



Small in size but powerful in effect, Concord and Niagara grapes are natural sources of plant nutrients that can help support healthy lifestyles. Every cup of nutrient-rich Concord grapes provides an excellent source of manganese, provides a good source of vitamin K, and also contributes to thiamin (vitamin B1) (6% Daily Value, DV), vitamin B6 (5% DV), potassium (5% DV), and vitamin C (6% DV) intake.¹ Plus, the Concord grape and its cousin the white Niagara grape, provide several plant nutrients that may help support and promote overall health.²

Grape Chemistry: Health-Promoting Plant Nutrients

The plant nutrients within the Concord grape include polyphenols, such as anthocyanins, catechin, epicatechin, and quercetin, which are flavonoids³⁻⁷, and potentially resveratrol, which is a stilbene.⁸

In a study by Muñoz-Espada, Concord grapes were abundant in anthocyanins, which, *in vitro*, also displayed antioxidant activity.⁶ Furthermore, Dr. Gu and colleagues estimated that Americans' third highest source of proanthocyanidins were grapes. Grapes and grape juice were shown to contribute nearly 18% of the total ~ 58 milligrams proanthocyanidin/person/day (> 2 years old).⁹ In fact, purple grape juice had the highest average content of proanthocyanidins per serving of all beverages tested (including red table wine and fruit juices), at 124 milligrams per 8 fluid ounces.¹⁰

Phytonutrients – Research continues to show these plant-based nutrients (phyto = plant) may have health benefits, and they are being actively investigated in the scientific community. Foods containing phytonutrients include fruits (like Concord and Niagara grapes), vegetables, legumes, whole grains, nuts and tea. Polyphenols, including flavonoids (e.g., flavonols, flavanols, flavanones, flavones, isoflavones, anthocyanins), phenolic acids, and stilbenes, comprise one group of phytonutrients.

Polyphenols – This sub-group of phytonutrients is found in a variety of foods, including grapes and grape juice, onions, tea, red wine, blueberries, and certain nuts. They are often concentrated in the skins of fruits, and act as a protector from pathogens, parasites, and predators – in addition to contributing to the flavor and color of fruits and vegetables. Research is currently investigating whether these plant-based nutrients can also protect the health of humans.

Flavonoids – These are naturally occurring compounds which comprise the largest and most studied sub-group of polyphenols. This group also includes the majority of phytonutrients found in the skins and seeds of Concord and Niagara grapes. There are thousands of different flavonoids found in nature, and fruits, vegetables, and plant-derived beverages (e.g., wine, grape juice, tea) contain many different types. Several of these biologically active compounds help to protect the plant from disease and damage and they are being actively studied to determine their potential role in human health. Sub-classes of flavonoids include flavonols, like quercetin, flavanols, like proanthocyanidins, and anthocyanins.

- **Anthocyanins** – A major sub-class of flavonoids, they are typically found glycosylated (linked to a sugar) in nature and they are responsible for the red, purple or blue color of many fruits and flowers.
- **Catechin and Epicatechin** – Common flavonoids found in beverages, these two related compounds are flavanols (or flavan-3-ols) a sub-class of flavonoids. They are the building blocks of proanthocyanidins. Teas, Concord and Niagara grapes, wine, apple juice, cocoa, and select legumes contain abundant quantities of these phytonutrients.
- **Quercetin** – A common flavonol found in fruits, this is not to be confused with *flavanol*, in the human diet. This flavonoid can be found in fruits, vegetables, leaves, and grains.

Resveratrol – This natural compound is a protector of plants that is sometimes found in the skins of deep-purple Concord grapes.⁸ This phytonutrient falls under the polyphenol sub-group of stilbenes.⁸ Optimal conditions for development of this phytonutrient include a cool and wet climate, without excessive sunshine; thus, the resveratrol content varies by grape cultivar, geographic location, and exposure to fungal infections.¹¹ In early laboratory studies, this phytonutrient shows promise in supporting certain aspects of health, including cardioprotective effects and promoting immune health.¹²⁻¹⁴

References:

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