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HEALTH | RESEARCH | EDUCATION



FOOD FOR THOUGHT

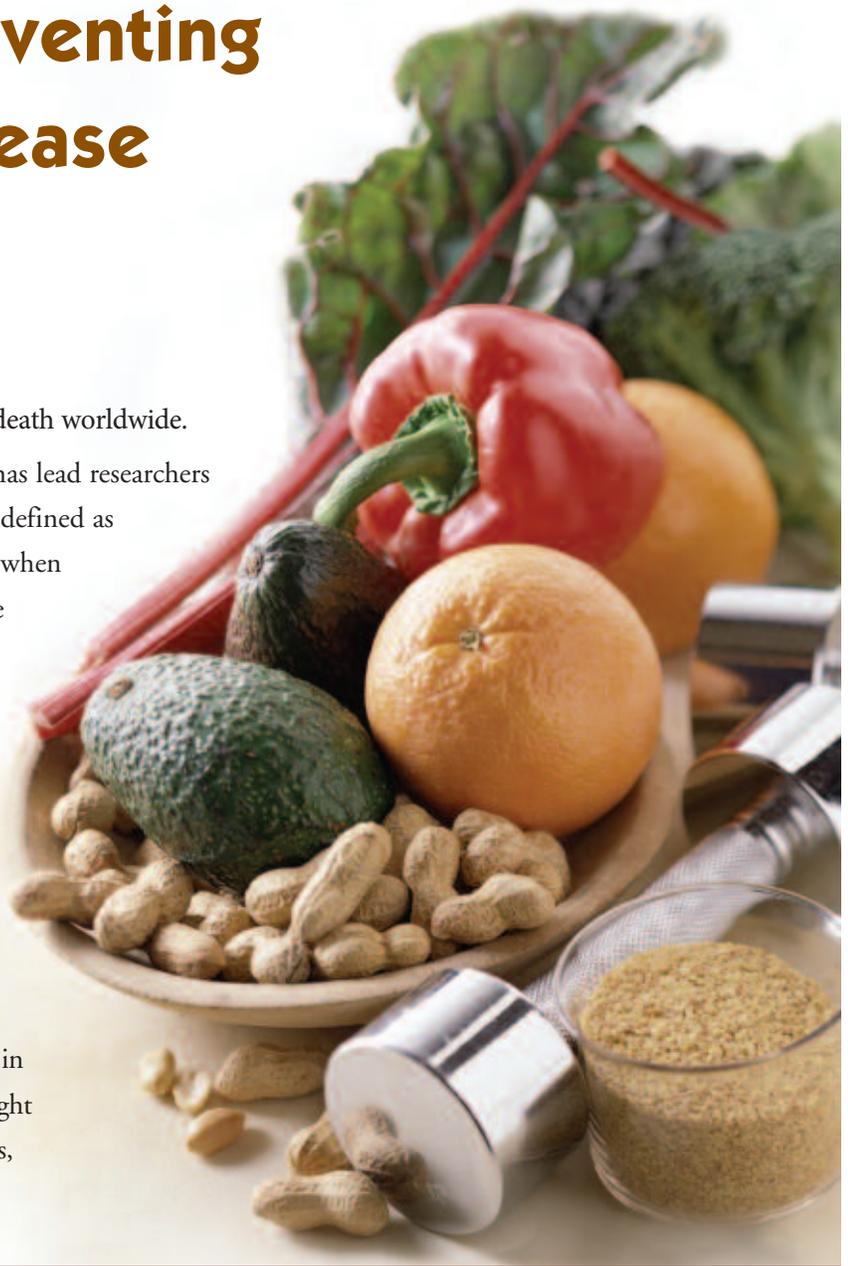
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What's the science on predicting and preventing Cardiovascular Disease (CVD)?

Cardiovascular disease is the leading cause of death worldwide.

The search for new and more consistent predictors of CVD has led researchers to find out more about inflammation. Inflammation can be defined as a natural response from the body to intruders. For instance, when you cut your skin, get a bruise, or catch a cold, your immune system kicks in and calls for help, resulting in inflammation.

Researchers are discovering that fat cells, once thought to be dormant, make a unique contribution to immune function, thereby influencing disease status. While basic inflammation is a normal, healthy response, trouble arises when the body is in a chronic state of heightened immunity. In a sense, the body begins to fight itself. Abnormal inflammation could occur in obese people where there tends to be a surplus of fat tissue containing fat cells. As fat mass increases, stress response in the body increases, resulting in chronic inflammation. This might help explain why obesity is a risk factor for a number of diseases, including arthritis, diabetes, and heart disease.



