

"Resveratrol is what activates the anti-aging switch (sirtuins)."

Sirtuins are a key to unlocking healthy gene expression, DNA repair, metabolic control, apoptosis, cell survival, inflammation, neuroprotection and healthy aging. And research is building that we can turn on sirtuins with foods like resveratrol. But let's back up a minute and get a few technical terms defined so we can fully appreciate the power of plants.

Sirtuins are proteins that are enzymes. They belong to a class of deacetylase enzymes. Dr. Vasquez did a great job on articulating and showing pictorially how the process of acetylation and deacetylation works in a webinar titled "Resveratrol and Sirtuins in Brain Mitochondrial Performance, Diabetes and Viral Infections."

Here are some highlights. Enzymes are the catalysts for biochemical reactions, and if the reactions move too quickly, the body can't keep up and intracellular damage occurs. In our body, there are enzymes that are acetylating, meaning that they slow down chemical reactions.



I love to cook, but if I cook at too high a temperature for too long, the heat damages proteins in the food and it gets burnt. Acetylation is like turning down the fire to not burn the food.

In real life, toxins, age, stress, or infection can also slow down the mitochondrial energy sites to the point where optimal cellular activity is compromised, resulting in fatigue, brain fog, etc. So the mitochondria are impaired, yet the acetylation process still has an enzymatic brake on desired enzymatic activity, kind of a double whammy on our energy factories.

There is another class of enzymes called deacetylases, and they pull off an acetyl group from the protein or enzyme and allow the enzyme to do its work. "Sirtuins work by deacetylating many of the enzymes that slow mitochondrial performance." So by increasing sirtuin activity, you increase or, in essence, repair mitochondrial function, and the extra energy allows for cellular repair. Resveratrol is a deacetylating agent. So in a sense, we are using resveratrol to remove the acetyl groups so the enzymes function more efficiently.

Here's another word picture that Dr. Vasquez painted. Think of a light switch that determines if electricity can flow to an overhead light. The electricity is present, but the switch must be turned on for it to flow. The enzymes, like electricity, are also present, but must be released by the switch.

Sirtuins can be compared to the light switch that has to be turned on. There are forces that are keeping the switch off. As we have discussed in the past, these forces can be stress, infection, environmental toxins, metals, etc. and should be looked at in context to the total therapy; but for now, let's flip the sirtuin switch to allow the electricity to flow.

Resveratrol is what turns on or activates the sirtuins, and in our example, the light switch which activates the enzymes to increase mitochondrial function and repair. Just like electric current, the enzymes are present, but someone has to activate or flip the switch. Resveratrol activates sirtuin enzymes which, as a result, cause mitochondria to function better. That's why so many different systems are affected.

Dr. Vasquez discussed papers that showed therapeutic benefit for: fatty liver, circulating glucose or diabetes, elevated triglycerides, reduction of inflammation markers like NF-kappaB, optimizing insulin resistance, vasodilating effects via stimulation of nitric oxide, estrogen reduction, immune stimulating effects that translate into anti-cancer effects, anti-viral effects, anti-obesity characteristics, etc.

When sirtuins are activated, they promote longevity and health. You can see an earlier Tuesday Minute for a discussion of resveratrol, telomeres, and further clinical benefits. There are actually seven classes of sirtuins that act as checks and balances in our body. The sirtuins

that seem to have the most positive benefit are SIRT1 and 3. Interestingly, these classes of sirtuins are activated by resveratrol.

In terms of human dosage, many of the studies have shown benefit with 250 mg, although higher doses have been used safely. Quercetin, another flavonoid, has an amplifying, protective effect on resveratrol. ResveraSirt-HP by Biotics Research Corporation contains 250 mg of trans-resveratrol and 25 mg of quercetin.

Resveratrol exists naturally in the trans-form which is bio-available. However, when exposed to ultraviolet light, it is denatured and converts to the cis form. Unfortunately, all resveratrol products are not equal. Biotics has tested many sources of raw materials and found contamination with mercury common.

Testing at Biotics Research has discovered a green tea mislabelled and sold as a 50% solution of resveratrol. Also, Biotics rejected an inactive resveratrol exists naturally in the trans form. That's the beauty of working with a company like Biotics, because they are so neurotic about quality control, we can relax and know we are getting pharmaceutical grade quality and consistency in nutrients.

My point is that unless you have an in-house phytochemistry lab like Biotics, who tests for purity and bio-availability, you may not be getting what you think you are purchasing.

Over the next decade we will probably hear about many phytochemicals that can flip on the sirtuin "switch," but for now, we know resveratrol is the big dog on the sirtuin block.

Thanks for reading this week's Tuesday Minute edition.