



NUTRITION 2000 ~ FOODS FOR THE 21ST CENTURY



Nutrition research is revealing that some foods deliver exactly what the doctor ordered. As scientists explore how the foods we eat affect health, they have discovered some foods that can decrease risk of disease and promote longer, healthier living. New discoveries in nutrition come at a rapid pace with each providing a piece of the puzzle about good nutrition and health. This fact sheet will help you see how you can put the latest findings to work in your everyday diet. You can enter the 21st century with the nutrition knowledge needed to take care of your

health.



WHAT YOU NEED TO KNOW

One of the biggest nutrition advances of the year 2000 will be the disappearance of those traditional RDAs (Recommended Daily Allowances) and the arrival of a new set of reference values called **Dietary Reference Intakes (DRIs)**. For more than 20 years, the RDAs have served as the benchmark of adequate nutrition intake, but new scientific knowledge has produced a need for them to be revised. Research has found benefits of nutrients and other components of food that go beyond preventing nutritional deficiency. There are some other things in foods (for example, antioxidants) that we know are important for an "ideal diet." The DRIs will serve as the new standards for healthy diets.

The DRIs will include seven nutrient groups:

- ① calcium, vitamin D, phosphorus, magnesium, fluoride
- ② folate and other B vitamins
- ③ antioxidants (for example, vitamins C and E, selenium)
- ④ macronutrients (for example, protein, fat, carbohydrates)
- ⑤ trace elements (for example, iron, zinc)
- ⑥ electrolytes and water
- ⑦ other food components (for example, fiber, phytoestrogen).

Three Levels of Recommended Intake

The new DRIs are a three-level guideline of minimum, optimum, and maximum intakes:

- **Level 1: Estimated Average Requirements** EARs are the nutrient intake levels estimated to meet requirements of 50 percent of healthy people. Some people need more; others need less.
- **Level 2: Recommended Dietary Allowances** New RDAs are levels that will meet nutrient requirements of 97-98 percent of healthy individuals. Intake values will be set for numerous age/gender categories.
- **Level 3: Tolerable Upper Levels** ULs are the highest levels of intake known to be safe.

Amounts taken above

this level may be harmful.



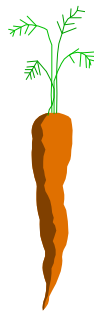
Does all the nutrition talk about phytochemicals, antioxidants, and all those other components with complicated names confuse you? Let's take a closer look at some of the components of foods believed to promote health.

PHYTOCHEMICALS

Scientists are discovering important nutritional elements in foods that go beyond the recognized vitamins, minerals, proteins and fat. These new components need to be placed in a group of their own. They have been given many names, but the most popular and widely used is **phytochemicals**—which means plant chemicals. There are many different classes and types of phytochemicals; that is why there are so many complicated names. Phytochemicals are found in plant-based foods like fruits and vegetables, grains, tubers (for example, sweet potato), and legumes (for example, beans). The foods that are known to contain these powerful phyto-chemicals are called “functional foods.” *But what is so important about phytochemicals?* Numerous research studies have found that different types of phytochemicals can help fight various diseases like cancer, heart disease, arthritis, and diabetes. We want you to learn about the foods that contain these disease-fighting components and make them your **Foods for the 21st Century**.

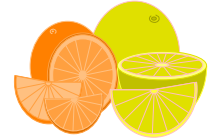
But what are antioxidants?

In the body, all cells use oxygen to break down carbohydrates, fats, and protein for energy. Just as pollution is created when gas is burned in a car, the body forms free-radicals when it creates energy. These radicals are dangerous because they may attach to other areas in the body and cause damage. This damage can lead to diseases like cancer. Antioxidants are components in food that prevent free-radicals from becoming destructive. An antioxidant may be a vitamin or mineral like vitamin E or selenium, or it could be a phytochemical, like lycopene. Here is a list of the most common antioxidants and the foods that contain them:



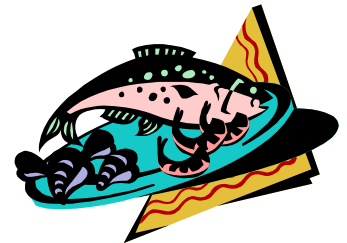
Carotenoids are found in fruits and vegetables—including carrots, fresh tomatoes, tomato products, green vegetables, peppers, and squash.

Vitamin C is found in oranges and orange juice, peppers, tomatoes, and many other fruits and vegetables.



