



# **THE ENCYCLOPEDIA OF Healing Foods**

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**ATRIA BOOKS**  
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**ATRIA** BOOKS

1230 Avenue of the Americas

New York, NY 10020

[www.SimonandSchuster.com](http://www.SimonandSchuster.com)

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For information address Atria Books, 1230 Avenue of the Americas, New York, NY 10020

Library of Congress Cataloging-in-Publication Data

Murray, Michael T.

The encyclopedia of healing foods / Michael T. Murray and Joseph E. Pizzorno with Lara Pizzorno.

p. cm.

Includes bibliographical references and index.

1. Nutrition—Encyclopedias. 2. Functional foods—Encyclopedias. 3. Diet therapy—Encyclopedias. I. Pizzorno, Joseph E. II. Pizzorno, Lara. III. Title.

RA784.M85 2005

613.2'03—dc22 2005048107

ISBN-13: 978-0-7434-7402-3

ISBN-10: 0-7434-7402-3

ISBN-13: 978-0-7434-8052-9 (pbk)

ISBN-10: 0-7434-8052-X (pbk)

eISBN-13: 978-1-4391-0344-9

First Atria Books hardcover and trade paperback editions September 2005

10 9 8 7 6 5 4 3 2 1

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Designed by Helene Berinsky

Manufactured in the United States of America

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*Let your food be your medicine and let your medicine be your food.*

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—Hippocrates

# ACKNOWLEDGMENTS

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First of all, it is important for us to acknowledge all the researchers, physicians, and scientists who over the years have sought to better understand the role of diet and natural medicines in the prevention and treatment of disease. Without their work, this book would certainly not exist. Next, we must acknowledge the important role that our agent, Bonnie Solow, played in linking us up with Tracy Behar and Atria Books. We are indebted to everyone on the team for having the perseverance to make our book as reader-friendly and practical as possible.

**Michael T. Murray, N.D.:** Most of all, I would like to acknowledge my wife, Gina. Her love, support, and patience are the major blessings in my life, along with our wonderful children, Alexa, Zachary, and Addison.

**Joseph E. Pizzorno, N.D.:** In appreciation of my wonderful family, who blesses my life: Lara, my beloved spouse; Raven, my dear daughter; and Galen, my brilliant son. Thank you to Dr. Michael Murray, whose keen intelligence and remarkable ability to communicate have dramatically increased the public understanding of natural medicine.

**Lara Pizzorno, M.A. (Divinity), M.A. (Lit.), LMT:** It's lovely to be able to publicly acknowledge my sweet soul mate and husband, Joe; Galen, our most dear son; Raven, the daughter of my heart; and our two faithful felines, Catnip, who will always live in our hearts, and Smidge, who worked late with me many nights. A special thanks to Juan San Mames for sharing his expertise on saffron, and to Dr. Jeff Dahlberg, Dr. Lloyd Rooney, and Dr. Ronald Prior for sharing their research on sorghum. Finally, I would like to thank Dr. Michael Murray; without his vision, encyclopedic knowledge, and hard work, this book would not exist.



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# PREFACE

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There is an ever-growing appreciation of the role of diet in determining our level of health. It is now well established that certain dietary practices cause, as well as prevent, a wide range of diseases. In addition, more and more research is accumulating that indicates certain diets and foods offer immediate therapeutic benefit.

However, as people learn more about the value of proper nutrition, they often become confused by the conflicting opinions they encounter. The purpose of this book is to provide the most up-to-date answers to some important basic questions about nutrition:

What is a healthy diet?

How do I know what to eat and in what quantities?

How much protein, fat, fiber, and other food factors do I need in my diet?

What properties do individual foods possess?

If foods are medicines, which ones offer the greatest benefit for specific health problems?

More important, we hope that this information will inspire you to make healthier food choices. Our belief is that healthier food choices will result in a healthier and happier existence.

The human body is remarkable and truly wondrous, but most Americans are not feeding the body the high-quality fuel it deserves and needs. When a dynamic living organism does not receive the proper building blocks it needs for energy, maintenance, or repair, it is only a matter of time before it fails to run in an efficient manner. Stated another way, if the body is not fed the full range of nutrients it needs, how can it be expected to stay in a state of good health?

