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The IMPACT MAGAZINE GUIDE TO NATURAL HEALTH PRODUCTS

Building Optimal Health and Performance

PART 9 IN A MULTI-ISSUE EXCLUSIVE FEATURE

ANTIOXIDANT, ANTI-AGING AND ANTICANCER HEALTH

BY DR. KYLEY HUNT

Antioxidants seem to be everywhere, in part because they are. They have become a buzzword for the health industry and can be found highlighted on labels from supplements to foods, and even drinks.

Antioxidants are naturally occurring compounds found in many different organisms and plants, most notably fruits and vegetables. Antioxidants protect the body from free radicals, as well as eliminate them to avoid them causing our bodies harm. A free radical is a molecule that contains unpaired electrons and is often termed a "reactive species." These compounds react with other molecules, including our cells, to steal electrons, which results in damage to the cell and the creation of more free-radical species. These reactive molecules are often thought to be the cause of skin damage, changes in eye health, including cataracts, as well as contributing to aging.

The overproduction of free radicals and

reactive species have been linked to many diseases including heart disease, diabetes mellitus, tissue damage from lack of oxygen, and most notably cancer.

Nutrients that are potent antioxidants help by donating electrons to the free radicals to prevent them from damaging healthy cells. They can also neutralize free radicals by pairing with them to form other molecules that are less damaging and can be removed more easily from the body. There are many studies being done to understand more about how antioxidants work and how we can better use them both for treatment and prevention of certain diseases.

Beyond a healthy diet rich in a fruits and vegetables, new supplements are being designed and studied that combine several antioxidants to improve their effect against free radicals and related diseases, especially cancer. This research will help us to improve our well-being and keep us living long and healthy lives.

This chapter of the IMPACT Magazine Guide to Natural Health Products is compiled with the expert assistance of Kyley Hunt, Melina Roberts and Ryan Nakama. For this article with references, please visit impactmagazine.ca



TURMERIC AND CURCUMINOIDS

What it is: Turmeric (*cucuma longa*), a member of the ginger family, is a

root with a warm, bitter taste and yellow colour. It grows in tropical locations and is a culinary spice and a major ingredient in curry powder. Curcuminoid constituents are the active ingredients and responsible for the yellow colour of turmeric.

What it does: Curcumin has liver protectant, antioxidant and anticancer effects and protects cells from damage. Curcumin lowers two enzymes that cause inflammation. It stops platelets from clumping together.

Why you might need it: Shown to be an effective treatment for inflammatory bowel disease (IBD) by decreasing mucosal ulcerations, decrease thickening of the intestinal walls and reduced inflammatory cells. Helps with joint disease such as arthritis due to its antioxidant and anti-inflammatory effects. Helps with preventing and treating cancer by destroying cancer cells and enhancing liver function. Also helpful in treating and preventing Alzheimer's disease since curcumin crosses the blood-brain barrier and removes amyloid plaques.

Who shouldn't use this: Turmeric and curcuminoids may interact with antiplatelet drugs. Contraindicated in individuals with bile duct obstruction, gallstones, or stomach ulcers. Due to the blood thinning effect, you should stop taking it at least two weeks prior to surgeries.

ANTIOXIDANT, ANTI-AGING AND ANTICANCER HEALTH

What happens if you take too much:

Can cause gastrointestinal disturbances.

Where to get it: Turmeric comes in capsules containing powder, fluid extract or tincture form.

IMPACT Expert Picks: Curcugen by Genestra, Celapro by Metagenics, Curcumatrix by Cytomatrix, Theracumin by Bioclinic Naturals.



TRANSRESVERATROL

What it is: Resveratrol is a naturally occurring compound found primarily in grape skins and red wine.

Resveratrol has become an item of interest as a result of the "French Paradox" in which moderate wine consumption was linked to decreased cardiovascular disease. The trans-isomer is thought to be the more active form.

What it does: It is a potent antioxidant that modulates important free-radical scavenging enzyme systems. Resveratrol reduces oxidative stress as a result of many factors, including diet and metabolism. Oxidative stress is implicated in many disease processes including diabetes, metabolic syndrome, cardiovascular disease, as well as aging in general. Specifically resveratrol reduces lipid peroxidation, improves mitochondrial function and increases insulin sensitivity.