Vitamin E is found in nuts, fats and oils, wheat germ, and green leafy vegetables.

Selenium is mostly found in seafood and organ meats.



GLOSSARY OF TERMS

dietary antioxidant: Dietary antioxidants are substances in foods that significantly decrease the adverse affects of reactive oxygen and/or nitrogen in the body.

free radical: Unstable molecules resulting from normal metabolic processes. Free radicals attack healthy cells in the body in hopes of finding another electron to stabilize themselves. This process can damage healthy cells.

functional food component: Nutritive and non-nutritive compounds found in food that are thought to reduce the risk of disease or promote health.

functional food: Foods that may provide a health benefit beyond basic nutrition.

phytochemical: Naturally occurring components of plant foods that are currently under scientific investigation to determine their potential benefits for reducing the risk of potential health problems including cancer, cardiovascular disease, arthritis, hypertension and other problems.

FIBER

There is one more specific component in foods that you need to know about...FIBER! Did you know that low-fat diets that regularly include fiber-rich foods can reduce total blood cholesterol by 10 to 15 percent? In a study at the University of Kentucky, 20 men with high cholesterol were given $\frac{3}{4}$ cup of fiber-rich beans a day. In three weeks, the men's total cholesterol dropped an average of 19 percent, possibly reducing their risk of heart attack by 40 percent. Besides decreasing your cholesterol and lowering your risk of heart attack, fiber may also decrease your risk of breast and colon cancer and help diabetics control blood sugar levels. Total dietary fiber intake *should* be 25 to 30 grams a day. Currently, Americans are only getting about half as much fiber in their diets as they need.

FOODS FOR THE 21ST CENTURY~ DICTIONARY

Now that you are familiar with the disease-fighting components in food, take a look at the **dictionary of Foods for the 21st Century** and make some of these your "functional foods" for the new millennium.

Apples

Potential Health Benefits:

- decrease heart disease risk
- help control diabetes
- decrease cancer risk.



The majority of the disease-fighting factors in apples can be found in the skin. Quercetin, the major antioxidant in apples, was discovered in a study in Finland to reduce the

risk of heart disease by 20 percent. Laboratory studies have also shown that quercetin can fight cancer cells. Apples are also well-known as a good source of fiber.

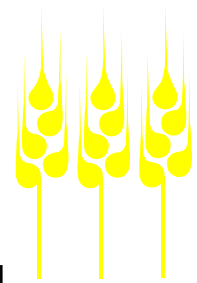
☛ **Tip:** Use applesauce in place of oil in your baking to decrease the amount of fat in the recipe.

Barley

Potential Health Benefits:

- lower cholesterol
- decrease cancer risk.

Barley is one of the most abundant sources of tocotrienols. These are extremely powerful antioxidants and David J. A. Jenkins, University of Toronto, says tocotrienols are potentially more powerful than some types of vitamin E. Barley can help fight heart disease by stopping free radical oxidation of blood vessels and decreasing cholesterol production in the liver. The cancer-fighting agents selenium and vitamin E also are abundant in barley. And if that weren't enough to convince you to try barley, consider that barley is also an excellent source of soluble fiber, which lowers cholesterol.



☛ **Tip:** Add barley to your soups or stews or try it instead of rice. One cup of dry barley will expand almost four times during cooking.

Beans

Potential Health Benefits:

- lower cholesterol
- stabilize blood glucose levels
- reduce risk of heart disease
- reduce risk of breast and prostate cancer.

Beans are one of the best sources of soluble fiber, which attaches to cholesterol-containing bile and removes it from the body before it can be absorbed. In a study at the University of Kentucky, men who ate $\frac{3}{4}$ cup of beans a day decreased their cholesterol 19 percent—possibly lowering their heart attack risk nearly 40 percent. The soluble fiber is also the main factor in controlling blood sugar levels. Compounds found in beans—lignans, isoflavones, saponins, phytic acid, protease inhibitors—are phytochemicals that have shown to have anti-cancer power.

☛**Tip:** Canned beans are just as good for you as the dried ones. If you are concerned about sodium, rinse them before use.

Broccoli

Potential Health Benefits:

- may protect against heart disease
- may help fight cancer
- may help boost immune system.

Broccoli helps fight against cancer with the help of indole-3-carbinol and sulforaphane. These phytochemicals work to fight hormone-induced cancers and increase the body's production of cancer-blocking enzymes. Broccoli is also an excellent source of beta-carotene and vitamin C. Studies have found that vitamin C may boost immunity and fight other diseases.