Did you know? Chronic diseases such as diabetes and obesity appear to be linked to elevated CRP levels.

Piecing the Inflammation Puzzle Together

Although the puzzle is not yet complete, the markers for inflammation are known. They include C-reactive protein (CRP), interleukin 6 (IL-6) and tumor necrosis factor (TNF).

Powerful substances like interleukin 6 and TNF help to regulate the immune system, but CRP has been identified as the key marker for inflammation. Data indicates that the proportion of cardiovascular disease (CVD) that might be prevented by reducing inflammation may be even greater than could be achieved by reducing low-density lipoprotein (LDL) cholesterol in the population. CRP is influenced by many variables, including those within our control, such as diet and exercise.

Researchers are beginning to discover that what you eat and drink and how active you are affects biomarkers, like CRP, that predict inflammation. For example, a Western diet pattern (higher in red meat, high-fat dairy products, and refined grains) has been shown to increase CRP (2). In addition, chronic diseases such as diabetes and obesity appear to be linked to elevated CRP levels.

■ Trans Fat and CRP

In a study of data from the Harvard School of Public Health's Nurses' Health Study, researchers examined the relationship between trans fat consumption and inflammatory markers. After analyzing the diets of over 820 healthy women, the researchers concluded that trans fat intake was positively associated with markers of systematic inflammation in women. Further, there was a positive association between trans fat intake and CRP and IL-6 in women with a higher body mass index (BMI) (3).

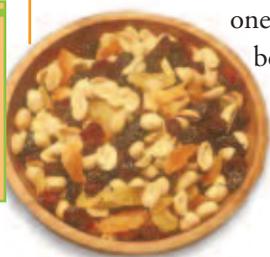
Did You Know?

The majority of fat in peanut butter is the heart-healthy unsaturated fat. Peanuts are a plant food and are naturally cholesterol-free and trans fat-free.

■ Fiber Intake and CRP

An examination of the US National Health and Nutrition Examination Survey (NHANES) from 1999-2000 shows that subjects in the third and fourth highest quartiles of fiber consumption (13.3-19.5 and >19.5 grams per day, respectively) had a lower risk of elevated CRP compared to those in the lowest quartile (less than 8.4 grams per day). This association was present even after controlling for variables such as body mass index, smoking, exercise, total calorie intake, and alcohol consumption. This finding suggests that inflammation may be one of the links

between cardiovascular disease and diet quality. (5,6)



Did you know?

Many adults do not consume enough beneficial dietary fiber. Peanuts contain about 2 grams of fiber per serving (a small handful, or one ounce)—as much as one slice of whole-wheat bread. A 32g golf-ball sized serving of peanut butter also contains nearly 2 grams of fiber and pairs well with other fiber-rich foods like apple quarters, bananas, celery and carrot sticks, and sliced peppers.



■ Magnesium and CRP

In a cross sectional study of 371 subjects, researchers showed that serum magnesium levels were independently related to CRP concentration. Further, in this study, the lowest serum magnesium levels and the highest CRP concentrations were documented in the obese subjects (7).

Did you know?

A research study at Purdue University showed that subjects with low levels of magnesium in their blood were brought up into normal ranges when they ate peanuts every day (8). Add a small amount of peanuts into your daily eating plan by substituting them for croutons on your salad, or by eating a peanut butter sandwich rather than a deli sandwich.

■ Metabolic Syndrome and CRP

Metabolic syndrome is often described as the crossroad between diabetes and heart disease because the predictors

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and symptoms overlap with both diseases. Many of the characteristics of metabolic syndrome are risk factors associated with either type 2 diabetes or heart disease, or both.

According to the US National Cholesterol Education Program (NCEP) guidelines (9), metabolic syndrome includes risk factors such as:

- High blood pressure
- Low “good” HDL cholesterol
- Elevated triglycerides
- Too much abdominal fat

In the Framingham Offspring Study, researchers examined the relationship of CRP levels to metabolic syndrome in 3037 subjects over 7 years. They concluded that elevated CRP levels are related to insulin resistance and the presence of the metabolic syndrome. Both elevated CRP and metabolic syndrome are independent predictors of new cardiovascular events (10).

■ Diabetes and CRP

Research suggests that elevated CRP may predict an increased risk of developing type 2 diabetes. Several studies have shown that both CRP and IL-6 levels in the blood predict insulin resistance and type 2 diabetes. In a study of more than 32,000 women, those with the highest levels of CRP had the greatest risk for developing type 2 diabetes (11).

Did You Know?

