

## Why phytonutrients from superfoods are better than direct antioxidants as immune system supplements.

---

Antioxidants are good for you – right? And if so, isn't more better? Supra-normal doses of antioxidants from pills, capsules or supplemented foods or water are widely accepted as being 'good for you'. Fruits and vegetables are also considered 'good' because they are 'chock-full' of antioxidants, vitamins and minerals. Here's a new, evidence-based perspective on a seemingly simple, but actually very complex paradox surrounding the ever-increasing use of antioxidants for their perceived health benefits.

Beginning with Denham Harman's free radical theory of aging in the 1950's, oxidative stress has been implicated in a multitude of chronic diseases associated with aging, including cancer. In chain-reaction fashion, free radicals damage DNA, protein, and other biological molecules, leading to mutation and deranged function. True enough, but does this mean that taking large doses of antioxidants offsets this type of damage?

A direct antioxidant may be described as a molecule such as vitamin C, vitamin E, or beta-carotene that can quench free radicals, stopping damage in its tracks. Yet, after 60 years of extensive research, there is still no convincing evidence of any health benefit from direct antioxidant supplementation (unless of course, when overcoming a deficiency condition such as vitamin C's ability to 'cure' scurvy). On the contrary, many clinical trials have needed to be stopped early due to adverse effects from the very antioxidants under study, such as higher than placebo rates of cancer and mortality.

Yet the evidence IS overwhelming that some fruits and vegetables indeed have tremendous health benefits, such as reducing cancer risk and lowering mortality. So, if not the vitamin, mineral, or direct antioxidant content, what makes these foods good? Recent research points out the critical role of phytonutrients, those specific molecules with little macro-nutrient content, but with high impact upon both our sensory organs and, more importantly, biological pathways of protection. And you don't have to rely on eating tons of fruits and vegetables to get enough of the right phytonutrients. Forward thinking supplement manufacturers like Medtrition now offer products such as PhytoFusion, which contain effective doses of the most important phytonutrients from all-natural superfood sources.

What's been missing in popular discussion is consideration of how we evolved alongside plants, and how we've come to use phytonutrients (and even free radicals) as sensors of stress to turn on

long-lasting immune defenses. Why did this happen? Did plants one day decide ‘Let’s produce molecules that will help these poor humans (who by the way, are eating us) avoid diseases like cancer’? No, plants want to defend themselves, and they do so by producing toxins against their most common enemies. But what may be a lethal dose to bacteria, fungi, or viruses can be ‘hormetic’ to the sophisticated immune defenses of humans. In other words, some types of phytonutrient can serve as the ‘canary in the coal mine’ signaling danger and boosting immunity to future attack.

For example, broccoli should be near the top of any superfood list. It contains a molecule called sulforaphane glucosinolate that in high doses is toxic, but ingesting the right amount will turn on about 200 protective genes including those involved in detoxification and endogenous antioxidant production. The synthesis of glutathione, the most important antioxidant in every cell, is enhanced by sulforaphane. This is why broccoli seed extract, which contains a consistently high level of sulforaphane is considered a ‘long-lasting antioxidant’, not because it contains direct antioxidants, but rather for its ability to induce the body’s natural antioxidant system. Ironically, for sulforaphane to turn on these immune boosting genes, free radical signaling is required within the cell and direct antioxidant supplementation will actually defeat sulforaphane’s ability to induce these protective genes.

Hopefully you’ll now realize the futility, and even danger, associated with taking excessive direct antioxidant supplements. This doesn’t imply that all supplements are bad. On the contrary, immune system boosting supplements like PhytoFusion by Medtrition, that contain controlled doses of the most important phytonutrients from whole food sources can be extremely beneficial.

