

Spices - Antioxidants and Oxidative Stress - Facts and Fiction

If there are insufficient quantities of antioxidants to match its exposure to free radicals then the body is said to be in a state of oxidative stress. In this state, unimpeded free radicals cause damage that can lead to inflammation, immune dysfunction, DNA damage and, potentially, a whole range of degenerative diseases. Although most of us are not in a continuous state of oxidative stress, we generally experience this unhealthy condition on a regular basis as it can be precipitated by a wide range of factors. These include psychological stress, infections, drugs, smoking, pollution, radiation, excessive exercise and obesity. Therefore we can all benefit from a regular intake of an array of antioxidants that can "mop up" excess free radicals as they are introduced into, and produced by, our bodies. Moreover, as many antioxidants are inactivated during the process of free radical neutralization, they need to be continually replenished. Our bodies do some of the work by producing their own antioxidants, but we need to supplement these with food-based compounds. Many health products almost claim to be panaceas as they contain large quantities of, what is claimed to be, a "strong antioxidant". Often, this antioxidant is said to be "more powerful" or "stronger" than other antioxidants. The implication is, of course, that the product is all we need to provide ourselves with antioxidant protection. This is an incorrect and potentially damaging perception. Measured against laboratory standards, one antioxidant may indeed prove more effective – or powerful – than another, but this is only true under certain conditions. No one antioxidant neutralizes all free-radical species no matter how potent that compound is. That is the most important reason why we should not rely only on one or two of them to deal with the multitude of free radicals that we are exposed to. Some antioxidants need the protection and synergistic relationships that can only be provided by other antioxidants. Rather than taking an isolated extract of any one antioxidant, however "powerful", we should be ingesting a wide range of these vital compounds. Beyond a certain threshold, any beneficial substance can become harmful. Antioxidants are no exception, and yet they are often consumed in dangerously high quantities. Vitamin C, for example, is an essential vitamin and valuable antioxidant. Taken in large doses, however, it has been found to damage DNA thereby increasing susceptibility to cancer. Even the antioxidants produced by our bodies can be damaging when present in excessive quantities. For example, bilirubin and uric acid are both beneficial antioxidants, but become dangerous when present in high concentrations. Liver disease can, for instance, lead to the very high levels of bilirubin that are responsible for the yellow skin discoloration known as jaundice. Kidney disease and gout are conditions associated with toxic levels of uric acid. The consumption of a wide array of antioxidants is essential if we are to provide ourselves with comprehensive protection against oxidative stress. As some of these are effective against certain free radicals but not others, consuming an assortment of antioxidants ensures that our bodies are able to tackle all free radical species. This enables the antioxidants to work optimally, as many operate synergistically with one another. Vitamin C, for instance, protects other antioxidants like vitamin E from being neutralized by free radicals. Moreover, different antioxidants tend to locate preferentially in different types of tissues and cells. For example, melatonin, an antioxidant hormone produced by the body (and also found in some spices like ginger) can cross the blood-brain barrier; a property that makes it particularly effective in protecting brain cell DNA. The powerful antioxidants lycopene and vitamin E are only effective in lipid-containing areas, while yet other antioxidants work more efficiently in the "watery" parts of tissues and cells. The best way to obtain a wide variety of antioxidants, in optimal amounts, is to eat an extensive selection of antioxidant-rich foods. As a general rule, strongly colored or strongly flavored plants contain the greatest quantity and range of antioxidant compounds. Amongst the fruits, for example, the richly colored berries, like blueberries, cranberries and raspberries, contain many antioxidants as do other fruits, grains and vegetables. However, it is the spices that have the highest antioxidant concentrations of all food groups and they are the best source of these vital compounds – some contain over 25 different antioxidants! Although all spices contain generous quantities of antioxidants, those richest in these substances are oregano, cinnamon, ginger, turmeric, clove. In fact the top five antioxidant foods in the USA (including all fruit and vegetables) are these five spices! By consuming anti-oxidant rich foods like spices with every meal we provide our bodies with the best means to fend off the relentless onslaught of free radicals and oxidative stress.

About the Author

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