Why you might need it: Because resveratrol reduces oxidative stress and inflammation specific to dietary and metabolic processes, it can be of benefit to those with cardiovascular disease risk factors. Studies are conflicting regarding the benefits of resveratrol in exercise. Due to its effects on energy production and because athletes have higher levels of oxidative stress, resveratrol may fit into training and competition protocols. Benefits are most likely to be seen with a specific dosage and/or timing of use.

Who shouldn't use this: Pregnant women and those with a history of alcoholism should not use red wine as a source of resveratrol. Those on blood pressure medications

or anticoagulants should use caution as resveratrol can cause additive effects.

What happens if you take too much:

Evidence for long term use and toxicity are lacking but resveratrol is likely safe at levels found in food and drink sources. Alcohol content in red wine can have negative consequences. Moderation is advised.

Where to get it: Red wine, red grape skins, nuts, and other berries. Most supplements use Japanese knotweed as their source.

IMPACT Expert Picks: Resveratrol Extra (Pure Encapsulations), PolyResveratrol-SR (Thorne Research), Resveratrol Ultra (Integrative Therapeutics)



BRASSICA FAMILY VEGETABLES

What it is: Members of the cabbage family. Also known as cruciferous vegetables.

What it does: Dietary consumption of cruciferous vegetables has been shown to decrease oxidative stress markers and be cancer protective. Different components have been found to have specific actions. Indole-3-carbinol (I3C) enhances liver function and promotes hormone metabolism. Sulforaphane also enhances liver function and detoxification pathways and has been shown to have anti-cancer properties. Topically, it is UV protective to the skin. **Why you might need it:** To help prevent free-radical damage common in modern living. To lower risk of developing certain cancers. To assist liver function and promote detoxification pathways. Topically, to decrease oxidative stress and damage from UV exposure.

Who shouldn't use this: Because cruciferous vegetables contain goitrogens — compounds that interfere with iodine uptake — people who have hypothyroid conditions may do best by limiting intake. Topical sulforaphane protective of sunburn, but appears to be beneficial in repairing damage post-UV exposure.

What happens if you take too much:

Brassica family vegetables are safe and

well-tolerated when consumed in dietary amounts. Some people will experience increased gas in response to eating more cruciferous vegetables.

Where to get it: Members of the brassica family include: broccoli, cabbage, kale, cauliflower, bok choy, Brussels sprouts, radishes, turnips and others. Broccoli sprouts contain the highest concentration of sulforaphane.

IMPACT Expert Picks: A healthy and balanced diet should include adequate amounts of cruciferous vegetables. Supplemental sources include: I-3-C from various sources, DIM Enhanced (Douglas Labs), Crucera-SGS (Thorne Research), Sulfurophane (Newco),



GREEN TEA AND GREEN TEA POLYPHENOLS

What it is: Green tea is one of the most widely consumed beverages in the

world and is made from the leaves of the *Camellia sinensis*. The polyphenols found in green tea, most notably epigallocatechin-3-gallate (EGCG) are the reason Green Tea is considered an antioxidant.

What it does: EGCG modulates cell-signalling pathways by activating the mechanisms in the cell that can trigger apoptosis and cell death. This has been attributed to the inhibition of cancer development or progression and, because it acts upon several pathways, is being studied for combined effects with chemotherapy in the management of cancer. The polyphenols in green tea have been shown to be potent antioxidants and free-radical scavengers.

Why you might need it: Green tea consumption has been shown to lower cardiovascular risk and mortality from all causes. There are also many studies showing that it has chemoprotective properties and that it may be effective for treating premalignant lesions as well as protecting against degenerative diseases.

Who shouldn't use this: Preparations with caffeine should be avoided in pregnancy, and

in use with children and infants. Use under the direction of a health care practitioner when combining with medications and other therapies, including chemotherapy.

What happens if you take too much:

Studies have not shown significant side-effects from EGCG. Possible reactions to prolonged high doses include mild upset stomach, nausea, heartburn, dizziness, headaches and muscle pains. In preparations containing caffeine, restlessness and agitation may be experienced.

Where to get it: From the consumption of organic green tea or as an extract of green tea or EGCG in a supplement.

IMPACT Expert Picks: Active Green Tea (AOR), Green Tea Phytosome (Thorne), EGCG SAP (NFH).



ASTAXANTHIN

What it is: Astaxanthin is a red carotenoid pigment found in a variety of organisms including algae, crustaceans and seafood, including salmon.

What it does: Astaxanthin has been shown to be a potent antioxidant, as well as having anti-tumor, anticancer, immunomodulating, anti-inflammatory effects. It also may have benefits in diabetes and improving endurance capabilities due to how it spares utilization of stored glycogen and enhances fatty acid use as energy. It is currently being studied as an inhibitor of *H. pylori*.

