

BY DEANNA ROSOLEN

UNLEASHING THE POWER OF PHYTOCHEMICALS

The research is still embryonic on how to utilize the power of antioxidants

Antioxidants are hot. If there were a Hall of Fame for science, they could be the molecular superstars: they've been linked to anti-aging and disease prevention. However, while scientists know how antioxidants work, they're only at the tip of the iceberg in their research. And for food processors that means there's no consensus among scientists on how much of an antioxidant you'd need to add to a food product to meet daily requirements and which antioxidant is appropriate in each case. But that doesn't mean antioxidants aren't an area worth exploring.

Most of us get antioxidants mainly from consuming fruits and vegetables. In food processing, antioxidants have been used for decades as a food preservative. In fact, interest in antioxidants as a preservative is growing, says Andrew Evans, manager specialty products at Acatris Inc. With labelling regulations changing starting at the end of this year and consumers pushing for more natural-based products and less

hydrogenation, food manufacturers are asking about antioxidants as a more natural way of preserving food.

Adding antioxidants to a product to enhance its health benefits is probably a decade or so old. Colin Kay, a post-doctoral fellow at the College of Health & Human Development at Pennsylvania State University, says antioxidant use began with adding some vitamins like C and E to fortify foods to prevent nutritional deficiency. Nutraceuticals and functional foods were also some of the first products to have antioxidants added.

Scientists say they know quite a bit about antioxidants, how they work and their role in disease prevention through laboratory tests, but haven't been able to measure the effects in the human body. That hasn't stopped some marketers. Look at the press surrounding pomegranate juice, blueberries and now peanuts.

But to backtrack a bit, what really triggered our interest in



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antioxidants? And how exactly do they work? Antioxidants prevent or slow down oxidation. According to Andrew Waterhouse, professor of enology (wine chemist) at the University of California, some oxidation is necessary to survive, but sometimes oxidative reactions release uncontrolled reactants called free radicals, which react to important molecules in the body and damage them. The damage they do can lead to disease.

Kay says a good analogy is to think of a forest fire on the edge of town. The town is your body and the houses are your cells. If the fire reaches the town, people will lose their homes. Depending on the intensity of the fire, measures can be taken to reduce its destructive potential. Sometimes we can completely put out the fire, while other times we may contain it or divert it away from the town. Much is the same for antioxidants. Some antioxidants can completely put out the fire, while others will contain it or divert it away from sensitive cell structures. Antioxidants never truly prevent oxidation from occurring, but they can prevent its damage. Therefore, antioxidants can prevent or slow down the damage of healthy cells, which in turn may prevent the initiation of disease or slow its progression.

The reason research is still at the tip of the iceberg, says Kay, is because the way antioxidants work is complex and not all antioxidants are created equal. Some will completely extinguish the fire and some will just dim it down.

Rong Cao, research scientist, Food Research Program at Agriculture and Agri-Food Canada in Guelph, Ont., says consumer interest in antioxidants likely all started with the study that was dubbed the French Paradox. Cao says scientists noticed that despite a diet of rich foods the rate of heart disease for French people was significantly lower than the rate among Americans.

Scientists did several surveys and found that the French drank more red wine. "[Scientists] looked at red wines and they found a lot of polyphenols, which are good antioxidants," says Cao. "It's the compound in the wine, in grapes. That's one of the theories. And then it triggered people to look at similar compounds in other fruits and so on."

Navindra Seeram, assistant director at the University of California Los Angeles Center for Human Nutrition, David Geffen School of Medicine, says researchers started to look at why some people develop certain diseases and others don't. They started looking at larger numbers of people in different parts of the world and found that people whose diets were high in fruits and vegetables had a reduced risk of disease. So what makes fruits and vegetables so different from other foods? Scientists knew they contain fibre, vitamins and good sugars. But Seeram says they probed further and found that fruits and vegetables contained phytochemicals or phytonutrients, which are antioxidants.

Today, says Kay, scientists are looking at antioxidants as a way to treat and prevent chronic degenerative diseases. The research continues to be pushed by health conscious consumers and baby boomers, who may be at risk of disease. But

