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Nutraceuticals, Phytochemicals, and Antioxidants—What Are They All About?

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The satisfying crunch of a sweet, raw carrot. The burst of flavor from a freshly picked berry. A squirt of juice from the first bite of a fresh orange. Equally important as the delicious flavors of these foods are the health benefits that they provide. You may have seen the terms nutraceuticals, phytochemicals, and antioxidants in television programs or read about them in newspaper and magazine articles. Consumers have known for a long time that what you eat influences your health, but studies on the different properties of foods have shown that eating certain foods may provide you with greater health benefits.

First some definitions. The word nutraceutical refers to foods or parts of foods that provide medical or health benefits, including the prevention and/or treatment of disease. Some examples of relationships between nutraceuticals and health benefits include the importance of calcium in preventing osteoporosis, folic acid in the prevention of neural tube defects in infants and the role of decreasing dietary fat and increasing fiber in the prevention of colon cancer. Phytochemicals and antioxidants are two specific types of nutraceuticals.

Phytochemicals (pronounced fight-o-chemicals) is a term that means plant chemicals. The word comes from the Greek root "phyto" meaning plant. There are over 900 phytochemicals found in foods, and one serving of a fruit or vegetable may have as many as 100

different phytochemicals. Fruits and vegetables that are bright in color—yellow, red, green, blue, and purple—usually have the most phytochemicals and nutrients. Research is showing that foods with phytochemicals may help to provide protection from diseases such as cancer, diabetes, heart disease, and hypertension. Some of the more common types of phytochemicals include carotenoids found in carrots and the yellow, red, and orange pigments of plants and ellagic acid found in berries.

Antioxidants are compounds in fruits and vegetables that may be helpful in avoiding chronic disease. They act as a defense system against oxidative damage in our bodies and may be helpful in avoiding chronic diseases and the effects of aging. Some examples of antioxidants are Vitamins A, C, and E and beta-carotene. Good sources of these antioxidants include:

- **Vitamin A and beta-carotene:** Carrots, spinach, cantaloupe, winter squash
- **Vitamin C:** Citrus fruits, broccoli, strawberries, tomatoes
- **Vitamin E:** Nuts, seeds, vegetable oil, wheat germ

Increasing Phytochemicals and Antioxidants in the Diet

One study found that the average American is only eating two servings of vegetables, not three to

five as recommended, and only one serving of fruit instead of the recommended two to four servings each day. Is this cause for concern? Yes, especially when the Framingham heart study found that eating three additional servings daily of fruits and vegetables may reduce overall stroke rates by 22% and risk of bleeding stroke by 51%.

So what can you do? Think of fresh fruits and vegetables as the original fast food. Once properly washed, they can be eaten on the spot, and some with little or no preparation. Eating a diet that contains 5 to 9 servings of fruits and vegetables is one of the easiest ways to increase phytochemicals and antioxidants in your diet.

Some suggestions include:

- Keep fruits and vegetables on hand.
- Use fresh or canned fruit as a topping for cottage cheese or desserts.
- Choose 100% fruit or vegetable juice instead of soda pop.
- Add grapes, pineapple, grated carrots, or other vegetables to chicken or tuna salad.
- Choose leaf lettuce with the darkest green or red leaves for an added nutritional boost.
- Snack on cut up broccoli, carrots, and peppers with light dips instead of foods like chips.
- Try a stir-fry using a variety of vegetables.
- Enjoy fruits and vegetables in season.
- Serve pasta dishes with tomato sauce and added vegetables.

- Add greens, carrots, and tomatoes to a pot of home-made soup.
- Add fresh vegetables to your pizza.

Following the Dietary Guidelines is another sure way to have phytochemicals and antioxidants in your diet each day. Some of them directly relate to these nutraceuticals.

- Let the Food Guide Pyramid guide your food choices.
- Choose a variety of fruits and vegetables daily.
- Choose a diet that is low in saturated fat and cholesterol, and moderate in total fat.

Always be sure to consult with your physician before making any changes in your diet.

For additional information on nutraceuticals refer to Ohio State University Extension Fact Sheet HYG-5050-98 "Phytochemicals—Vitamins of the Future?" and HYG-5051-98 "Chemoprevention—The Answer to Cancer?" These, and many others, are available at your local Extension office, as well as on-line at <http://ohioline.osu.edu>.

Sources

Dresbach, Sereana Howard and Amy Rossi. "Phytochemicals—Vitamins of the Future?" OSU Extension Fact Sheet HYG-5050-98.

Dresbach, Sereana Howard and Amy Rossi. "Chemoprevention—The Answer to Cancer?" OSU Extension Fact Sheet HYG-5051-98.

Dietary Guidelines, 2000.

Visit Ohio State University Extension's web site "Ohioline" at: <http://ohioline.osu.edu>

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