDL, or "bad," cholesterol to help keep arteries free and clear of excess plaque build-up.6,8-11 If LDL particles are oxidized while in the arterial wall, this can initiate a cascade of events that can eventually lead to arterial blockage. Some,6,8 but not all12 research has shown that Concord grape juice is linked to an increase in serum antioxidant capacity as determined by ORAC. And studies have linked Concord grape juice to slowing of LDL oxidation, alone or with the addition of vitamin E.3, 6,8-11

- A 2002 study by O’Byrne et al., published in the American Journal of Clinical Nutrition, investigated the differences between Concord grape juice and vitamin E (alpha-tocopherol) on oxidative stress in healthy adults. Seventeen participants were randomized to a vitamin E (400 IU, alpha-tocopherol) group and 15 to a Concord grape juice (10 mL/kg/d) group. Both groups experienced significant increases in serum antioxidant capacity and decreased LDL oxidation rate.8 Positive results on LDL-oxidation were also seen by Stein et al. (study also noted above), where CAD patients drinking Concord grape juice for two weeks experienced slowed LDL oxidation time compared to the control group (117 v. 87 minutes).8 While these findings are promising, Chou and colleagues found that consuming Concord grape juice had no beneficial effect on LDL oxidation rate in CAD patients studied over a 28 day period.3 Additionally, in a recent study in healthy adults, Hollis and colleagues failed to find a significant increase in serum antioxidant capacity with chronic Concord grape juice consumption.12

Concord grapes have been shown to have an anti-clotting effect5,9,13 similar to red wine.14

- Red wine has been shown to have an effect on inhibiting platelet aggregation.14,15

- A crossover study by Keevil et al. compared the effects of consuming about two cups/day of either purple grape, orange or grapefruit juice in 10 healthy adults. 100% grape juice was the only juice to show anti-clotting effects through its ability to inhibit platelet aggregation.13 Freedman et al. published similar benefits of Concord grape juice on decreasing platelet aggregation in a study of 20 healthy, adults consuming 7 mL/kg/d for 2 weeks.5 Both authors attribute the anti-clotting effects to Concord grape juice’s high content of proanthocyanins and other flavonoid polyphenols. While these clinical results are exciting, these outcomes were not replicated by Albers and colleagues who found Concord grape juice to have no beneficial effect on platelet aggregation in those who were already on aspirin therapy.16

- An animal study by Shanmuganayagam et al., published in Atherosclerosis, also supports the anti-clotting effects of Concord grape juice. Twenty animal subjects were fed the same high cholesterol diet for the first 48 days. For the second 48 days, half of the group received Concord grape juice and the other half of the group received a sugar water control. The animals drinking Concord grape juice experienced significantly reduced platelet aggregation by day 96.9
In certain populations, Concord grapes may play a role in healthy blood pressure.\textsuperscript{7,17,18}

- A double-blinded, placebo controlled study by Park et al. (\textit{Biofactors}, 2004) of 40 adult Korean men with elevated blood pressure, found that daily consumption of Concord grape juice for 8 weeks (5.5 mL/kg/d) resulted in lower systolic and diastolic blood pressure versus baseline.\textsuperscript{17}

- Another study by Mark and Maki found that after 12 weeks of daily consumption of 10 oz. of Concord grape juice, both systolic and diastolic blood pressure responses were significantly decreased in men with a high baseline systolic blood pressure.\textsuperscript{18}

- It is healthy and normal for blood pressure to drop at night—giving the heart a rest. People who do not experience these nighttime (nocturnal) dips in blood pressure may be at increased risk for heart-related health issues over time.\textsuperscript{19,20} A recent double-blind, cross-over study, published in the \textit{American Journal of Clinical Nutrition} by Dohadwala et al., of 64 adult men and women with pre-hypertension or stage 1 hypertension, found that drinking Concord grape juice helped lower nocturnal blood pressure and had a beneficial effect on blood glucose levels compared to a placebo-matched control. This study also found that Concord grape juice consumption did not impact body weight. No significant decrease in 24-hour ambulatory blood pressure was found, so these findings should not be taken to mean that Concord grape juice treats high blood pressure.\textsuperscript{7}

**Bottom Line:** Based on published research, to-date, Concord grapes and grape-based products appear to play a positive role in promoting heart health in certain population groups. While said, findings from animal, both \textit{in vivo} and \textit{ex vivo}, and \textit{in vitro} models need to be replicated in larger human studies in order to better understand the biomedical benefits of grapes and grape products in a more diverse population.

**Bibliography**


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