

Vegetarian Diets

Vegetarian diets are not new. Vegetarianism can be traced from biblical times to present day. Until recently, it was considered as a way of life either because of religious reasons or limited animal foods. But renewed interest in the possible health advantages of a vegetarian diet has now made meatless meals available on airlines, in restaurants, in college dining rooms, and in many homes.

Vegetarian diets, even those that totally exclude all animal products, can meet nutrient needs if well planned. In 1988, The American Dietetic Association took the position that a vegetarian diet can be nutritionally adequate for adults if the following conditions are met:

- Eat a variety of plant foods.
- Know critical nutrients and plan your meals around them.

- **SECTIONS**

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I. What Vegetarianism Really Means

In general, a vegetarian is a person who does not eat any meat, poultry, or fish. They may also omit eggs and dairy products. Most vegetarian diets in the United States are low in total fat, saturated fat, and cholesterol, and high in fiber. Vegetarianism is usually related to a way of life

as well as to diet.

There is no single eating pattern for vegetarians. Different vegetarians have different food practices. Most, however, can generally be grouped into the following categories, based on diet restrictions.

Lacto-ovo-vegetarians eat dairy foods and eggs as well as plant foods. Dairy foods are milk, cheese, cottage cheese, yogurt, sour cream, butter, and ice cream. Plant foods include vegetables, fruits, enriched or whole grain breads and dry peas and beans, lentils, nuts and nut-like seeds, peanuts, and peanut butter. A lacto-ovo-vegetarian does not eat meat, poultry, and fish.

Ovo-vegetarians eat eggs and plant foods. They do not eat dairy foods, meat, poultry, and fish.

Lacto-vegetarians eat dairy foods and plant foods. They do not eat eggs, meat, poultry and fish.

Vegans or strict vegetarians eat only plant foods. All animal foods, including eggs and dairy products, are excluded. The term, vegan, refers to individuals who share a philosophy and lifestyle as well as a restricted diet.

Semi-vegetarians limit the amounts of most animal foods. They eat less meat and more vegetables. Semi-vegetarians are a group comprising one of the major trends in the health movement in the United States.

There are other groups, less commonly known, who follow vegetarian-type diet restrictions. Among these are *pescovegetarians* and *pollovegetarians*. Pescovegetarians eat fish as well as plant foods. Pollovegetarians eat poultry and plant foods. They may or may not eat dairy foods and eggs.

II. Why People Become Vegetarians

Historically, vegetarianism was often brought about by necessity because of a shortage of animal foods. In some parts of the world, this is still true. Present day vegetarians, however, choose their lifestyle for a variety of reasons. Generally, becoming a vegetarian is based on one of the following motivations:

- Religion
- Ecology
- Ethics
- Economics
- Food Preference
- Personal Convictions
- Health

Religion. Trappist Monks, Seventh-day Adventists, and Hindus have a long standing pattern of not eating meat. Some of the new vegetarians are also members of religious cults with diet-related taboos. Even though these cults differ greatly in their practices, they all tend to believe that they can purify their bodies and souls through a religion and lifestyle whose essential element is vegetarianism.

Ecology. Many people question the practice of growing crops to feed livestock. They wonder if there will be enough food, particularly animal protein food, to feed the people of the world.

Ethics. Some people have a philosophy and practice of compassionate living and so are opposed to the act of killing. They find it impossible to sanction the slaughter of animals for food. Thus, they abstain from eating meat, poultry, and fish.

Economics. Diets low in animal proteins are typically less expensive than meat-based diets. Some people think that they cannot afford meat, so meatless meals become part of their dietary patterns.

Food Preference. Most people like animal foods, but a few do not. They may avoid one or more of the animal foods (meat, fish, poultry, eggs, and dairy products) simply because they don't like them.

Personal Convictions. Some people think vegetarianism improves their quality of life and are willing to change their whole lifestyle. A vegetarian diet is the focal point for these believers.

Health. Many scientific studies show that a vegetarian lifestyle may reduce the risk for several chronic diseases and conditions, such as obesity, coronary artery disease (heart disease), hypertension (high blood pressure), diabetes mellitus, colon cancer, and others. Because vegetarian diets are usually lower in fat and cholesterol, vegetarians suffer less from problems associated with heart disease and stroke. Studies have shown that vegetarians have lower blood cholesterol levels than those who eat meat. Vegetarians generally have lower blood pressures and lower rates of diabetes than do nonvegetarians, which may also lower their risk for heart disease.