☛**Tip:** Gently cooking broccoli helps release some protective compounds, but don't overheat it. Look for broccoli sprouts at your neighborhood grocery or health food store. A recent study at John Hopkins reports that three day old sprouts contain 20 to 50 times the amount of protective agents of mature plants.

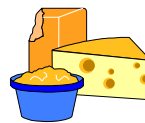
Cereals

Potential Health Benefits:

- may help decrease cancer risk
- may help fight heart disease.

Cereals are a “bowl” full of nutrition. They are fortified and enriched with many essential vitamins and minerals. Cereal can be an excellent source of dietary fiber, which helps lower cholesterol, decrease the risk of heart attack, and protect against colon cancer. In one study, 3 grams of soluble fiber a day from oat bran decreased participants' cholesterol levels five to six points. Oatmeal is also a good source of soluble fiber.

☛**Tip:** Drink the milk in the bottom of your bowl. Vitamins are sprayed on cereals when fortified and some will end up in the milk.



Dairy Foods

(low-fat milk, cheese, and yogurt products)

Potential Health Benefits:

- build strong bones
- decrease risk of osteoporosis
- may help lower blood pressure and cholesterol
- may decrease risk of stroke.

Dairy products are a well-known source of calcium, which is essential to build strong, healthy bones and prevent osteoporosis. Studies have found that calcium also may help reduce blood pressure. The American Cancer Society found that women who drank low-fat milk had lower risks of cancer than those who did not drink milk. But dairy products also are packed with many nutrients that may help prevent stroke and even cancer.

☛**Tip:** Skim and low-fat varieties of milk contain the same nutrients as whole milk but without all the fat. If you don't like the taste of skim milk, try the new low-fat varieties that

have the consistency of higher-fat milks. As a bonus, without the fat there's more room for calcium.

Greens

Potential Health Benefits:

- control blood pressure
- decrease risk of heart disease
- decrease risk of cancer

Leafy green vegetables may be the most nutrient-dense food we have available, Michael Liebman, Ph. D., a professor of human nutrition points out this idea. Leafy green vegetables contain magnesium, iron, calcium, folate, vitamins C and B6, and phytochemicals. Homocysteine, a natural compound in the body, can become destructive and cause heart disease when it is not kept regulated. Folate and vitamin B6 from greens may help protect against high homocysteine levels and heart disease.

☛**Tip:** Iceberg lettuce, the type found in most salads, does not contain nearly the nutrient value of other greens. Choose spinach, kale, or turnip greens to receive all the potential benefits provided by this functional food.

Oats

Potential Health Benefits:

- lower cholesterol and blood glucose
- improve insulin sensitivity
- reduce risk of cancer and heart disease.

Oatmeal and oat bran contain the soluble fiber beta-glucan and compounds called saponins. Both of these components bind to cholesterol and help decrease LDL levels. The soluble fiber also helps regulate blood sugar levels. Fiber slows the rate at which carbohydrates are absorbed by the body and decreases hormone output. Oats fight against heart disease and cancer with three powerful antioxidants: tocotrienols, ferulic acid, and caffeic acid.

☛**Tip:** Cook your oats in apple juice instead of milk or water for a new flavor. Choose oat bran instead of oatmeal if you are trying to cut back on calories. Oat bran contains 87 calories per cup cooked compared to 145 in the same amount of oatmeal.

Olive Oil

Potential Health Benefits:

- lower cholesterol
- reduce the risk of heart disease
- reduce the risk of breast cancer.

The key to olive oil's powerful benefits is that it is a monounsaturated fat. This type of fat lowers LDL cholesterol, but leaves alone the good HDL cholesterol. Researchers began looking for the health benefits of olive oil when they noticed the lower incidence of heart disease in Mediterranean countries. These nations consume more olive oil and far less butter and margarine. One project called the "Seven Countries Study" found that deaths in Crete due to heart disease were only 4 percent for middle-aged men compared to 46 percent for American men. Olive oil also contains many disease-fighting polyphenols, which are antioxidants.

☛**Tip:** Extra-virgin olive oil contains the most polyphenols. This is because the oil is retained from the first pressing of the olives. Keep olive oil in your refrigerator or a cool dark place to keep it from going bad, to maintain taste, and to prevent the loss of protective compounds.

