

Powerful Natural Antioxidant

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As we all know, there is an antioxidant/free radical balancing act constantly going on in our bodies, with antioxidants trying to quench free radicals. A statement by Barry Sears, author of The Zone Diet, has been haunting me ever since I heard it. He said, “Many of the antioxidants we talk about so freely, vitamins A, C, E, selenium, zinc, etc. are one and done. They quench one free radical then they must be regenerated before they can quench another, like shooting one bullet at a time and having to reload after each shot.”

If antioxidants were like bullets in a gun, would you rather have an antioxidant pistol that would only shoot one free radical at a time or an antioxidant machine gun that could shoot tens of thousands of free radicals at a time? In terms of antioxidant potential, polyphenols are like the machine gun, quenching tens of thousands of free radicals. I've attached a link to the 100 richest dietary sources.

Basically, polyphenols give fruits, berries, and vegetables their vibrant colors and contribute to the bitterness, astringency, flavor and aroma of the food. In the plant, they



protect against ultraviolet radiation, pathogens, oxidative damage, and harsh climate conditions. As you would expect, the antioxidant effects of polyphenols can have a powerful effect on cancer, cardiovascular disease, and neurodegeneration. Polyphenols also reduce inflammation, and diabetes. They affect signaling pathways, and recent research shows that plant polyphenols even influence and modulate your gut microbiota. Among other things, they exert a prebiotic effect by improving the nutrition of beneficial bacteria living in your gut.

I also have attached an article showing how polyphenols

enhance mitochondrial function. Authors describe 5 different mechanisms how polyphenols inhibit oxidation.

One of the ways polyphenols work is to induce natural superoxide dismutase (SOD) production. SOD converts the highly active and destructive superoxide radical into hydrogen peroxide. Another primary antioxidant, catalase, converts hydrogen peroxide (H₂O₂) to water and oxygen. A direct benefit of quenching the superoxide radical is the limitation of the highly reactive and destructive hydroxyl radical.

One of the reasons polyphenols are so powerful is they activate our SOD enzymes. But, as

powerful as polyphenols are in their ability to quench free radicals, from an antioxidant perspective SOD dwarfs even polyphenols. The antioxidant capacity of SOD is like a weapon of mass destruction to free radicals. One author shared that one molecule of intracellular SOD can destroy 2 billion super oxide anions per second. Another author makes the point that extracellular SOD is not as reactive as the intracellular form. Still, a single unit of extra-cellular SOD quenches billions of free radicals.

To give you some perspective, each mcg of SOD contains 6.4 units of activity. There are 1000 mcg in a milligram. These are crazy numbers, tiny amounts creating major shifts. But the question is, will orally ingested SOD be absorbed? The answer to that is a resounding yes, but it comes with a caveat. The caveat is that many SOD products say they have SOD in them, but when tested, do not have the ability to quench the superoxide radical. You see, there was a flurry of interest in oral SOD about 20 years ago until researchers started to report that SOD was not absorbable via the gut. At that point all interest in oral SOD stopped.

You may have heard that SOD is measured in McCord-Fridovich units. Biotics actually bought the lab from McCord-Fridovich to make SOD, so they were confident their SOD product had physiological value. Then Biotics decided to check all the commercially available sources of SOD. At the time, there were about 51 of them. Not surprising, few of them even came close to label claim. It's pretty hard to raise blood levels of SOD, if there is no SOD in the product!

The next step was to see if the Biotic product Dismuzyme Plus Granules raised blood levels of SOD. Since SOD is stable in a pH of 2 to 11, we know it can survive our digestive juices. In a laboratory study, 10 grams of plant-based SOD manufactured by Biotics Research Corporation called Dismuzyme Plus Granules were ingested orally. Blood levels of erythrocyte SOD were measured pre and post. The study showed

conclusively that plant based SOD as Dismuzyme Plus Granules did raise blood levels of erythrocyte SOD.

Interestingly, patients with arthritis, especially RA, have lower levels of SOD in their synovial fluid than controls.

One of SOD's strengths is to protect the body from radiation. And we know new sources of radiation are added to our environment every day. As chemicals accumulate in our environment, they generate free radicals, and in effect, create the same scenario as radiation.

So, the take home message for your patients is eat more plants with a variety of color for polyphenols. But also consider as an adjunct to whatever stubborn inflammatory problem you are treating Dismuzyme Plus Granules by Biotics Research Corporation. Use 1 tsp - 1 Tbs, 1-2 times per day. Each tablespoon provides 1,200 mcg of SOD. Also, you may consider adding Dismuzyme Plus Granules to your morning protein smoothie to reduce your own inflammation and aging. Remember, as I mentioned, that just one molecule of intracellular SOD quenches 2 billion superoxide anions per second. And one unit of extracellular SOD quenches billions over time.

Here's one last antioxidant clinical pearl. Many of the Biotics' products contain 20 mcg of SOD as part of their unique antioxidant tableting base. They also contain 20 mcg of catalase another primary antioxidant which is needed to convert hydrogen peroxide to water and oxygen. I think you can appreciate how even these seemingly tiny amounts can have huge physiologic benefits over time, especially if you are taking 3 or 4 products three times a day. So, not only does the tableting base provide and protect the longevity and integrity of the product, it adds secondary benefit as a profound antioxidant.

Thanks for reading this week's Tuesday Minute edition. I'll see you next Tuesday.