

# Crash Course about Antioxidants and Green Tea

## "Use antioxidants (have I ever steered you wrong?)"

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**By Barb Randall**

When contemplating what to explore in this space each week, I sometimes sip a soothing cup of green tea. For me, drinking tea is relaxing; when I drain my cup, I feel refreshed and focused. I feel healthier, too, because I've pumped antioxidants into my body.

For years, I have nodded my agreement with healthcare researchers that we should drink green tea daily for its flavonoids and catechins - the antioxidants that help neutralize the free radicals that can lead to heart disease, stroke and cancer. Frankly, I understood the principle, but had only a vague idea of what the vocabulary meant. I couldn't see any antioxidants in my blueberries and felt no less radical - free or otherwise - when I finished a bottle of green tea.

It wasn't until cancer wormed its way into my circle of friends and relatives that I felt compelled to unravel the medical jibberish. A survey of co-workers revealed that I wasn't the only one not comprehending the advice, which led me to believe that others could benefit from a simply worded explanation of why we are urged to add antioxidants to our diets by drinking green tea and eating a colorful array of fruits and vegetables.

Using a number of web sites as resources (see list at end of column) I will attempt to clarify the medical mystery of antioxidants. Please read on, the information is important and difficult to understand.

### **Crash course in biochemistry**

In my high school chemistry class, we learned that our bodies are made up of different types of cells; the cells are made up of different types of molecules. Molecules consist of one or more atoms of one or more elements joined by chemical bonds.

Atoms consist of a nucleus, neutrons, protons and electrons. The number of protons (positively charged particles) in the atom's nucleus determines the number of electrons (negatively charged particles) surrounding the atom. Electrons are involved in chemical reactions and are the substance that bonds atoms together to form molecules. The innermost shell is full when it has two electrons. When the first shell is full, electrons begin to fill the second shell. When the second shell is full, electrons begin to fill the next shell, and so on.

The most important structural feature of an atom for determining its chemical behavior is the number of electrons in its outer shell. A substance that has a full outer shell tends not to enter into chemical reactions. Because atoms seek to reach a state of maximum stability, an atom will try to fill its outer shell by either 1) gaining or losing electrons to either fill or empty its outer shell, or 2) sharing its electrons by bonding together with other atoms. By sharing electrons, the atoms are bound together and satisfy the conditions of maximum stability for the molecule.

Whew - with me so far? Take a deep breath, we're almost to the point of clarity!

Normally, bonds don't split in a way that leaves a molecule with an odd, unpaired electron. But when weak bonds split, free radicals are formed. Free radicals are very unstable and react quickly with other compounds, trying to capture the needed electron to gain stability. Generally, free radicals attack the nearest stable molecule, "stealing" its electron. When the "attacked" molecule loses its electron, it becomes a free radical itself, beginning a chain reaction. Once the process is started, it can snowball, finally resulting in the disruption of a living cell.

The body can usually handle free radicals, but if antioxidants are unavailable, or if the free radical production becomes excessive, damage can occur, i.e. cancer, heart disease or other disorders may develop.

Colorful fruits, vegetables, and tea, particularly green tea, are abundant with antioxidants, which protect the body against the destructive effects of free radicals. Antioxidants are the samurais of the body, helping to prevent cell and tissue damage that can lead to disease.

Antioxidants neutralize free radicals by donating one of their own electrons, ending the electron-"stealing" reaction. The antioxidant nutrients themselves don't become free radicals by donating an electron because they are stable in either form, but once they neutralize a free radical, the antioxidant stops functioning as an antioxidant. This is why we must continually re supply our body with the vitamins and other chemicals that act as antioxidants.

### **Sei Mee for a cup of tea?**

I thank my friend Liz Perkins for introducing me to organic Sei Mee Tea Edible Green tea. A ground tea, as opposed to a leaf tea, Sei Mee Tea is imported from Japan.

Through the company's web site, [www.groundgreentea.com](http://www.groundgreentea.com), I made contact with owner Kiyomi Koike. We traded e-mails and finally got to chat by telephone at her office in Enterprise, OR.

Koike explained that green tea, the traditional beverage of Japan, was originally brought from China. Highly sought after for its impressive medicinal qualities, wealthy Japanese added it to dumplings to take in its benefits. Eventually it became a beverage for all people.

