

Oligonol®

The Next-Generation Antioxidant

How a proprietary polyphenol can protect your heart and skin, keep you energized, and help you lose belly fat.

by Sara Lovelady

The antioxidants category is huge—and not all antioxidants are alike. Some antioxidants are vitamins or minerals; some are botanical in origin. Some antioxidants work in the presence of fats; some in the presence of water. Some antioxidants protect one part of the body; some protect another. But the most important—and often overlooked—difference among antioxidants is that some are only active in a test tube, while others are active in the human body. How do you know which ones are which?

The Problem with ORAC

It's all the rage these days to rate antioxidants by their ORAC (oxygen radical absorbance capacity) score. ORAC is a method of measuring the antioxidant strength of different substances. The higher the score, the more powerful the antioxidant is said to be.

Yet while the ORAC method is a good way of comparing antioxidant potential, it has its problems. First, it's a test tube study. And as we all know, substances often behave differently in the human body than in the lab. Second, it only measures an antioxidant's activity should it be absorbed; it doesn't actually measure whether it will be absorbed. And third, it only measures an antioxidant's activity against two types of free radicals—peroxyl and hydroxyl radicals—not the other four types known to be harmful to humans: hydrogen peroxide, super oxide anion, single to oxygen and peroxy nitrite.

So if ORAC isn't the best way to evaluate an antioxidant, what is? The answer is human clinical trials. As you can guess, the results of clinical trials don't always align with the results of test tube studies. Research into some traditional vitamin and mineral antioxidants has yielded disappointing results, even though these nutrients have shown antioxidant activity in the lab. However, one type of antioxidant that has yielded very promising research has been performed with plant substances called polyphenols.

Some Antioxidants You May Never Have Heard Of

Polyphenols are the plant compounds that have made green tea, chocolate, berries, soy and red wine recognized for their healthful properties. They're the reason "superfruits" like mangosteen, pomegranate and acai have experienced explosive growth in the last couple of years. And they may explain—at least partially—why fruits and vegetables are so good for us. Clinical research documents that polyphenols can help prevent cardiovascular disease. Animal research suggests they may play a role in preventing cancers, osteoporosis, neurodegenerative diseases and diabetes.

There are four major groups of naturally occurring polyphenols. Of these, the flavonoid group, often referred to as bioflavonoids is most important from a nutritional perspective. Bioflavonoids are further divided into numerous subclasses, including flavones (found in guava and papaya), flavanones (present in citrus fruits), isoflavones (contained in soy), anthocyanins (provided by berries) and flavanols (abundant in green tea, chocolate and wine)

Initial polyphenol research, in the form of test tube and animal studies, was promising. The human studies that followed yielded mixed results, with some studies showing a positive effect and others showing no benefit. The difference in outcome appears to be directly tied to the kind of polyphenols being studied. Most notably, there is strong

clinical evidence supporting the efficacy of flavanols. Today, many leading researchers consider flavanols to be the most promising area of nutritional research. In fact, the University of California, Davis—one of the leading nutrition research centers in the world—has made the study of flavanols one of its key research priorities.

The Bioavailability Problem

According to Dr. Robert Hackman, a researcher at UC Davis who has studied polyphenols, bioavailability (i.e., how much of a substance your body can actually absorb) is a crucial consideration when comparing antioxidants. "It's not a matter of what gets in your mouth," he explains, "It's a matter of what gets in your blood."

Polyphenols vary dramatically in their bioavailability. Some, such as anthocyanins have less than 0.1% bioavailability. Others, like quercetin (found in apples and onions), register somewhere between 1 and 5%. In contrast, flavanols have 10–30% bioavailability, which helps explain why this group of polyphenols has yielded the most promising human clinical results. So, what is it that keeps flavanols from being fully absorbed? The answer is pretty intuitive—it's their size. Flavanols consist of short-chain and long-chain molecules. The short-chain molecules (called monomers, dimers and trimers) are of a low molecular weight and can be easily absorbed by the body. Long-chain molecules, known as polymers, are of a high molecular weight, so they are too big to be absorbed into the small entry ways along the human intestines. Consequently, polymers simply pass through the body as waste.