The human body, the vessel of your soul, is something to be cherished. Ralph Waldo Emerson said, "The first wealth is health." We agree with this sentiment and urge you to make eating a healthy diet a lifetime habit. With that goal in mind, we offer you *The Encyclopedia of Healing Foods: A Comprehensive Guide to the Healing Power of Nature's Best Medicine*.

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May you live in good health, with passion and joy!

Michael T. Murray, N.D.

Joseph E. Pizzorno, N.D.

Lara Pizzorno, M.A., L.M.T.

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PART



*Basic Principles of a Good Diet*

# Human Nutrition: An Evolutionary Perspective

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In order to answer the question “What is a healthy diet?” it is important to first take a look at what our body is designed for. Is the human body designed to eat plant foods, animal foods, or both? Respectively, are we herbivores, carnivores, or omnivores?

While the human gastrointestinal tract is capable of digesting both plant and animal foods, there are indications that we evolved to digest primarily plant foods. Specifically, our teeth are composed of twenty molars, which are perfect for crushing and grinding plant foods, along with eight front incisors which are well suited for biting into fruits and vegetables. Only our front four canine teeth are designed for meat eating, and our jaws swing both vertically to tear and laterally to crush, while carnivores’ jaws swing only vertically. Additional evidence that supports the human body’s preference for plant foods is the long length of the human intestinal tract. Carnivores typically have a short bowel, while herbivores have a bowel length proportionally comparable to humans’.

To answer the question of what humans should eat, many researchers look to other primates, such as chimpanzees, monkeys, and gorillas. These nonhuman wild primates are omnivores. They are also often described as herbivores and opportunistic carnivores in that although they eat mainly fruits and vegetables, they may also eat small animals, lizards, and eggs if given the opportunity. For example, the gorilla and the orangutan eat only 1 percent and 2 percent of animal foods as a percentage of total calories, respectively. The remainder of their diet is derived from plant foods. Since humans are between the weight of the gorilla and orangutan, it has been suggested that humans are designed to eat around 1.5 percent of their diet in the form of animal foods. However, most Americans derive well over 50 percent of their calories from animal foods.

Since wild primates fill up on wild fruit and other highly nutritious plant foods, those weighing one tenth the amount of a typical human ingest nearly ten times the level of vitamin C and much higher amounts of many other vitamins and minerals (see Table 1.1). How is this possible? One reason is that the cultivated fruit in an American supermarket is far different from the wild fruit of the primate’s diet, having a slightly higher protein content and a higher content of certain essential vitamins and minerals. Cultivated fruit tends to be higher in sugars and, while very tasty to humans, it is not nearly as nutritious. In fact, it raises blood sugar levels much more quickly than its wild counter-parts do.

There are other differences in the wild primate diet that are also important to highlight, such as a higher ratio of alpha-linolenic acid—the essential omega-3 fatty acid—to linoleic acid—the essential omega-6 fatty acid. A higher ratio of omega-3 fatty acid decreases the likelihood of the development of inflammatory and chronic diseases as well as their severity. Finally, the wild primate diet is very high in fiber, while the average American diet is not. A high-fiber diet protects against heart disease and many types of cancer.

Determining what diet humans are best suited for may not be as simple as looking at the diet of wild primates. Humans have some significant structural and physiological differences compared to apes. The key difference may be our larger, more metabolically active brains. In fact, it has been theorized that a shift in dietary intake to more animal foods may have produced the stimulus for human brain growth. The shift itself was probably the result of limited food availability, which forced early humans to hunt grazing mammals such as antelope and gazelle. Archaeological data support this association—humans’ brains started to grow and become more developed at about the same time evidence shows an increase of animal bones being butchered with stone tools at early villages.

**TABLE 1.1 Estimated Mineral Intakes of Wild Monkeys and Humans**

<b>Mineral</b>	<b>Total Daily Intake for 7 Kilogram Adult Wild Male Monkey (milligrams)</b>	<b>RDA for 70 Kilogram Adult Human Male (milligrams)</b>
Calcium	4,571	800
Phosphorus	728	800
Potassium	6,419	1,600-2,000
Sodium	182	500
Magnesium	1,323	350
Iron	38.5	10
Manganese	18.2	2.0-5.0
Copper	2.8	1.5-3.0

From: Milton, K., "Nutritional Characteristics of Wild Primate Food: Do the Diets of Our Closest Living Relatives Have Lessons for Us?" *Nutrition* 1999:15; 488-498.

