A glass of Concord grape juice being poured from a bottle. The glass is filled with a dark red liquid, and a stream of the same liquid is being poured into it from a bottle at the top left. The glass is surrounded by a white banner with a black outline. In the background, there are bunches of purple grapes.

# CONCORD GRAPE JUICE

## THE POLYPHENOL POWERHOUSE

**A unique fruit juice combining  
strong heritage, fantastic flavor and  
important health benefits**

A white paper by Welch's  
Global Ingredients Group

# THE POLYPHENOL POWERHOUSE

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The Concord grape is a distinctive dark purple grape variety grown with expertise and care by Welch's family-farmer owners in select regions across North America. It is a sweet and boldly delicious grape, perfect for creating flavorful 100% juices, as well as fruit juice-containing beverages and dairy products. Welch's Global Ingredients Group, the recently launched ingredients division of Welch's, offers Concord grapes in an array of formats, including top-sellers like single-strength juices, juice concentrates and purées. These high quality products open up a world of opportunities to enable food and beverage manufacturers to innovate and bring excitement to the marketplace.

The Concord grape and its juice aren't only delicious, they're nutritious. Concord grape juice is a nutrition powerhouse, delivering more polyphenols than most other commonly consumed juices<sup>1,2</sup>. Additionally, a recent publication showed that Concord grape juice has a greater concentration of these health-promoting plant nutrients than several 'superfruit' juices<sup>3</sup>.

Not only do polyphenols give Concord grapes their signature purple color, these natural plant nutrients can also deliver benefits to promote health. In fact, nearly 20 years of research shows that thanks to the Concord grape, Concord grape juice helps support a healthy heart<sup>1, 4-12</sup>.

In addition, while more research is needed, preliminary studies suggest that Concord grape juice may provide benefits in areas such as cognitive function<sup>13-15</sup> and blood sugar control<sup>16</sup>.

Welch's is one of America's oldest juice companies with nearly 150 years of experience growing Concord grapes and transforming them into delicious and nutritious 100% grape juices. In the US today, grape is the 4th most popular 100% juice flavor<sup>17</sup>, and within the category, Welch's is the number 1 selling grape juice brand. It is a firm family favorite that is steeped in heritage – and yet it remains on the cutting edge of the juice market, offering the kind of taste and nutrition properties that modern consumers are crying out for.

Welch's is more than a consumer packaged goods company. It is also an ingredients supplier, offering grape expertise and solutions to companies across the globe through Welch's Global Ingredients Group. Concord grape juices and purées are available in the US, Korea and Japan, and recently became available to companies in Europe and China, thanks to a distribution agreement with Wild Juice. This means manufacturers across Asia and the EMEA region can now excite the taste buds of health conscious and price savvy consumers by incorporating the inherent goodness of Concord grapes into a wide range of branded and private label beverages, dairy products and more.



# A SUPERFRUIT MADE IN THE USA



Welch's is a cooperative of approximately 1,000 family-farmer owners, who for generations have planted, cared for, and harvested Welch's Concord grapes with passion and skill. Native to Massachusetts, and today grown across North America, the distinctly delicious and uniquely sweet dark purple Concord grape is one truly American superfruit.

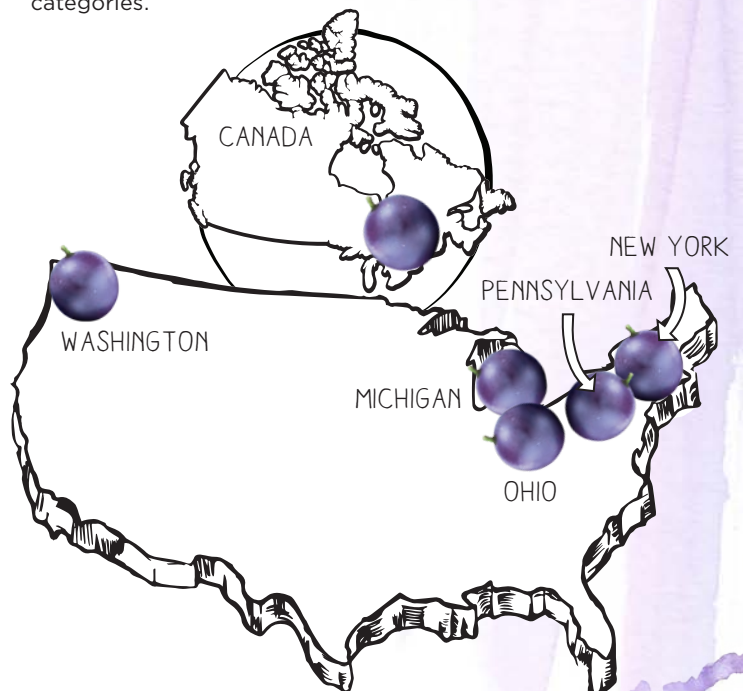
Just like a fine wine, the memorable taste of Welch's juices and other grape-based products is a result of where the Concord grape is grown. Unlike many other grapes, Concord grapes thrive in harsh growing conditions and unique microclimates, such as near larger bodies of water. Because of the special conditions needed, Welch's Concord grape vineyards aren't found in California, but instead in areas such as New York, Pennsylvania, Ohio, Michigan, Washington and Ontario, Canada.