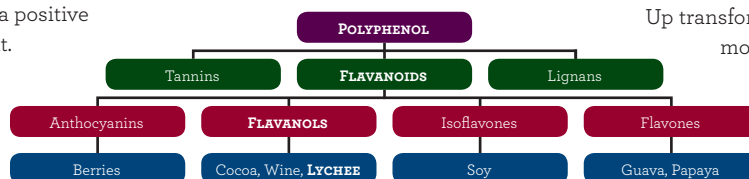
Imagine how much more effective a flavanol compound could be if its absorption rate was increased from 10–30% to 60% or more. The obvious hypothesis would be that its efficacy should be at least double. But, can such a compound be created? And if so, can its superior efficacy be proven in human clinical trials?

From Lychee Fruit to Low-Molecular-Weight Oligonol

Five years ago, these same questions occurred to Ken-ichi Kosuna, the founder of Amino Up Chemical Company, one of Japan's leading nutraceutical companies. Amino Up was already well-known for its discovery of AHCC, a low-molecular-weight medicinal mushroom compound. Applying the R&D expertise it gained from AHCC, it developed the first industrially produced low-molecular-weight polyphenol.

In essence, Amino Up's proprietary technology involves taking a pair of high-tech scissors to cut polyphenols into tiny pieces. Specifically, the technology breaks down long-chain flavanol molecules into short-chain molecules. The end result is a polyphenol extract that contains high levels of low-molecular weight flavanols. After experimenting with several other flavanol-rich compounds, Amino Up discovered that lychee was the superfruit that lent itself best to its new technology. It was a logical choice, since the lychee fruit contains more polyphenols than any other edible plant on the planet besides the strawberry. And for centuries, the lychee has been associated with lasting beauty and longevity throughout Asia.

Through the application of its proprietary technology, Amino Up transformed the lychee fruit into a low-molecular-weight polyphenol extract and tested it in a human clinical trial. After two hours, the blood concentration of polyphenols in subjects who had taken a single

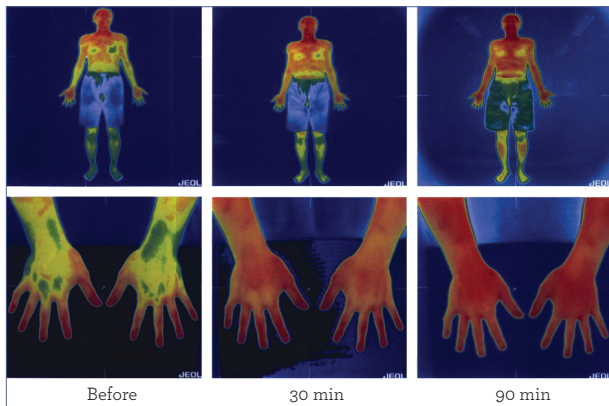


dose of the extract was three times higher than that of those who had taken the regular lychee extract. Two years, 30 studies and \$12 million later, Amino Up constructed a state-of-the-art plant, conducted 10 clinical trials on several health conditions and began to offer the product—which they named Oligonol—in Japan and the United States.

The Key Is Increased Blood Flow

Human clinical studies on Oligonol have shown that the low-molecular weight polyphenol has a broad spectrum of benefits including improvement in cardiovascular risk factors, better skin and reduced fatigue.

Its ability to do so many things has to do with Oligonol's primary mode of action, which is to increase blood flow. As human beings, we're pretty dependent on a steady supply of blood to nourish our cells with oxygen. Deliver more oxygen to the heart and you get improved cardiovascular health, to the skin and you get better skin tone and elasticity, and to the muscles and you get less fatigue. Oligonol's ability to enhance circulation has been documented through thermographic pictures—high-tech images that show how much heat is radiating from the body. The thermograms clearly show an increase in body temperature after subjects took Oligonol, which shows that the ingredient relaxes the blood vessels, increasing blood flow.



Effect on Cardiovascular Health

A solid base of scientific literature points to how flavanols support cardiovascular health. First, flavanols are thought to increase nitric oxide in the blood. This critically important substance causes blood vessels to expand, which can improve blood flow and reduce blood pressure. Nitric oxide performs an equally important function of keeping small cells called platelets present in the blood from becoming overly chummy. When platelets clump together they can eventually form heart attack and stroke-causing blood clots. Thus, preventing platelet aggregation is very important for maintaining heart health.