Soy Foods

Potential Health Benefits:

- decrease risk of heart disease
- relieve menopause symptoms
- reduce risk of breast and prostate cancer.

Dr. James W. Anderson of the University of Kentucky College of Medicine found after

analyzing 38 separate studies that consuming 1 to 1.5 ounces of soy protein a day lowered total cholesterol by 9 percent and destructive LDL cholesterol by 13 percent. High cholesterol is a major risk factor for heart disease. Components known as phytoestrogens are found in soy. They may act like women's natural estrogen and be helpful in reducing hot flashes during menopause. Phytoestrogens may also help protect against breast cancer and prostate cancer.

☛**Tip:** When buying soy milk, skip the advice to look for low-fat varieties. Full-fat soy milk contains 50 percent more phytoestrogens. Soy products can be used in everything from soups to desserts; look for new recipes that call for soy and try them out!

Sweet Potatoes

Potential Health Benefits:

- help control diabetes
- reduce risk of heart disease
- reduce risk of cancer

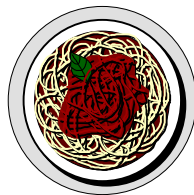
Just as in carrots, the bold orange color of sweet potatoes is produced by large amounts of the powerful antioxidant beta-carotene. Sweet potatoes are also a rich source of vitamins C and E. The large amount of fiber in this vegetable contributes to its potential benefit of helping to control diabetes. Blood sugar levels are lowered because the rate at which the food is converted to glucose and absorbed is decreased.

☛**Tip:** Choose sweet potatoes with the most intense orange color. The deeper the color, the more beta-carotene they contain.

Tomato Products

Potential Health Benefits:

- reduce risk of cancer
- reduce risk of heart disease.

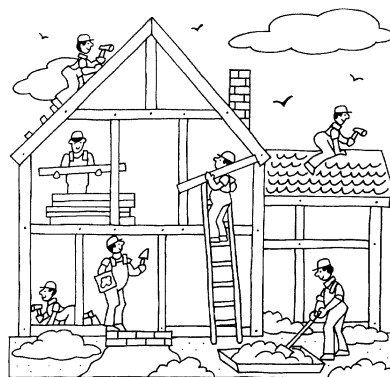


The bright red color of tomatoes is produced by the active antioxidant lycopene. In past studies, beta-carotene received a lot of attention for its potential cancer-fighting power but researchers think lycopene may have twice the power of beta-carotene.

☛**Tip:** Cooking tomatoes releases more of the lycopene that is found in the cell walls. Lycopene may also be absorbed better when eaten with a little fat, so add a little olive oil to your next serving of tomatoes.

ADVICE FOR ACTION

Think of building a pyramid of healthy eating into your lifestyle, just as you might decorate a room in your home. The first thing you would do is pick a base color for your walls. Try browns



of the grain family. Oat bran, ready-to-eat cereals, or oatmeal would all be nice shades.

Then start picking some colorful furniture; it will take at least

five pieces to make your room complete. Be sure to get at least five fruits and vegetables in your diet each day.

Next, you need to add pictures and other decorative pieces. They don't fill the room, but provide essential accents. Accent your diet with 2 to 3 servings of milk, cheese, or yogurt. Also, try different items like tofu or Mediterranean foods.

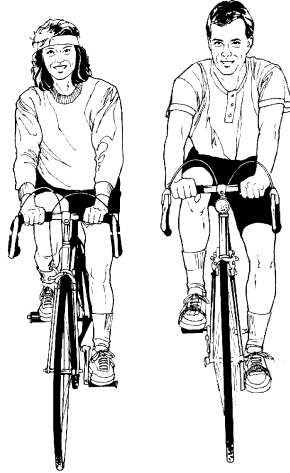
In your living room, the last thing you might do is add a lamp or overhead fixture. Usually one provides enough light to shine throughout the room. Fats, oils, and sweets act like the light that shines throughout our diets. We need to limit the amounts we get and make sure the sources are the best. For example, choose olive oil instead of butter.

Finally, put your room to use! Activate your life by incorporating physical activity whenever possible. Making changes like these CAN be fun and lead to happy, healthier, and longer lives. Enjoy!

References

- *Food Insight*. "Antioxidants: Working Toward a Definition." November/December, 1998.

- Prevention's New Foods for Healing. Selene Yeager, 1998, Rondale Press, Inc., Emmaus, Pa.



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