The window for picking for Concord grapes is fairly short – just a few weeks in the fall. The precise harvest time for Welch's vineyards is determined by a careful evaluation of the fruit. All the grapes must meet high quality standards before they are selected for juicing. Once picked and assessed, Welch's Concord grapes are pressed into juice within 8 hours of harvesting, locking in the grape's perfectly ripe flavor and benefits.

The Concord grape (*Vitis labrusca*) is distinct from other grapes, including many table grapes, because it has a thick, dark purple skin and crunchy seeds, both of which hold the key to this grape's goodness. That's because naturally occurring plant nutrients called polyphenols are concentrated in the skins and seeds of the grape. Research suggests that polyphenols, like those found in the Concord grape, can play a role in promoting health.

To preserve the grapes' natural nutrition power, Welch's Concord grape juice is made by squeezing whole Concord grapes – skins, seeds and all – to release healthy polyphenols straight from the grape into the juice. In fact, according to a recent publication<sup>3</sup> Concord grape juice delivers 13% more polyphenols than blueberry juice, 24% more than acai juice and 53% more than cranberry juice.

The benefits of polyphenols resonate with consumers, and the market for these ingredients is expected to grow globally by 6.1% a year (CAGR) to reach a value of almost US\$874 million by 2018, according to an independent analysis<sup>18</sup>. This indicates that polyphenols such as those delivered by Concord grape juice are very much on-trend. In addition, consumers increasingly want to know that healthy food and drink is 'naturally functional'. In its report<sup>19</sup> *10 Key Trends in Food, Nutrition & Health 2016*, respected marketing consultancy New Nutrition Business described naturally functional as "the King of Trends". In tune with this, Concord grape juice offers product developers an authentic ingredient that delivers the taste and nutrition today's consumers are looking for in their foods and beverages. Its inherent health benefits take it to another level, and mean it is the perfect option for creating delicious and naturally functional products that will breathe new life into the food and beverage categories.



# VALUABLE HEALTH BENEFITS

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For years, leading researchers have been investigating the nutrition and health benefits of Concord grapes and grape juice. While Concord grape juice research has focused mainly on its role in cardiovascular health, other emerging areas are also being studied. **Discover more on the state of this research below:**

## Cardiovascular health

Nearly 20 years of research shows that Concord grape juice can help support a healthy heart. In fact, recently completed reviews of the literature concluded that consuming grapes and grape products, including Concord grape juice, can support cardiovascular wellbeing by having a favorable impact on a variety of health effects, most notably vascular health<sup>4-6</sup>.

When the lining of arterial walls is not functioning properly, this can be an early sign of cardiovascular health problems. Studies report that drinking Concord grape juice helps relax and dilate arteries<sup>7-10</sup>. And, relaxed and dilated arteries can support healthy circulation, keeping your blood pumping and energy flowing.

Concord grape juice also appears to offer a unique vascular benefit versus many other juices. For example, when compared to nearly 50 other fruit juices, Concord grape juice, alongside blackcurrant juice and a red juice blend, had the most potent positive effect on blood vessel health. This laboratory research suggests that not only is it the polyphenol concentration but also the type of polyphenols present in the grape juice that supports blood vessel relaxation and healthy circulation<sup>1</sup>.

According to researchers in the field, the vascular effects associated with Concord grape juice and its polyphenols may be linked to a compound called nitric oxide, which relaxes the blood vessels, causing them to expand and keep our blood flowing freely. Specifically, a study published in Cardiovascular Research concluded that Concord grape juice stimulated the production of nitric oxide in cells that line the arteries<sup>11</sup>. This research complements previous work by Freedman and colleagues, which showed increased production of nitric oxide from blood platelets in healthy adults drinking Concord grape juice<sup>12</sup>.





## Cognitive health

Researchers have been investigating the role of Concord grape juice in cognitive health. The research in this area is emerging, yet science has begun to suggest that Concord grapes may offer certain health benefits for the mind<sup>13-15</sup>.