Koike had done intensive research to find a green tea for her husband who was diagnosed with cancer. As a native Japanese, she knew the health benefits of green tea. She could find green tea leaves and green tea bags on the grocery shelf, but recognized that her husband would have to drink 10 cups every day of the brewed tea to match the health benefits of the ground teas of Japan. The antioxidants are in the leaves. When green tea is brewed only two percent of the antioxidants come out into the water; the other 98 percent remains in the leaves enclosed in the tea bag, which ends up in the garbage pail. When you consume ground tea, you get 100 percent of the antioxidants. Koike explained there are two types of green tea, Matcha and Sencha. Both teas come from the same plant; whether or not the plant is grown in direct sunlight determines which tea will be produced.

Matcha powdered green tea is used in traditional tea ceremonies. Grown under cover, it is rather bitter in taste. It has a higher caffeine content than Sencha, which heightened enlightenment and clarity for monks during meditation. Matcha has less antioxidants than Sencha tea.

Sencha tea is grown in full sun, which somehow increases its antioxidants - but that is another chemistry lesson! With its smooth, mild taste, this is the tea Kiyomi chose for her husband.

## **Goodness in every sip**

Sei Mee Tea powdered green tea has the consistency of all purpose flour. You can stir it into hot or cold water for tea, stir it into soups, sprinkle over vegetables, meats, cereals, baked potatoes or popcorn.

I bought decaffeinated proportioned packets of the tea, measuring a scant 1/4 teaspoonful. The package directions called for stirring the tea into 8 ounces of heated water. This produced a deep green, refreshing beverage with a wonderful fragrance and pleasant taste.

I drink water or tea throught the day and have been emptying a single packet into a full tea kettle of water. Was I diluting the tea to far? I asked Koike. She replied that the 1/4 teaspoon serving is enough for one day, regardless of how you consume it.

I still had questions: Could I grind the tea from green tea bags and get the same product? What about white tea? Will bottled teas deliver the same level of antioxidants?

Koike doubted I could grind the tea as finely as Sei Mee Tea in my frood processor and she questioned how I would quantify the tea's quality.

White tea, with three times as many antioxidants and a higher caffeine content than green tea, is simply tea dried in natural sunlight, which evidently preserves more of its antioxidant properties. Koike as unaware of a source for ground white tea, which left us back at steeping the tea, and hence losing some of its antioxidant potency.

As far as bottled green teas go, they are refreshing beverages, but don't count on them providing "significant antioxidants." Enjoy them, but count their antioxidants as "bonus points."

## **Koike's dream: Green tea in every pantry**

When Koike's husband recovered from his cancer, she decided to introduce Edible Green to the U.S. Market.

"My dream is ground green tea is going to be a staple ina pantry of every American household," She said.

Over the past two years, I have encouraged you to try a hundrend new foods and/or recipes. Many of you ate goat cheese, figs, leeks, himalayan salt and more items on my recommendation - and wrote to tell me you enjoyed them. My intentions are always focused on helping people discover the pleasure of eating well. If I ever encouraged you to try a specific brand, it was because I truly believed it provided an exceptional culinary experience. Sei Mee Edible Green tea fits that category.

I m not a doctor - I am only a person concerned about the health and well-being of my family and friends and our community. I truly believe drinking Sei Mee Tea will make a difference to my health and yours.

You be the judge. Try the tea, visit the Web sites and replenish your antioxidantes every day. Bon Appetit! - Eat locally!

Locally you can buy Edible Green Sei Mee Tea at Palisades Market Place, 1377 McVey Ave., Wizer's Lake Grove Market, 16331 Bryant Road, both in Lake Oswego, and Bales Marketplace West Linn Thriftway, 19133 Willamette Drive and Market of Choice 5639 Hood St., both in West Linn. You can also order the tea off of the Website at [www.groundgreentea.com](http://www.groundgreentea.com)

*For more information, visit these Websites: [www.healthchecksystems.com](http://www.healthchecksystems.com)*

*[www.cookscorner.net/Tea](http://www.cookscorner.net/Tea)*

*<http://coffeetea.about.com>*

*The Linus Pauling institute Website at <http://lpi.oregonstate.edu>*

*Randall welcomes your food questions and research suggestions. She can be reached at 503-635-8811 or by e-mail at [brandal@lakeoswegoreview.com](mailto:brandal@lakeoswegoreview.com)*