Vegetarians of the Seventh-day Adventists faith have lower rates of colon cancer than other Americans. This may be related not only to their vegetarianism, which includes a high-fiber intake, but also to their not smoking or drinking alcoholic or caffeine beverages.

Most vegans or strict vegetarians are not obese. They have body weights that are closer to the desirable weight than do nonvegetarians. Low-fat, high-fiber vegetarian diets, along with exercise, decrease the risk of obesity.

One word of caution. Many people believe that they will be healthier if they are vegetarians. Too often, though, they have a false sense of security and mistake vegetarianism as a prevention or cure for disease. They may become less careful about other routine but necessary medical care practices.

Both vegetarian and nonvegetarian diets can be either good or bad for your health. Sound nutrition planning is needed for both diets. Good planning can reduce the risk of certain diseases. Poor planning can increase the risk of certain diseases. This can happen whether you are a vegetarian or not!

III. How To Balance A Vegetarian Diet

A vegetarian diet can be a nutritionally balanced diet. This balance requires a good knowledge of food composition and principles. The diet must have enough calories to maintain a desirable body weight, particularly in children. It must also have a good balance throughout the day of the essential amino acids to equal the complete protein found in animal foods. A vegetarian diet also needs to supply adequate sources of calcium, riboflavin, iron, and vitamins A, D, and B12.

The more restrictive the vegetarian diet, the more difficult it is to get the nutrients you need. It's easier to meet nutritional needs with the lacto- or lacto-ovo-vegetarian approach.

The greatest risk of a vegetarian diet comes from eating only single plant food. The Zen macrobiotic movement, which was popular in the 1960s, is an example. Followers were encouraged to move through ten dietary stages from a diet with a variety of foods to one of only brown rice. This diet led to scurvy, anemia, low levels of blood calcium and blood protein, emaciation, and sometimes death.

Groups With Special Needs

Vegetarians who are growing rapidly (children and pregnant women), nursing a baby, or recovering from an illness need to be especially careful about meal planning. Generally, their nutrient needs can be met on a vegetarian diet that contains dairy products. Vegans or strict vegetarians should be sure that their diets supply enough calories, vitamin B12, and vitamin D.

Breast-fed infants beyond 4 to 6 months should be given vitamin D and iron supplements. This applies to infants of both vegetarians and nonvegetarians who are fed only breast milk.

Children under 2 years who are on restrictive vegetarian diets are also of great concern because of their susceptibility to developing a nutritional deficiency, particularly rickets. They may also have slower growth and development rates. Part of this may be because infants and young children do not completely digest legumes. Thus, they may receive an inadequate intake of dietary protein.

Elements of nutrition that are of major concern for vegetarians are the following:

- Protein
- Vitamin B12
- Calories
- Calcium And Riboflavin
- Iron
- Vitamin D

Protein. Protein is needed for growth, maintenance of body tissues, muscles, blood, skin, nails,

hair, and milk production in nursing mothers. It is also needed for the body to produce enzymes, hormones, and antibodies that regulate body functions. The body needs the 20 different amino acids that act as building blocks to manufacture new protein. Some of the amino acids can be made in the body, but eight can only be supplied by the foods you eat. These eight are called *essential amino acids*. They are tryptophan, methionine, threonine, isoleucine, valine, lysine, leucine, and phenylalanine. Infants also require histidine, a ninth essential amino acid. They are all found in animal foods, which are referred to as high quality or complete proteins.

Plant proteins are referred to as incomplete because they do not contain all eight of the essential amino acids. Grains, nuts, and seeds are deficient in isoleucine and lysine; legumes, in tryptophan and methionine; and vegetables, in isoleucine and methionine.

Essential amino acids can come either from animal foods or plant foods. Animal foods will provide the essential amino acids all at one time. Plant foods can provide the necessary amounts of amino acids when a variety of foods are eaten on a daily basis. For example, a mixture of plant proteins from unrefined grains, legumes, seeds, nuts, and vegetables will "complement" one another throughout a day's intake. In other words, an essential amino acid that is lacking in grains will be present in legumes. A varied diet eaten over the course of the day will ensure that all essential amino acids are present.