Eating a half serving of peanut butter or a full serving of peanuts five or more times a week is associated with a 21% and 27% reduced risk of developing type 2 diabetes, respectively (12). In addition, peanuts and peanut butter fit well into diets for people with diabetes, providing plant protein, healthy unsaturated fat, and fiber.

■ Weight Loss and CRP

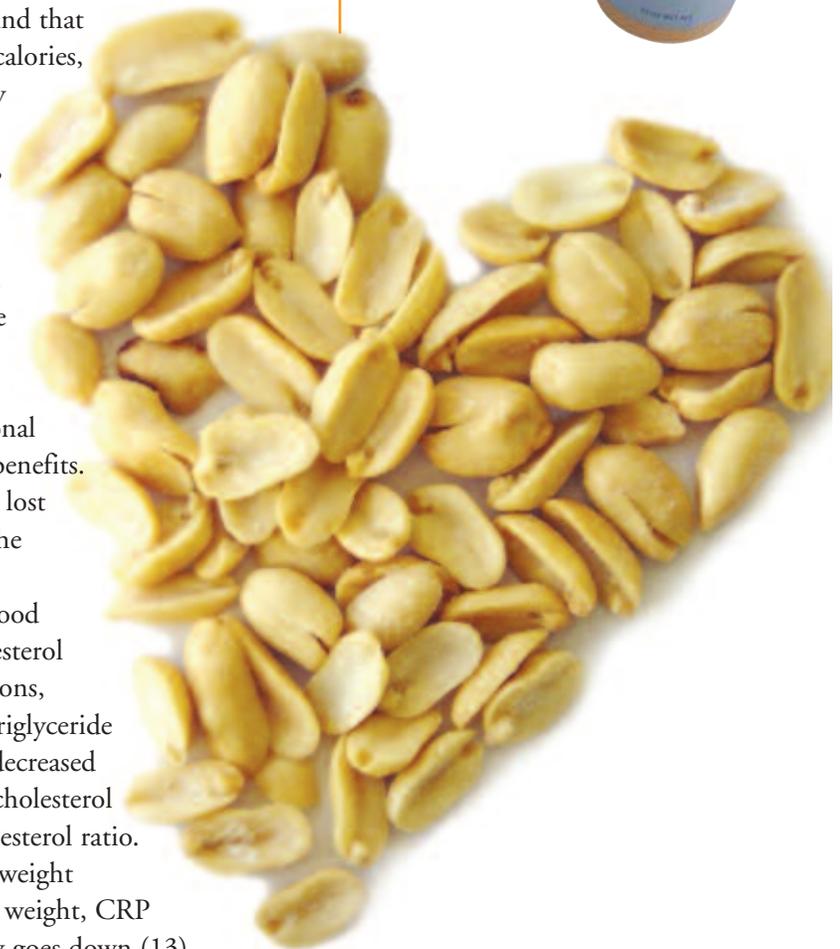
What is clear from current scientific research is that overweight and obese individuals are at greater risk for many chronic diseases. Inflammation and CRP levels may help to explain in part this added risk. Research is ongoing to pinpoint the exact function of fat cells and why they seem to be so harmful to health.

Scientists now know that fat cells do a lot more than just store energy. In fact, they perform many important functions in the body. Fat cells play a crucial role in sending out chemical signals that regulate functions such as constriction of blood vessels, production of sex hormones, immune response, and more. In large population studies, CRP has been positively associated with body weight and body fatness. A clinical study that examined obese women found that restricting calories, and thereby inducing weight loss, decreased plasma CRP levels. Further, the weight-loss program had additional metabolic benefits. Those who lost weight in the study also increased good HDL cholesterol concentrations, decreased triglyceride levels and decreased their total cholesterol /HDL cholesterol ratio. When overweight people lose weight, CRP consistently goes down (13).

According to a large body of research, weight loss of 5 to 15 percent of body weight has proven health benefits (14). This is the equivalent of a 200-pound person losing 10 to 30 pounds.

Did You Know?

Including peanuts and peanut butter in a healthy dietary pattern contributes to satiety and feelings of fullness, which could help with weight loss and weight maintenance (15, 16). It is easy to incorporate a small amount of peanut butter or peanuts into healthy diets each day. Use peanut butter instead of butter or margarine on your morning toast or bagel, or snack on peanuts or mixed nuts instead of chips or pretzels to satisfy hunger later in the day.



Conclusion

Overall, emerging research shows that diet can play a role in controlling new predictors of cardiovascular disease (CVD), including inflammation. The good news is that many chronic diseases, such as CVD, can be prevented with the same healthful diet. Namely, one that is calorie-controlled, balanced in protein, “good” unsaturated fat, and “good” carbohydrates, and full of fruits, vegetables, whole grains, nuts and peanuts.