While improved dietary quality alone cannot fully explain why human brains grew, it definitely appears to have played a critical role. With their bigger brains, early humans were able to engage in more complex social behavior, which led to improved foraging and hunting tactics, which, in turn, led to even higher quality food intake that fostered additional brain evolution.

Data from anthropologists looking at evidence from hunter-gatherer cultures is providing much insight as to what humans are designed to eat. However, it is important to point out that these cultures were not entirely free to determine their diets. Instead, their diets were molded as a result of what was available to them. For example, the diet of the Inuit Eskimos is far different from that of the Australian Aborigines. Therefore, it may not be appropriate to answer the question "What should humans eat?" simply by looking at these studies alone.

Nonetheless, regardless of whether a hunter-gatherer community relied on animal or plant foods, the rate of diseases of civilization such as heart disease and cancers was extremely low.

How is this possible? One reason is that the meat our ancestors consumed was much different from the meat we find in the supermarket today. Domesticated animals have always had higher fat levels than their wild counterparts, but the desire for tender meat has driven the fat content of domesticated animals to 25 to 30 percent or higher compared to a fat content of less than 4 percent for free-living animals or wild game. In addition, the type of fat is considerably different. Domestic beef contains primarily saturated fats and virtually undetectable amounts of omega-3 fatty acids. In contrast, the fat of wild animals contains over five times more polyunsaturated fat per gram and has desirable amounts of beneficial omega-3 fatty acids (approximately 4 percent).

What conclusions can we draw from the evidence of the wild primate and hunter-gatherer diets about how we should eat today? Overwhelmingly, it appears that humans are better suited to a diet composed primarily of plant foods. This position is supported also by a tremendous amount of evidence showing that deviating from a predominantly plant-based diet is a major factor in the development of heart disease, cancer, strokes, arthritis, and many other chronic degenerative diseases. It is now the recommendation of many health and medical organizations that the human diet should focus primarily on plant-based foods, comprising vegetables, fruits, grains, legumes, nuts, and seeds.

The evidence supporting diet's role in chronic degenerative diseases is substantial. There are two basic facts linking the diet-disease connection:

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1. A diet rich in plant foods is protective against many diseases that are extremely common in Western society.
2. A diet providing a low intake of plant foods is a causative factor in the development of these diseases and provides conditions under which other causative factors became more active.

## **The Pioneering Work of Denis Burkitt and Hugh Trowell**

Much of the link between diet and chronic disease originated from the work of two medical pioneers Denis Burkitt, M.D., and Hugh Trowell, M.D., editors of *Western Diseases: Their Emergence and Prevention*, first published in 1981. Although now extremely well recognized, the work of Burkitt and Trowell is actually a continuation of the landmark work of Weston A. Price, a dentist and author of *Nutrition and Physical Degeneration*. In the early 1900s, Dr. Price traveled the world observing changes in teeth and palate (orthodontic) structure as various cultures discarded traditional dietary practices in favor of a more "civilized" diet. Price was able to follow individuals as well as cultures over periods of twenty to forty years, and he carefully documented the onset of degenerative diseases as their diets changed.

Based on the extensive studies examining the rate of diseases in various populations (epidemiological data), including the groundbreaking work of Dr. Price and their own observations of primitive cultures, Burkitt and Trowell formulated the following sequence of events:

**First stage:** In cultures consuming a traditional diet consisting of whole, unprocessed foods, the rate of chronic diseases, such as heart disease, diabetes, and cancer is quite low.

**Second stage:** Commencing with eating a more "Western" diet, there is a sharp rise in the number of individuals with obesity and diabetes.

**Third stage:** As more and more people abandon their traditional diet, conditions that were once quite rare become extremely common. Examples of these conditions include constipation, hemorrhoids, varicose veins, and appendicitis.