### Early science suggests that Concord grape juice may provide memory benefits in older adults.

- A randomized, double-blind, placebo-controlled pilot study of 12 older adults with early memory deficits (ie forgetfulness) found cognitive improvements after 12 weeks of Concord grape juice consumption. Five subjects consuming Concord grape juice experienced significant improvement in list learning and trended toward improved verbal recall and spatial memory compared to controls<sup>13</sup>.
- Building on earlier research, Krikorian and colleagues demonstrated that Concord grape juice can increase blood flow to certain regions of the brain, as well as improve memory function compared to those drinking a grape-flavored, sugar-sweetened drink (the placebo). In this study, 21 older adults with early memory decline were given either Concord grape juice or the placebo daily for 16 weeks, and were tested in various areas related to long-term memory. Those who drank Concord grape juice were less susceptible to distraction when asked to remember what they had previously learned. Test scores in other areas like learning and retention did not improve with the juice<sup>14</sup>.

Also, using functional magnetic resonance imaging (fMRI), the researchers monitored specific areas of the brain in a subset of eight study participants while they performed a working memory task. The researchers found that the group drinking Concord grape juice had increased neural activity (indicating an increase in blood flow) in two regions of the brain involved in working memory, compared to the placebo<sup>14</sup>.

### A new study suggests that Concord grape juice may benefit cognitive function in younger people too, specifically those with stressful lifestyles.

- New research by the University of Leeds in the UK suggests that drinking Concord grape juice daily can benefit certain aspects of memory and everyday tasks in people with stressful lifestyles – specifically working mothers. In the study, 25 healthy, 40-50 year old working women with pre-teen children drank Concord grape juice and a placebo for 12 weeks each. Over the duration of the study, the women participated in a series of tests designed to assess their cognitive performance, including a 25-minute driving simulator challenge in which they were asked to match the speed and direction of a lead vehicle. Statistically significant improvements in a memory measure (immediate spatial memory) and driving performance were both seen when the moms drank Concord grape juice daily versus when they consumed the placebo<sup>15</sup>.

## Blood glucose control

Unlike sugar-sweetened drinks with added sugars, Concord grape juice is a nutrient-dense beverage that delivers naturally occurring fruit sugars in combination with health-promoting polyphenols. Using a series of laboratory techniques, researchers, for the first time, examined how the polyphenols in Concord grapes may impact the digestion and absorption of carbohydrates and possibly modify changes in blood sugar after consumption. The results of this pre-clinical study suggest that polyphenols naturally present in Concord grape juice can slow the absorption of the naturally occurring sugars present in the juice<sup>16</sup>. Therefore, drinking grape juice versus a sugar-sweetened beverage may result in a modestly lower glycemic response (blood sugar rise).

While preliminary and more research needs to be conducted, this study further reinforces the distinction between sugar-sweetened beverages and Concord grape juice.

VISIT [GRAPESCIENCE.COM](http://GRAPESCIENCE.COM) FOR MORE INFORMATION ABOUT RESEARCH ON THE ROLE OF CONCORD GRAPES AND GRAPE JUICE IN HEALTHY LIFESTYLES



*Any claimed health effects should be checked for compliance if being considered for use in the labelling or advertising of foods intended for delivery to the final consumer.*

# REAWAKENING CONSUMERS' TASTE BUDS

Welch's products are sold throughout the USA and in approximately 40 countries around the globe. Our experts are on hand to help you create a product that's perfect for your customers, wherever they are. Our Grape Center of Excellence provides leadership in grape science, chemistry, formulation, process technology, research, innovation, analytical methods and new product development.

Concord grape juice is made in the USA. It is available in multiple formats and is a versatile, easy to use ingredient in beverage formulations and beyond. Its vibrant color, bold and delicious flavor, science-backed health benefits and value set it apart from other superfruit juices on the market. Concord grape juice provides manufacturers with an opportunity to excite the taste buds of consumers who are looking for a beverage that can deliver true nutrition and health benefits at a reasonable price.

Besides purées, concentrates and single strength juices, Welch's offers a range of ingredients made with Concord grapes, including real fruit pieces and powders that can be incorporated into food applications from snacks and baked goods to confectionary and dairy products. Welch's Concord grape ingredients are certifiable Kosher by Circle K, OU Kosher or ISA Halal, as needed. Halal Certified concentrates can also be made available on request. Additionally, organic options are available, in limited amounts and on request.

The food and beverage category is huge, but competitive. Incremental sales come to those who innovate with products that tap into current consumer needs. With its combination of great taste and natural nutrition, Concord grape juice offers a great solution for today's sophisticated and discerning shoppers. Contact Welch's Global Ingredients Group today to find out how Concord grape juice could help take your juice business to the next level and leave your competitors trailing.