Peanut Butter “Sweets”*

Bake the sweet potato the night before to take to work for a satisfying lunch. Reheat a potato half in the microwave, then spread with peanut butter.

1 medium sweet potato, baked
4 Tbsp crunchy peanut butter
Dash of ground cinnamon

Cut the hot sweet potato in half. Spread each half with 2 Tbsp of peanut butter and sprinkle with cinnamon. Makes 2 servings.

Per serving: 258 calories, 9 g protein, 23 g carbohydrates, 16 g fat, 3 g saturated fat, 8 g monounsaturated fat, 0 mg cholesterol, 3 g fiber, 165 mg sodium

*Adapted from *The Peanut Butter Diet Book*, 2001 (amazon.com)



Go to www.peanut-institute.org for:

The Peanut Institute is a non-profit organization that supports nutrition research and develops educational programs to encourage healthy lifestyles.

For Further Information:

The Peanut Institute
P.O. Box 70157
Albany, GA 31708-0157
USA

TEL: 1-888-8PEANUT FAX:
1-229-888-5150
www.peanut-institute.com

- Peanut and peanut butter nutrition research
- Recipes
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Phytochemicals and Flavonoids

■ Phytochemicals are plant substances that have been found to offer health benefits beyond those of traditional nutrients such as vitamins and minerals. Scientists have discovered there are many different classes and subclasses of phytochemicals, including polyphenols and plant sterols, both of which are found in peanuts. Peanuts provide modest amounts of many of these potentially beneficial phytochemicals, including resveratrol, procyanidins, and beta-sitosterol.

■ Resveratrol—Found in Peanuts and in Red Wine

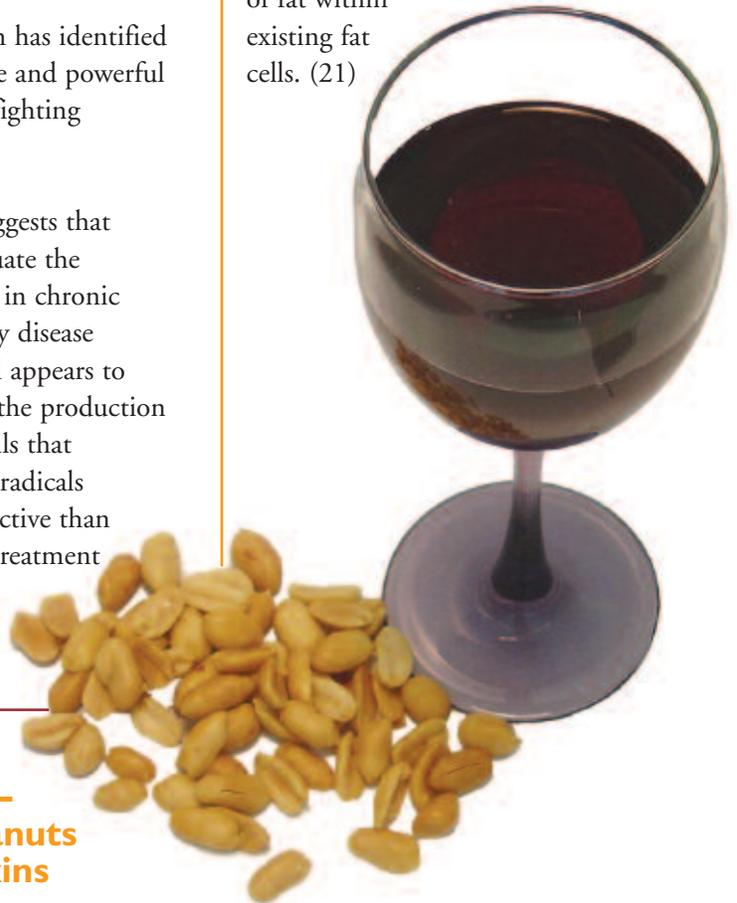
■ One serving (or one ounce) of peanuts contains 0.57 to 51 micrograms of resveratrol, a beneficial phytochemical that has been associated with reduced risk of chronic diseases such as heart disease and cancer. Resveratrol is also found in red wine (17).

■ In addition to strong antioxidant characteristics, resveratrol has been shown to reduce cell adhesion, or sticking to artery walls, thereby decreasing the risk of clogged arteries (18).

■ Laboratory research has identified resveratrol's impressive and powerful potential as a cancer-fighting chemical (19).