**Fourth stage:** Finally, with full Westernization of the diet, other chronic degenerative or potentially lethal diseases, including heart disease, cancer, osteoarthritis, rheumatoid arthritis, and gout, become extremely common.

Since the publication in *Western Diseases* of Burkitt and Trowell's pioneering research, a virtual landslide of data has continually verified the role of the Western diet as the key factor in virtually every chronic disease, but especially in obesity and diabetes. In 1984, the Food and Nutrition Board of the National Research Council established the Committee on Diet and Health to undertake a comprehensive analysis on diet and major chronic diseases. Their findings, as well as those of the U.S. surgeon general, the National Cancer Institute, and other highly respected medical groups brought

the forefront the need for Americans to change their eating habits to reduce their risk for chronic disease. Table 1.2 lists diseases with convincing links to a diet low in plant foods. Many of these now common diseases were extremely rare before the twentieth century.

## Trends in U.S. Food Consumption

During the twentieth century, food consumption patterns changed dramatically. Total dietary fat intake increased from 32 percent of calories in 1909 to 43 percent by the end of the century; carbohydrate intake dropped from 57 percent to 46 percent; and protein intake has remained fairly stable at about 11 percent.

**TABLE 1.2 Diseases Highly Associated with a Diet Low in Plant Foods**

Type of Disease	Diseases
Metabolic	Obesity, gout, diabetes, kidney stones, gallstones
Cardiovascular	High blood pressure, strokes, heart disease, varicose veins, deep-vein thrombosis, pulmonary embolism
Colonic	Constipation, appendicitis, diverticulitis, diverticulosis, hemorrhoids, colon cancer, irritable bowel syndrome, ulcerative colitis, Crohn's disease
Other	Dental caries, autoimmune disorders, pernicious anemia, multiple sclerosis, thyrotoxicosis, psoriasis, acne

Compounding these detrimental changes are the individual food choices accounting for the changes. There were significant increases in the consumption of meat, fats and oils, and sugars and sweeteners in conjunction with a decreased consumption of noncitrus fruits, vegetables, and whole-grain products. But the biggest change in the last hundred years of human nutrition was the switch from a diet with a high level of complex carbohydrates, as found naturally occurring in grains and vegetables to a tremendous and dramatic increase in the number of calories consumed in the form of simple sugars. Currently, more than half of the carbohydrates being consumed are in the form of sugars such as sucrose (table sugar) and corn syrup, which are added to foods as sweetening agents. High consumption of refined sugars is linked to many chronic diseases, including obesity, diabetes, heart disease, and cancer.

## The Government and Nutrition Education

Throughout the years, various governmental organizations have published dietary guide-lines, but it has been the recommendations of the U.S. Department of Agriculture (USDA) that have become the most widely known. In 1956, the USDA published "Food for Fitness—A Daily Food Guide." This became popularly known as the Basic Four Food Groups. The Basic Four were:

1. The Milk Group: milk, cheese, ice cream, and other milk-based foods
2. The Meat Group: meat, fish, poultry, and eggs, with dried legumes and nuts as alternatives



3. The Fruits and Vegetables Group

4. The Breads and Cereals Group

One of the major problems with the Basic Four Food Groups model was that it suggested graphically that the food groups were equal in health value. The result was an overconsumption of animal products, dietary fat, and refined carbohydrates and insufficient consumption of fiber-rich foods such as fruits, vegetables, and legumes. This in turn resulted in the diet being responsible for many premature deaths, chronic diseases, and increased health care costs.