**Welch's Concord grape juice is made in the USA.**



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# REFERENCES

1. Auger C, Pollet B, Arnold C, Marx C and Schini-Kerth VB. Great Heterogeneity of Commercial Fruit Juices to Induce Endothelium-Dependent Relaxations in Isolated Porcine Coronary Arteries: Role of the Phenolic Content and Composition. *J Med Food*. 2015. 18(1):128-136.
2. Mullen W, Marks SC and Crozier A. Evaluation of Phenolic Compounds in Commercial Fruit Juices and Fruit Drinks. *J AgricFood Chem*. 2007. 55:3148-3157.
3. Seeram NP, Aviram M, Zhang Y, Henning SM, Feng L, Dreher M and Heber D. Comparison of Antioxidant Potency of Commonly Consumed Polyphenol-Rich Beverages in the United States. *J AgricFood Chem*. 2008. 56(4):1415-1422.
4. Vislocky LM and Fernandez ML. Biomedical Effects of Grape Products. *Nutrition Reviews*. 2010. 68(11): 656-670.
5. Vislocky LM, and Fernandez ML. Grapes and Grape Products: Their Role in Health. *Nutr Today*. 2013. 48(1):47-51.
6. Wightman JD and Heuberger RA. Effect of grape and other berries on cardiovascular health. *J Sci Food Agric*. 2015. 95(8):1584-1597.
7. Stein JH, Keevil JG, Wiebe DA, Aeschlimann S and Folts JD. Purple grape juice improves endothelial function and reduces the susceptibility of LDL cholesterol to oxidation in patients with coronary artery disease. *Circulation*. 1999. 100(10):1050-1055.
8. Chou EJ, Keevil JG, Aeschlimann S, Wiebe DA, Folts JD and Stein JH. Effect of ingestion of purple grape juice on endothelial function in patients with coronary heart disease. *Am J Cardiol*. 2001. 88(5):553-555.
9. Siasos G, Tousoulis D, Kokkou E, Oikonomou E, Kollia ME, Verveniatis A, Gouliopoulos N, Zisimos K, Plastiras A, Maniatis K and Stefanadis C. Favorable effects of Concord grape juice on endothelial function and arterial stiffness in healthy smokers. *Am J Hypertens*. 2014. 27(1):38-45.
10. Dorsey PG, Holbrook M, Carey M, Leleiko RM, Rodrigues I, Aasen J, Eberhardt RT, and Vita JA. Concord Grape Juice Improves Endothelial Function in Overweight, Older Adults. Presented at the 55th Annual Conference of American College of Nutrition. San Antonio, TX. October 15-18, 2014.
11. Anselm E, Chataigneau M, Ndiaye M, Chataigneau T and Schini-Kerth VB. Grape juice causes endothelium-dependent relaxation via a redox-sensitive Src- and Akt-dependent activation of eNOS. *Cardiovasc Res*. 2007. 73(2):404-413.
12. Freedman JE, Parker C, 3rd, Li L, Perlman JA, Frei B, Ivanov V, Deak LR, Iafrazi MD and Folts JD. Select flavonoids and whole juice from purple grapes inhibit platelet function and enhance nitric oxide release. *Circulation*. 2001. 103(23):2792-2798.
13. Krikorian R, Nash TA, Shidler MD, Shukitt-Hale B and Joseph JA. Concord grape juice supplementation improves memory function in older adults with mild cognitive impairment. *Br J Nutr*. 2010. 103(5):730-734.
14. Krikorian R, Boespflug EL, Fleck DE, Stein AL, Wightman JD, Shidler MD and Sadat-Hossieny S. Concord grape juice supplementation and neurocognitive function in human aging. *J Agric Food Chem*. 2012. 60(23):5736-5742.
15. Lamport DJ, Lawton CL, Merat N, Jamson H, Myrissa K, Hofman D, Chadwick HK, Quadt F, Wightman JD and Dye L. Concord grape juice, cognitive function, and driving performance: a 12-wk, placebo-controlled, randomized crossover trial in mothers of preteen children. *American Journal of Clinical Nutrition*. 2016;103:775-83.
16. Moser SE, Lim J, Chegini M, Wightman JD, Hamaker BR and Ferruzzi MG. Concord and Niagara grape juice and their phenolics modify intestinal glucose transport in a coupled in-vitro digestion/Caco-2 human intestinal model. *Nutrients* 2016, 8(7):414.
17. IRI, 52 weeks ending 23 August 2015
18. 'Polyphenols Market - Global Industry Analysis, Size, Share, Growth, Trends and Forecast, 2012 - 2018', Transparency Market Research, April 2015
19. '10 Key Trends in Food, Nutrition & Health 2016', New Nutrition Business, December 2015