Second, as antioxidants, flavanols keep lipid peroxides (a type of freeradical) in check. Lipid peroxides deliver a double-whammy to the smooth lining of the blood vessels. Not only do they attack it directly—they also oxidize LDL cholesterol. Once LDL cholesterol has been oxidized, it too damages the vessel lining. And that can lead to hardening and narrowing of the arteries, reducing blood flow.

A study in male smokers (who are at elevated risk for vascular disease) found that the beta version of Oligonol significantly improved platelet function compared to placebo. Taken over the long term, Oligonol has the potential to protect the body against atherosclerosis—a common disease in which plaque builds up on the insides of the arteries, which can cause heart attack, stroke, and even death.

Effect on Skin Health

Flavanols are not only good for the heart, they are also good for the skin. It comes down to the same mode of action: increased circulation. Flavanols have been shown to increase blood flow in the skin. In fact, one

study found that within just two hours of drinking a high-flavanol cocoa drink, women's dermal blood flow increased 1.7 times and their oxygen saturation increased 1.8 times.

How does enhanced blood flow translate into improved skin health? Increased circulation leads to faster skin cell turnover, meaning old cells are replaced by new cells quicker. After a 12-week study, researchers observed a gradual reduction in the number and area of freckles, a decrease of wrinkle length and depth and an improvement of general skin texture (including increased skin smoothness and resiliency) among female subjects aged 26-60. The older the subjects were, the more visible the results.

Effect on Fatigue

The reason why trained athletes don't get tired when they exercise is, again, due to improved blood flow. When more blood is flowing to the muscles, two things happen. First, more oxygen is being delivered to them. Second, more waste is being removed from them. This combination prevents fatigue.

Oligonol's ability to aid recovery from fatigue was tested in male and female athletes. Half of the participants took Oligonol; half took regular lychee extract. At the end of the 52-day trial, not only did the Oligonol group report feeling improvements in recovery from fatigue, mental clarity, quality of sleep, eye fatigue and stiff shoulder compared with the regular lychee group, they also had lower urine levels of 8-OHdG, a marker for physical and mental fatigue.

Effect on Visceral Fat

You've probably heard that it's better to have a pear shape (where fat collects around the hips and thighs) than an apple shape (where fat collects around the belly). Why? Because belly, or "visceral," fat is associated with an increased risk for diabetes, high blood pressure, stroke, heart disease, gall bladder disease, sleep apnea and even cancer. A person doesn't even have to be overweight to suffer the consequences of visceral fat. Women, even with normal weight, are 79% more likely to die prematurely if their waists are bigger than 35 inches than if they measure less than 27 inches. Men should start worrying if their waists exceed 40 inches.

Researchers don't have definitive data on why belly fat is so much more harmful than other types of body fat. However, current research suggests that this type of fat, which accumulates around the organs, promotes insulin resistance. And when the body becomes resistant to insulin, the risk of developing metabolic syndrome increases.

Perhaps the most impressive human clinical trial on Oligonol to date studied its effect on visceral fat. When participants took the low-molecular weight polyphenol for 10 weeks, their visceral fat went down by over 12% while there was no change in the placebo group. Since abdominal obesity is one of the hallmarks of metabolic syndrome, and metabolic syndrome increases your risk of coronary heart disease, Oligonol could have indirect cardiovascular benefits in addition to its direct ones.

Exactly how Oligonol reduces visceral fat isn't perfectly clear, but this study and previous research studies offer a clue. It appears that Oligonol may regulate the production of special hormones that are produced in the fat tissue. By increasing the production of hormones that facilitate fat metabolism (called "adiponectins") and by blocking hormones that cause inflammation (called "TNF-Alpha"), Oligonol has the potential to reduce the risk of metabolic syndrome.

Apparently, people are paying attention to this multi-functional ingredient. In 2008, Oligonol received the prestigious Nutracon NutrAward for "Most Innovative Evidence-Based Product of the Year." Plus, it is under-going further clinical studies at universities such as UC Davis for conditions ranging from hypertension to athletic endurance. **WF**

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