**TABLE 1.3 Quantities of Foods Consumed per Capita (pounds per year)**

<b>Foods</b>	<b>1909</b>	<b>1967</b>	<b>1985</b>	<b>1999</b>
Meat, poultry, and fish:				
Beef	54	81	73	66
Pork	62	61	62	50
Poultry	18	46	70	68
Fish	12	15	19	15
<b>Total</b>	<b>146</b>	<b>203</b>	<b>224</b>	<b>199</b>
Eggs	37	40	32	32
Dairy products:				
Whole milk	223	232	122	112
Low-fat milk	64	44	112	101
Cheese	5	15	26	30
Other	47	159	190	210
<b>Total</b>	<b>339</b>	<b>450</b>	<b>450</b>	<b>453</b>
Fats and oils:				
Butter	18	6	5	5
Margarine	1	10	11	8
Shortening	8	16	23	22
Lard and tallow	12	5	4	6
Salad and cooking oil	2	16	25	29
<b>Total</b>	<b>41</b>	<b>53</b>	<b>68</b>	<b>70</b>
Fruits:				
Citrus	17	60	72	79
Noncitrus:				
Fresh	154	73	87	115
Processed	8	35	34	37
<b>Total</b>	<b>179</b>	<b>168</b>	<b>193</b>	<b>231</b>
Vegetables:				
Tomatoes	46	36	38	55
Dark green and yellow	34	25	31	39
Other:				
Fresh	136	87	96	126

Processed	8	35	34	39
<b>Total</b>	224	183	199	259
Potatoes, white:				
Fresh	182	67	55	49
Processed	0	19	28	91
<b>Total</b>	182	86	83	140
Dry beans, peas, nuts, and soybeans	16	16	18	22
Grain products:				
Wheat products	216	116	122	150
Corn	56	15	17	28
Other grains	19	13	26	24
<b>Total</b>	291	144	165	202
Sugar and sweeteners:				
Refined sugar	77	100	63	68
Syrups and other sweeteners	14	22	90	91
<b>Total</b>	91	122	153	159

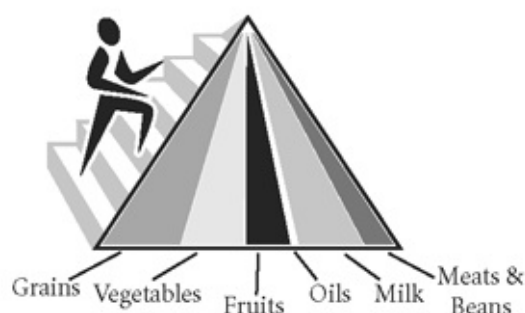
From: Economic Research Service, United States Department of Agriculture, "Food Consumption (per Capita) Data System," [www.ers.usda.gov](http://www.ers.usda.gov).

To replace the Basic Four Food Groups model, various other government and medical organizations developed guidelines of their own, designed either to reduce a specific chronic degenerative disease such as cancer or heart disease or to reduce the risk for all chronic diseases.

In an attempt to create a new model in nutrition education, the USDA published the "Eating Right Pyramid" in 1992. Since it received harsh criticism from numerous experts and other organizations, it was altered visually in 2005 (see page 10).

One of the main criticisms of the Eating Right Pyramid is that it does not stress strongly enough the importance of quality food choices. For example, the USDA thinks foods from the Bread, Cereal, Rice, & Pasta Group should make up the bulk of your diet. Eat six to eleven servings a day from this group, and you are supposedly on your way to a healthier life. What the pyramid doesn't tell you is that you are setting yourself up for insulin resistance, obesity, and adult-onset diabetes if you consistently choose refined products (those containing white flour) rather than whole-grain products in this important category.

**FIGURE 1.1**  
**USDA Eating Right Pyramid**



You see, the Eating Right Pyramid does not take into consideration how quickly blood sugar levels rise after eating a particular type of food—an effect referred to as the food’s glycemic index, or GI. The GI is a numerical scale used to indicate how fast and how high a particular food raises blood glucose (blood sugar) levels. There are two versions of the GI, one based on a standard of comparison that uses glucose scored as 100, while the other is based on white bread. Foods are tested against the results of the selected standard. Foods with a lower glycemic index create a slower rise in blood sugar while foods with a higher glycemic index create a faster rise in blood sugar.

The glycemic indices of some of the foods the pyramid is directing Americans to eat more of, such as breads, cereals, rice, and pasta, can greatly stress blood sugar control, especially if they are derived from refined grains, and are now being linked to an increased risk for obesity, diabetes, and cancer. As a result, while the goal of the Eating Right Pyramid was to improve the health of Americans and, it was hoped, slow down the growing trend for obesity and diet-related disease, the fact is that because of poor individual food choices within the categories, the pyramid has only worsened the problem. In light of this, the big question consumers may want to ask is “Is it appropriate to have the USDA making these food recommendations in the first place?” After all, the USDA serves two somewhat conflicting roles. First, it represents the food industry, and second, it is in charge of educating consumers about nutrition. Many people believe that the pyramid was more weighted toward dairy products, red meat, and grains due to the influence of the dairy, beef, and grain farming and processing industries. In other words, the pyramid was not designed as a way to improve the health of Americans but rather to promote the USDA agenda of supporting multinational food giants.