■ Recent research suggests that resveratrol may attenuate the inflammatory process in chronic obstructive pulmonary disease (COPD). Resveratrol appears to completely eliminate the production of certain immune cells that produce harmful free radicals and may be more effective than conventional steroid treatment for COPD (20).

■ The latest research in mice suggests that resveratrol speeds up the activity of the SIRT1 gene, common to mice and humans, which has been shown to reduce the development of new fat cells and increase the "burn rate" of fat within existing fat cells. (21)



■ Beta-Sitosterol—Plentiful in Peanut Products

■ Research has shown that a plant sterol, beta-sitosterol (SIT), which inhibits breast, prostate and colon cancer cell growth, and protects against heart disease, is present in peanuts and peanut products: (22)

■ Roasted snack peanuts contain between 48-94 mg SIT/100 gm

■ Regular peanut butter contains 134 mg SIT/100 gm

■ Peanut oil has 153 mg SIT/100 gm—that's more than extra virgin olive oil

■ Flavonoids—Present in Peanuts and Peanut Skins

■ Peanuts contain procyanidins, a subclass of flavonoids. Flavonoid intake has been inversely linked with coronary heart disease in the Netherlands' Zutphen Elderly Study and the Seven Countries Study (23, 24).

■ Proanthocyanidins, also called condensed tannins or procyanidins, are present as the second most abundant natural phenolics after lignans. However, few foods have been identified for their proanthocyanidin content. One study analyzed 88 different foods. One type of polyphenols called "A-type proanthocyanidins" has been identified in peanuts, as well as plums, avocados, curry and cinnamon (25).

■ Eight different flavonoids have been found in peanut skins (26).



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Cholesterol Ratios and Triglyceride Levels



Scientists now understand the importance of measuring cholesterol ratios, which give a more comprehensive cardiovascular disease risk assessment than looking at low-density lipoprotein (LDL) cholesterol alone. Numerous studies have shown that when peanuts and peanut butter are included in a healthful diet, cholesterol ratios improve and triglyceride levels go down.

In a controlled clinical study, a higher-fat, peanut and peanut butter diet was better than a low-fat diet when it came to cholesterol ratios. This is because including peanuts and peanut butter in the diet not only lowered “bad” LDL cholesterol, but also maintained beneficial high-density lipoprotein (HDL) cholesterol. The result was a favorable drop in the ratio of “bad” cholesterol to “good” cholesterol. Conversely, there was no change in these important ratios in the low-fat group (27).

Furthermore, researchers found that the higher-fat “peanut” group lowered their triglyceride levels, whereas triglycerides actually increased in the low-fat group (27).

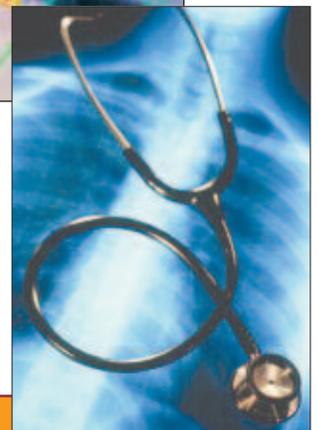
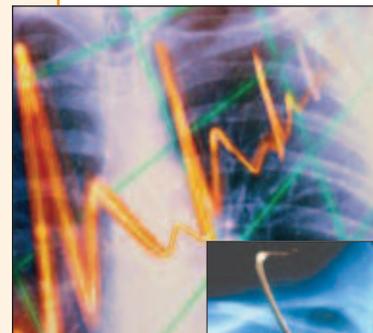
Another study found that regular consumption of peanuts lowered triglycerides and improved total diet quality. By either adding peanuts to their daily diet or by substituting peanuts for other foods in their daily diet, subjects significantly lowered triglycerides, by 24 and 18 percent respectively. This could translate into an 8 and 6 percent decrease in risk of cardiovascular disease (8).

Traditional Risk Factors for CVD:

- Smoking
- Family History of Heart Disease
- Low Activity Levels
- Elevated Low-Density Lipoprotein (LDL) Cholesterol Levels
- Elevated Total Cholesterol Levels
- Hypertension
- Obesity

New and Emerging Predictors for CVD:

- Markers for Inflammation, including CRP (C-Reactive Protein)
- Phytochemicals and Flavonoids in the Diet
- Cholesterol Ratios, including High-Density Lipoprotein (HDL) Cholesterol
- Triglyceride Levels



FDA Approved Qualified Health Claim

Scientific evidence suggests but does not prove that eating 1.5 ounces [or 42 grams] of most nuts, such as peanuts, as part of a diet low in saturated fat and cholesterol may reduce the risk of heart disease. See nutrition information for fat content.