

The Popular Polyphenol

by Meredith Kleeman

As a natural products vendor, you're probably aware that the beneficial properties of foods are linked to certain compounds. But did you know that the beneficial properties associated with specific foods and products are due to the presence of polyphenols?

The number of known, natural polyphenols is staggering—we're talking more than 8,000—and research suggests that each polyphenol has its own particular benefit. But what do consumers need to know about polyphenols, and how can you help them navigate the increasing array of products and supplements touting polyphenolic benefits? Here's the bottom line.

The presence of polyphenols creates much of the colors, tangy flavors, and health benefits that consumers desire in their natural products. Polyphenols include subgroups, such as flavonoids, that are divided even further into isoflavones, anthocyanins, and catechins. Most fruits, vegetables, and plants contain combinations of these compounds in varying concentrations. Apples, onions, capers, and broccoli contain high concentrations of quercetin, a polyphenol belonging to the flavonoid group and beneficial to cardiovascular health, while berries include a range of polyphenolic compounds, namely

anthocyanins, flavanols and flavonols, tannins, and stilbenes, shown to promote healthy aging and reduce the risk of cardiovascular disease.

Polyphenols vs. Antioxidants

Consumers are aware of the benefits of a diet rich in antioxidants, and some may even understand the science behind antioxidants. What is less clear is how polyphenols differ from antioxidants. For a while, polyphenols were described interchangeably with the term antioxidants. It's true that many polyphenols have antioxidant proper-



ties, but research has made it clear that many polyphenols either don't act as antioxidants once they are in the body; don't find their way to the blood stream intact or at all; or if they do, their health benefits involve other mechanisms entirely.

Health Benefits of Polyphenols

Research into the health benefits of polyphenols has surged in the last 20 years. There's growing evidence that everything from fruits and vegetables to coffee, wine, and chocolate contain potential health benefits due to polyphenols. Studies have suggested that polyphenols can improve cardiovascular and skin health, promote anti-aging and anti-inflammation, and even benefit cognitive function.

The most highly touted benefit of polyphenols—and that which savvy consumers have probably heard about—is its effect on cardiovascular health. A 2013 study published in the journal *Nutrition, Metabolism & Cardiovascular Diseases* notes that an increased intake of polyphenols may reduce the risk of cardiovascular disease by 46 percent.

The journal *Nutrients* published similar findings as part of a literature review in which five scientists discussed the highlights of the last two decades of polyphenol research. "Numerous studies have demonstrated the importance of naturally occurring dietary polyphenols in promoting cardiovascular health and emphasized the significant role these compounds play in limiting the effects of cellular aging," write the authors. "Polyphenols such as resveratrol, epigallocatechin gallate (EGCG), and curcumin have been acknowledged for having beneficial effects on cardiovascular health, while some have also been shown to be protective in aging."

The authors also note that resveratrol, belonging to the stilbene subgroup, is the most widely studied polyphenol. "Proponents of resveratrol have ascribed longevity-enhancing, anti-cancer

as well as cardioprotective properties to it," the authors write. "Briefly, resveratrol has been demonstrated to impact all the hallmarks of cardiovascular aging and disease."

Regulatory Backing

Regulatory agencies have been slow to accept dietary polyphenols as a valid source of health benefits. "In spite of the extensive research and health claims emerging over the past two decades, not one dietary phenolic compound has been accepted by government regulatory agencies as an agent that may mitigate disease or that has health benefits," notes Chang Lee, a professor of food science at Cornell University, in a recent commentary published in the *Journal of Functional Foods*. Lee argues that many studies don't take note of the issues surrounding bioavailability—the degree and rate at which a substance is absorbed into the body.

Despite absorption issues and a lack of regulatory backing, consumers are responding to the research results. Polyphenol use in functional food and

drink marketing has shot up 69 percent since 2009, according to market analyst Mintel.

Popular categories include cookies, gums, jellies and chews, cakes, pastries and sweet goods, as well as teas and juices. Tea polyphenols are poised to enjoy strong growth over the next decade, *NutraIngredients-USA* reports. Green tea polyphenols emerged as the leading product segment consumed worldwide and accounted for more than 70 percent of the total market in 2012, according to research firm *Grand View Research*. Green tea generally contains high amounts of polyphenols such as catechins, flavanols, and EGCG, and contains 30 to 40 percent of water-extractable polyphenols.

For consumers to fully understand and reap the health benefits of a polyphenol-rich diet, natural products vendors will need to closely monitor research results and ensure that the products they manufacture and sell contain quality ingredients formulated for maximum absorption.

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