## **The Optimal Health Food Pyramid**

We do like the concept of graphically illustrating what constitutes a healthful diet, so we are offering our version of the Eating Right Pyramid: the Optimal Health Food Pyramid.

The Optimal Health Food Pyramid incorporates the best aspects from two of the most healthful diets ever studied: the traditional Mediterranean diet and the traditional Asian diet. It also more clearly defines what the healthy components within the categories are and stresses the importance of regular consumption of vegetable oils as part of a healthy diet. Let’s take a closer look at each category.

Foods to avoid entirely:

- Refined white flour products, including breads, pastas, cakes, muffins, and pretzels

- Refined sugar-loaded products, including cereals, candies, and baked goods

- Processed foods packed full of empty calories (sugar and fat) and/or salt, for example, canned soups, theater-style popcorn, and potato chips

- Margarine, butter, and shortening

- Smoked and cured meats, including bacon, hot dogs, smoked luncheon meats, sausages, ham, and Spam

- Meats cooked at extremely high temperatures or cooked to well done

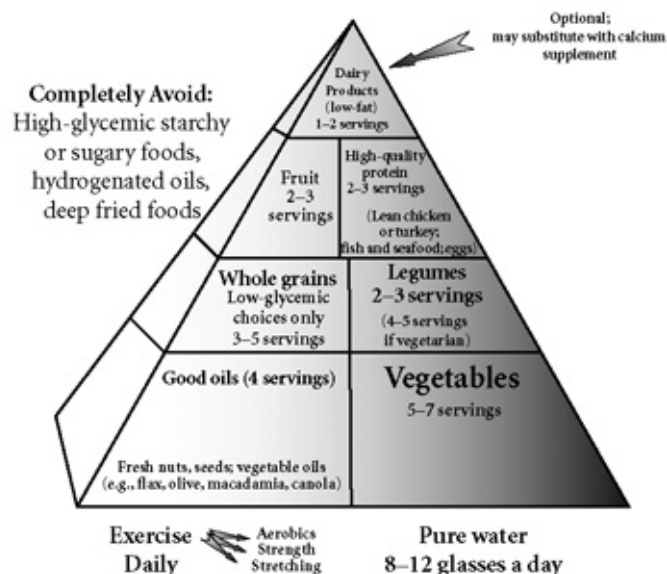
- Heavily sweetened or artificially sweetened soft drinks, flavored drinks, and teas

- Fried foods, including French fries, potato chips, corn chips, and doughnuts

***Vegetables: Five to Seven Servings Daily***

The word “vegetable” comes from the Latin *vegetare*, meaning “to enliven or animate.” Vegetables give us life and should be the main focus of any health-promoting diet. Vegetables provide the broadest range of nutrients of any food class. They are rich sources of vitamins, minerals, carbohydrates, and protein. They also provide high quantities of cancer-fighting phytochemicals. It is very important not to overcook vegetables. Overcooking will not only result in the loss of important nutrients, it will also drain the flavor. Light steaming, baking, and quick stirfrying are the best ways to cook vegetables. And do not boil vegetables unless you are making soup, as much of the nutrients will leach into the water.

**FIGURE 1.2**  
**The Optimal Health Food Pyramid**



**TABLE 1.4 The Optimal Health Food Pyramid Daily Food Group Recommendations**

<b>Foods</b>	<b>Number of Daily Servings (2,000-calorie diet)</b>
Vegetables:	5-7
Green leafy and cruciferous vegetables	2-4
Low-glycemic vegetables	2-3
Starchy vegetables	1-2
Good oils:	4
Nuts and seeds	1
Olive, macadamia, flaxseed, or canola oil	2-3
Whole grains	3-5
Legumes (beans)	2-3 (4-5 if vegetarian)
High-quality protein	2-3

Fruit 2-3

Dairy products 1-2 (optional)

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If fresh vegetables are not available, frozen vegetables are preferred over their canned counterparts. The only exception is tomato products, for example, soup, paste, or sauce, because canned products actually provide more absorbable lycopene than do raw tomatoes.