Why you might need it: To support immune function and defend against infection. Can help with fatigue and improve endurance. As Astaxanthin is a carotenoid it is often used for eye and vision health.

Who shouldn't use this: Avoid if you have an allergy to the source (i.e. shellfish) or a sensitivity to 5-alpha-reductase inhibitors.

What happens if you take too much:

Astaxanthin is generally considered safe, though may lower eosinophil numbers and, as it might inhibit 5-alpha-reductase, may lower mood, cause weight gain, impotence and decreased libido.

Where to get it: From dietary sources (including crustaceans and seafood) or as a standardized extract in supplement form.

IMPACT Expert Picks: Astaxanthin Ultra (AOR), Astaxanthin (Pure Encapsulations), Krill Oil (Thorne).



CARNITINE

What it is: Carnitine is a compound derived from the amino acids lysine and methionine. It can be made

in the liver and kidneys and is primarily stored in skeletal and cardiac muscle. It is found as either free carnitine or bound to acetyl groups. Acetyl-L-carnitine crosses the blood-brain barrier more easily than other forms of carnitine and, as such, is more widely used.

What it does: It is required for the transport of fatty acids across the mitochondrial membrane for energy metabolism. It has been shown to balance glucose metabolism and stimulate glycogen synthesis in animal studies, as well as affecting lipid (fat) metabolism. There have been studies on acetyl-L-carnitine to investigate its role in restoring cellular membranes, brain energy and protecting cells by maintaining acetyl-CoA concentrations.

Why you might need it: Carnitine supplementation has been shown to be beneficial in improving exercise performance in individuals with kidney impairment and peripheral vascular disease. It has also been seen to be useful in people with chronic fatigue syndrome, memory issues, Alzheimer's and depression in the elderly.

Who shouldn't use this: In clinical trials it has not been shown to definitely improve exercise performance in healthy individuals or to burn fat. Side effects, such as muscle pain, poor exercise tolerance and depletion of L-carnitine stores have been shown with the use of the D,L form and, as such, that form should be avoided. People with kidney problems should use L-carnitine with caution and only under guidance from their medical professional.

What happens if you take too much:

Diarrhea can occur in high doses. Some people notice a fishy smell or heartburn with initial use.

Where to get it: It is found naturally in foods, primarily beef, dairy and pork. Also it can be taken as a supplement in the acetyl L-carnitine form.

IMPACT Expert Picks: Acetyl L-Carnitine by Douglas Laboratories, NeuroQOL by Thorne, ALCAR by AOR.



FLAVONOIDS

What it is: Flavonoids are a diverse group of polyphenolic plant metabolites. Because

flavonoids are quite complex they are divided into subgroups including flavonols, flavones, isoflavones, anthocyanins, flavanones, flavan-3-ols and proanthocyanidins.

What it does: All subgroups of flavonoids are well known antioxidants. Flavonoids scavenge free radicals by reacting with them to make them less active. They interfere with several free-radical producing systems and improve enzyme systems in the body to deal with free radicals.

Why you might need it: There are a variety of benefits to flavonoids, especially when used nutritionally. As a supplement, the benefits of flavonoids for use in specific health conditions can depend on the subclass. Overall flavonoids are used to protect cells against damage and improve cardiovascular health. Flavonoids have been shown to have anti-inflammatory, antiviral, anti-allergy and anti-carcinogenic properties.

Who shouldn't use this: People with an allergy to any of the plants used to source the flavonoid. Citrus bioflavonoids may contain naringin, a flavonoid found in grapefruit juice. Naringin interacts with certain drugs including coumarin, nifedipine, felodipine, verapamil, terfenadine, estrogens and caffeine.

What happens if you take too much:

Flavonoid extracts with caffeine can cause a stimulant effect including nervousness, insomnia and irritability.

Where to get it: The best way to get flavonoids is through a varied, plant-rich diet. Flavonoids are naturally found in fruits, vegetables, herbs, as well as beverages (such as tea and wine) and some grains/legumes. Flavonoid extracts can also be found in commercially available supplements.

IMPACT Expert Picks: A healthy balanced diet should provide an adequate source of flavonoids. Supplemental sources include: Pro Bioflavonoids by AOR, Aller-C by Vital Nutrients, Quercetone by Thorne, EGCG SAP by NFH. ■