



## Nutrition Nibbles

### Antioxidants: Health or Hype? by Katie Giebler, RD

As Registered Dietitians, we are well aware of the inverse relationship between fruit and vegetable intake and diseases like cardiovascular disease, cancer, diabetes, metabolic syndrome, and even neurological diseases. Their benefits are described in countless studies and research literature, however, the public relies on the most accessible source of information for their nutrition questions: the internet. As a forum with millions of Google pages worth of information amendable and contributable by anyone, the public is bound to become confused about the terms **antioxidant**, **polyphenol**, and **flavonoid** and what they mean for their health. Even Registered Dietitians, as nutrition experts, may have a hard time keeping up with the constant flux of changing recommendations and research studies happening in their field. Although antioxidant activity can prevent free radical damage, current research is showing its action is much more complex than this and that several issues and questions still remain unanswered.

**Antioxidants**, like their name implies, prevent the oxidation of other molecules. The oxidation reaction creates free radicals, or

highly reactive molecules that can damage or destroy cells. We encounter free radicals every day from normal reactions of metabolism, exercise, cigarette smoke, pollution, and sunlight. The action of free radicals causes oxidative stress, a process that triggers cell damage, which can cause chronic diseases and is often a consequence of disease as well.

The term “antioxidants” serves as the blanket term for many different types of antioxidants. Some examples are **polyphenols**, glutathione, vitamin C, vitamin A, and vitamin E and enzymes found within the body such as catalase, superoxide dismutase and various peroxidases. Phenolic phytochemicals also have the capacity to increase the levels of anti-inflammatory genes that increase the activity of detoxification enzymes in the body. **Well-known sources of antioxidants are brightly colored fruits and vegetables, tea, wine, chocolate, and extra virgin olive oil.**

The effects of **polyphenols** have been extensively studied and described in literature reviews. They are a type of antioxidant characterized by its unique physical, chemical, and biological properties and structure. Despite all that is

### College Corner: **SHAPE UP THIS SUMMER**

Summer is here and chances are you want to get a tan, get in-shape, go on vacation (preferably get in-shape before going on vacation), cook healthier, and spend more time outdoors. Sound familiar? Try these 5 simple summer moves to shape-up your wellbeing this summer:

**1. Walk It Off.** Finals may have left you feeling sluggish and stuffed from stress eating. Rev up your energy by walking in the sunshine. Both your mood and gut will lift.

**2. Shake Up Your Summer Routine.** There is more to exercise than cardio! Try balancing your workouts with some strength-training exercises and stretching moves. Both will tone your physique in a way cardio can't.

**3. Cook Outdoors.** Fire up the BBQ. Grilling is a fun cooking method that will not only save you some calories (requiring less oil) but will also impart unique summer flavor. Throw lean meats, tofu, veggies, even fruit on the grill and enjoy!

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## Antioxidants cont...

known about polyphenols, some very significant questions remain: how well are polyphenols absorbed after they are digested? What is their mechanism of action? Are “test tube” experiments on the effects of polyphenols reflective of what’s happening in the body? Does each individual differ in the metabolism of polyphenols? Should an RDA be set for polyphenol intake? Do polyphenols interact with proteins, carbohydrates, fiber or fat from the diet?

Since there are many questions still left unanswered, there are several considerations as to why high polyphenol food consumption is healthful. It may simply be because it allows limiting the intake of other potentially “harmful” foods such as those rich in animal protein and saturated fat that would increase risk of disease. The substitution of vegetable protein (like those of whole grain and soy) for animal protein is associated with protection from heart disease. This suggests that diets associated with a high intake of fibers, a low caloric density, and a lack of high saturated fats and animal proteins in the diet are likely to provide protection from these diseases.

Polyphenol research has grown readily since the 1990’s and is revealing several nutrition-pharmaceutical biological activities of these compounds that extend beyond the antioxidant activity its best known for. Unfortunately, marketing departments of food and pharmaceutical industries are running ahead of solid scientific evidence and making unsubstantiated claims for whole, fortified, enriched, or enhanced foods sold as “functional

foods”, “nutraceuticals” or “designer foods” based on its purported antioxidant ability. These claims are based on “test tube” techniques (usually the ORAC measurement, a.k.a. Oxygen Radical Absorbance Capacity) that, though providing suggestive evidence, are not known yet to be representative of the antioxidant actions that would occur in the body.

Therefore, future research (and advertisement) should focus on identifying an array of actions and ways to measure antioxidant intake within an individual that is reflective of their actions after we consume them. **Until more is known about the role of polyphenols and health, all we know now are that whole fruits and vegetables play multiple roles in human physiology and should not be lauded for only their antioxidants, but, rather as foods containing multi-functional and biologically-important compounds that work in harmony to prevent chronic diseases.** Despite what one reads daily in the lay press, RDs and other health practitioners should refrain from extending their advice beyond consuming a diet full of diverse, whole fruits and vegetables.

*Katie Giebler is a Registered Dietitian who recently completed her dietetic internship at UCSF Medical Center. She is currently a graduate student in the Graduate Group of Nutritional Biology at UC Davis. She is the study coordinator of a human clinical trial involving the consumption of whole grape powder and inflammatory status in obese individuals. After she completes her Master's degree, she would like to become a research dietitian or work in clinical pediatrics.*

## SHAPE UP THIS SUMMER CONTINUED...

**4. Power Your Body With Produce.** Summer yields an amazing variety of fruits and vegetables. Melons, berries, stone fruit, squash, tomatoes, green beans, corn-on-the-cob are at their peak. Enjoy at least 2 pieces of fruit daily and unlimited veggies for a vitamin and antioxidant boost.

**5. Hydrate, Hydrate, Hydrate.** Keep your summer body in top condition by filling up on at least 8 cups of water. For that refreshing summer taste, add sliced strawberries, cucumbers, lemon, or mint to your water pitcher.

I wish you a healthy, relaxing summer. Don't forget the sunscreen!

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I'd love to hear from you!

