THE Peanut Institute

FOOD FOR THOUGHT

PHYTOCHEMICALS: IMPORTANT "NEW NUTRIENTS" FOR HEALTH

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Health experts around the world, including the International Agency for Research on Cancer, the Food and Agriculture Organization of the United Nations, the World Health Organization, and the National Cancer Institute, agree on the number one recommendation for increasing health and decreasing disease: *Choose predominately plant-based diets rich in a variety of vegetables and fruits, legumes and minimally processed and starchy staple foods.*

Phytochemicals, or plant chemicals, are the essence of this recommendation. Researchers are discovering that phytochemicals are outstanding when it comes to protecting health and preventing disease. Scientifically speaking, phytochemicals are a unique class of compounds found only in plant foods. They are neither vitamins, nor minerals, but rather a class of "new nutrients."

It is estimated that there are over 200 different phytochemicals. Scientists are just now beginning to identify and quantify these new nutrients and the role they play in health through various cutting-edge research studies. One phytochemical in particular, resveratrol, has made headline news in the world of science and health.

Resveratrol

"Res-what?"

Resveratrol (res-VER-a-trol)

What is resveratrol?

Resveratrol is a naturally occurring plant compound that exists to protect plants from disease. According to preliminary research, it appears as though resveratrol may help to protect humans from disease as well. Researchers are still gathering information on the exact action of resveratrol in the body. Chemically, resveratrol is a phenolic compound which contains groups of oxygen and hydrogen on the ring structures. →

INSIDE...

Resveratrol

Where is resveratrol found?

Resveratrol is most widely known for its presence in grape skins and red wine. Dr. Tim Sanders and his colleague Dr. Robert W. McMichael, Jr., researchers at the US Department of Agriculture, have now found that peanuts contain a significant amount of resveratrol in both the kernel and skin. The average amount of resveratrol in one ounce of commonly eaten peanuts without the skin (15 whole peanut kernels) is 73 ug. Ounce for ounce, peanuts contain almost 30 times as much resveratrol as grapes (1,2).

What does resveratrol do?

While the mechanism of resveratrol's healthful function in the body has not yet been identified, resveratrol's presence in red wine has been associated with reduced cardiovascular disease. This idea is more commonly known as the "French Paradox." The "French Paradox" refers to the fact that despite consuming a relatively high-fat diet, the French have surprisingly low rates of heart disease (3).

What does the research say?

Results from various research studies have shown that resveratrol may protect against atherosclerosis by preventing the oxidation, or breakdown, of the low-density lipoprotein (LDL) cholesterol in the blood. LDL cholesterol is known as the "bad" cholesterol, relative to high-density lipoproteins, or HDL, the "good" cholesterol. The oxidation of LDLs begins the deposition of cholesterol on the walls of arteries leading to heart disease (4,5,6).

Resveratrol may also prevent platelet accumulation in the arteries. This accumulation of platelets can form a clot which can cause a heart attack or stroke by decreasing the flow of blood to the brain and heart (7,8).

More recently, research has been conducted at the University of Illinois at Chicago using resveratrol extracted from grapes. Feeding resveratrol to animals appeared to reduce their risk of cancer by stopping the growth of damaged cells in the body. If these damaged cells were left unchecked, they could grow out of control and cause cancer in the body. Researchers believe that resveratrol works in a number of ways to stop this series of reactions in the body (9).

What is the heart-healthy link?

The finding that peanuts contain resveratrol appears to support previous epidemiological studies from Loma Linda University, the Harvard School of Public Health, and the Iowa Women's Study. Each found that in the population studied, frequently eating small amounts of peanuts, peanut butter, and nuts helped to reduce the risk of heart disease (10,11,12). In addition, a new clinical study at Pennsylvania State University shows that three different diets—the first with peanuts and peanut butter, the second with peanut oil, and the third with olive oil—all lowered total cholesterol, LDL (bad) cholesterol, and triglyceride levels, and did not lower beneficial HDL cholesterol levels. These results may be due to the many plant chemicals found in peanut products, as well as the other essential nutrients and healthy fatty acids that peanuts contain.