There are three vegetable categories: green leafy and cruciferous; low-glycemic; and starchy. Eating variety of vegetables from each category daily will help you achieve a “rainbow” assortment and allow you to focus on low-glycemic choices. One vegetable serving equals:

1 cup of raw leafy vegetables (such as lettuce or spinach);

½ cup raw nonleafy, cooked vegetables, or fresh vegetable juice.

#### GREEN LEAFY AND CRUCIFEROUS VEGETABLES: TWO TO FOUR SERVINGS DAILY

Alfalfa sprouts

Beet greens

Bok choy

Broccoli

Brussels sprouts

Cabbage

Cauliflower

Chard Spinach

Chinese cabbage

Collard greens

Dandelion

Endive

Escarole

Kale

Lettuce (the darker, the better)

Mustard greens

Parsley

Turnip greens

Watercress

#### LOW-GLYCEMIC VEGETABLES: TWO TO THREE SERVINGS DAILY

Artichoke (1 medium)

Asparagus

Bean sprouts

Bell peppers

Carrots

Celery

Cucumber

Fennel

Mushrooms

Okra

Onions

Peas (fresh or frozen)

Radishes

Rhubarb

String beans (green or yellow)

Tomatoes, tomato

paste, tomato

sauce, tomato

Summer squash

juice cocktail

juice, vegetable

Zucchini

#### STARCHY VEGETABLES: ONE TO TWO SERVINGS DAILY

Beets

Potatoes

Parsnips

Pumpkin

Rhubarb

Rutabagas

Winter, acorn, or butternut squash

Yams or sweet potatoes

#### ***Good Oils and Fats (Nuts, Seeds, and Vegetable Oils): Four Servings Daily***

Nuts and seeds, especially those providing the monounsaturated and medium-chain fatty acids, contain beneficial oils. Regular consumption of nuts has been shown to improve blood sugar regulation and lower the risk for diabetes, heart disease, obesity, and cancer.

Be sure to focus on raw nuts and seeds, avoiding nuts and seeds roasted in oils or coated with sugar. Nuts and seeds are great to add to salads and sautéed greens. Try to mix it up a bit by eating a variety such as almonds, Brazil nuts, flaxseeds, pecans, pumpkin seeds, sunflower seeds, walnuts, and pumpkin seeds.

Use canola, flaxseed, macadamia, or olive oil to replace the butter, margarine, and shortening that you use for cooking, or try them in your homemade salad dressings. However, you never want to cook with flaxseed oil because it is very rich in omega-3 polyunsaturated fats, which are easily damaged by heat. Coconut and macadamia nut oils are the best cooking oils because of their ability to remain stable at high temperatures, but olive oil is great for sautéed vegetables and canola oil is usually best for baking.

goods because it has the least “nutty” flavor. Avoid using safflower, sunflower, soy, and corn oil because they contain too much omega-6 fatty acid, which feeds into inflammatory pathways in the body.

We suggest that you have at least one serving of nuts or seeds (one serving equals ¼ cup) and 3 tablespoons of the healthy oils per day.

### ***Whole Grains: Three to Five Servings Daily***

It is very important to choose whole-grain products, such as whole-grain breads, whole-grain flour products, and brown rice, over their processed counterparts, including white bread, white flour products, and white rice. Whole grains provide substantially more nutrients and health-promoting properties. They are a major source of complex carbohydrates, dietary fiber, magnesium and other minerals, and B vitamins. The protein content and quality of whole grains is also greater than that of refined grains. Diets rich in whole grains have been shown to be helpful in both the prevention and treatment of diabetes, heart disease, and cancer.