Resveratrol Content Comparison

FOOD	RESVERATROL
Peanuts (1 oz)	73ug
Red Wine (1 fl oz)	160ug
Concord Grapes (1/4 lb)	10ug

One such essential nutrient is Vitamin E. Peanuts and peanut butter are excellent food sources of this vitamin. They also provide approximately 2 grams of fiber per ounce, and have relatively high amounts of folic acid, thiamin, niacin, copper, manganese, phosphorus, magnesium, and zinc. In addition, they are very high in plant protein. In fact, peanuts provide more protein per ounce than any other legume.

Do peanuts contain other phytochemicals?

Yes. In addition to resveratrol, peanuts contain a number of phytochemicals known as flavonoids. Flavonoids act as antioxidants in the body, helping to reduce the formation and circulation of free radicals. Flavonoids demonstrate a protective effect against heart disease by inhibiting oxidation of unhealthy LDL cholesterol (13). Peanuts are thought to contain many different flavonoids such as catechin, epicatechin, apigenin, and luteolin. The role that these phytochemicals play in diet and disease is still being discovered.

Peanuts contain additional plant chemicals such as isoflavones and phytosterols. New research studies have found the phytosterol B-sitosterol (SIT) in peanuts, peanut oil, and peanut flour. Preliminary work with SIT shows that it may offer protection from colon, prostate and breast cancer by blocking the absorption of both dietary cholesterol and cholesterol made in the body (14).

What other foods contain phytochemicals?

Whole grains, fruits, vegetables and nuts all contain a plethora of disease-fighting phytochemicals, as does a wide range of delicious foods and some herbs, such as garlic and ginger. Fruits in general are an excellent source—oranges alone are thought to contain over 200 different phytochemicals! Many different vegetables (carrots, celery, and cabbage are some of the best) offer a myriad of phytochemicals. Eating a **variety** of fruits and vegetables every day will provide you with a healthy mix of plant chemicals that compliment each other in disease prevention. Whole grains also contain phytochemicals thought to reduce the risk of cardiovascular disease and cancer. Because the phytochemicals in grains are concentrated in the germ and the bran, which are removed during processing, refined breads and cereals do not offer as many health benefits.

The American Institute for Cancer Research's number one "Diet and Health Guideline for Cancer Prevention" is to choose a diet rich in a variety of plant-based foods. Peanuts, although nutritionally similar to other nuts, technically belong to the plant family of legumes. Legumes are a rich source of plant protein, and contain no cholesterol, making them more beneficial to health than many sources of animal protein.

Glossary of Common Phytochemicals

Flavonoids—contain flavone in various combinations and act as antioxidants in the body, reducing the risk of cancer; food sources include fruits, vegetables, nuts, tea, wine, and oregano.

Isoflavones—block estrogen activity in cells, reducing the risks of ovarian and breast cancer; food sources include soy products and a variety of legumes including beans and peanuts.

Phytosterols—generic term for the sterols of plants; action in the body is to inhibit cell reproduction in the gastrointestinal tract, preventing colon cancer; food sources high in phytosterols include peanuts, peanut oil, peanut flour, corn, bean, and plant oils. Phytosterols are found in larger quantities in vegetarian diets, as opposed to Western diets which contain the animal sterol cholesterol in much greater quantities.

Carotenoids—yellow-red pigments that act as antioxidants in the body, reducing the risk of many types of cancer; food sources include dark-pigmented fruits and vegetables such as carrots, sweet potatoes, tomatoes, spinach, broccoli, pumpkin, apricots, etc.

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The Peanut Institute *is a non-profit organization dedicated to expanding state-of-the-art knowledge regarding peanuts and peanut products. A special emphasis is placed on establishing sound science as the basis for food, nutrition, and health discussions about peanuts.*

The Peanut Institute *pursues its mission through research programs, educational initiatives, and the promotion of healthful lifestyles to consumers of all ages. As an independent forum, The Peanut Institute is uniquely positioned to work with all segments of the food industry, the research community, academia, consumer organizations and government.*

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