#### **ONE SERVING OF WHOLE GRAINS EQUALS:**

Bread:	
Whole-wheat, rye, or other whole grain	1 slice
Cereals:	
Whole-grain cereal	½ cup
Corn:	
Cooked whole-kernel corn	½ cup
Corn on cob	1 small
Flour and flour products:	
Whole-wheat flour (unbaked)	2½ tablespoons
Whole-grain pasta (cooked)	½ cup
Whole-grains (cooked):	
Amaranth, barley, millet, oats, quinoa, rice, spelt, and wheat	½ cup

### ***Beans (Legumes): Two to Three Servings Daily***

Beans, a mainstay in most diets of the world, are second only to grains in supplying calories and protein to the world’s population. Compared to grains, they supply about the same number of total calories but usually provide two to four times as much protein and are a richer source of the soluble fiber that lowers cholesterol and stabilizes blood sugar levels. While we do not recommend using canned vegetables or fruit, canned beans retain their fiber content and anticancer flavonoids. Plus, given the long preparation time for cooking beans, canned beans are extremely quick and convenient. A serving size for beans is ½ cup.

### ***Fruits: Three to Four Servings Daily***

Fruits are a rich source of many beneficial nutrients, and regular fruit consumption has been shown

offer significant protection against chronic degenerative diseases, including cancer, heart disease, cataracts, diabetes, and stroke. Fruits make excellent between-meals snacks and super desserts. We know it's easy to get into the habit of eating only a few varieties of fruit, so we encourage you to eat a "rainbow" assortment of fruits over the course of a week. Keep in mind that one serving equals one medium fruit or ½ cup of small or cut-up fruit; 4 ounces of 100 percent juice; or ¼ cup dried fruit.

### ***High-Quality Protein: Two to Three Servings Daily***

The detrimental effects of diets high in saturated fat and cholesterol have been stressed for decades. Likewise, the importance of the omega-3 fatty acids in the battle against chronic disease is now well known. Fish consumption, in particular, has shown tremendous protection against heart disease and cancer because of the high content of omega-3 fatty acids in fish. Choosing smaller species of fatty fish, such as wild salmon, mackerel, herring, and sardines, is best because their smaller size and shorter life span translate into a smaller accumulation of mercury, PCBs, and other environmental toxins. Wild-caught fish have less accumulation than farmed fish. Because of concerns about exposure to mercury and other environmental toxins, we recommend that you consume wild fish at least three but no more than six, times per week.

We suggest that you limit your intake of red meat (beef, veal, or lamb) to no more than two servings per month and choose the leanest cuts possible. Do not charbroil or cook the meat until well done, as this increases the formation of cancer-causing compounds. Also, consider some of the alternatives to beef, such as venison, buffalo, elk, rabbit, and ostrich. These emerging beef alternatives are lower in saturated fat and provide higher levels of omega-3 fatty acids.

Chicken and turkey can also provide excellent protein with very little fat, especially if you eat only the white meat (breast) and do not eat the skin. Eggs are also a very good source of high-quality protein and, if produced by free-range hens fed flaxseed meal, are rich in beneficial omega-3 fatty acids.

One serving is about the size of a deck of cards. That translates to roughly 3 to 4 ounces.

### ***Dairy: One to Two Servings Daily (Optional)***

Many people are allergic to milk or lack the enzymes necessary to digest dairy products. Even for people who do tolerate dairy foods, milk consumption should be limited to no more than one or two servings per day. Although dairy foods are rich in protein and calcium, they are also high in fat and calories, lacking the wide nutrient spectrum of foods in the categories previously discussed. Dairy foods can also contain accumulations of agricultural chemicals and hormones if not organically produced. Use organic, nonfat, or reduced-fat dairy products over whole-milk varieties whenever possible. Also, fermented dairy products such as yogurt, kefir, and acidophilus-fortified milk are preferred over milk due to their content of beneficial bacteria, which predigest the dairy proteins and sugars. If you haven't tried some of the soy milk alternatives to cow's milk, they are delicious, especially the flavored varieties, which include vanilla and chocolate.

One serving equals 1 cup of milk, yogurt, or cottage cheese or 1 ounce of cheese. If you do not consume dairy products, we recommend that you take a calcium supplement.

The Optimal Health Food Pyramid and the dietary guidelines given reflect the current scientific answer to the ideal diet for most people. They are based upon a 2,000-calorie-a-day diet. If you need to increase your caloric intake, we recommend getting the extra calories you need by increasing the



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