An old theory, the combined proteins theory, stated that plant proteins must be combined at every meal to make a complete protein. It was thought that this was the only way the body could use protein. More recent scientific studies indicate, however, that it is not necessary to combine proteins at every meal. As long as a variety of plant proteins are eaten daily, your body will get the mixture it needs.

Whether you are a vegetarian or nonvegetarian, you can get enough quality protein in any of the following ways:

- Use a complete animal protein-meat, poultry, fish and seafood, eggs, and dairy foods.
- Eat a small amount of a complete animal protein and a lot of incomplete vegetable or grain proteins during the day. Some good examples are a peanut butter sandwich with milk, dried beans with ham bits, and macaroni and cheese.
- Use the engineered vegetable protein foods-textured vegetable protein (TVP) and meat analogues. These became available in the 1970s. They can be found in most health food stores and grocery stores in the larger cities.

Textured vegetable protein is usually made from soybeans. It comes in a dried form and must be reconstituted with water. TVP is used mainly in casseroles with other foods. TVP can be fortified to have all the essential nutrients that animal protein contains. It provides many valuable vitamins and minerals but has very little fat and no cholesterol. Meat analogues are canned or frozen meat-like foods derived from vegetable protein, usually soy, gluten, or nuts. They are available in chicken, beef, pork, sausage, and bacon flavors and also as egg substitutes. They vary in many ways so check the package label for information.

- Just in case you want to have a complete protein dish from plant foods, you can combine

complementary incomplete vegetable and grain proteins. Legumes (Group 1) combined with grains, nuts, or seeds (Group 11) provide all the essential amino acids at one time. But remember, variety throughout the day will supply the complete proteins needed by the body.

Group I	+ Group II	= Complete Protein
Dried Beans	Grain	Complementary Combinations
Black	Barley	Baked beans and brown bread
Broad	Buckwheat	Hopping john (black eyed peas and rice)
Kidney	Corn products	Succotash (corn and lima beans)
Lima	Millet	
Mung	Oatmeal	
Navy	Rice	
Soy	Rye	
White	Wheat products	
Dried Peas	Nuts	
Black-eye	Black walnuts	
Chick-peas (garbonzo beans)	Brazil nuts	
Split	Cashews	
	Peanuts	
	Peanut butter	
	Pistachio	
Lentils	Seeds	
	Sesame seeds	
	Sunflower seeds	

Calories. Most vegetarian diets tend to be high in bulk and low in fat. Thus, meeting caloric needs may be difficult, especially for children. Also, with fewer calories, the available protein may be used for energy rather than for the repair of tissues, body cells, and other important functions. You must be careful to eat well-rounded meals to get enough calories and other nutrients.

Iron. Whether you are a vegetarian or not, you might have difficulty getting the recommended amount of iron. Without meat and eggs, women during the child bearing years may not get enough iron. Dark green leafy vegetables, dried fruits, legumes, and whole and enriched grain foods help furnish iron. Iron-fortified cereals also supply additional iron. Supplemental iron is sometimes beneficial.

Vitamin B12. Although the body needs only a small amount of vitamin B12, there is no vitamin B12 in any food grown in the soil. Vitamin B12 is found only in animal sources. In general, vegetarian diets that include dairy products are likely to furnish the body with adequate amounts of vitamin B12.

The risk of developing a vitamin B12 deficiency is a concern for vegans and other types of vegetarians who don't consume adequate amounts of dairy products. These persons should supplement their diets with a source of vitamin B12 such as a cobalamin supplement. They also can select vitamin B12 fortified foods such as fortified breakfast cereals. Further studies on sources of vitamin B12 for vegans are needed.

Calcium And Riboflavin. Unless dairy foods are included in the vegetarian diet, it is difficult to meet the calcium and riboflavin (vitamin B2) needs of the body. Dark green leafy vegetables can be added daily for calcium. Legumes, enriched breads, and whole grains can help replace the riboflavin.

Vitamin D. When egg yolks, liver, and fortified milk are omitted from a diet, very little vitamin D is obtained from foods. For those who do not use vitamin D fortified milk, a vitamin D supplement may be needed. This is especially important for dark-skinned individuals and for infants (4 to 6 months or older) who are fed exclusively breast milk.

Although vitamin D can be formed when the human skin is exposed to sunlight, this will not be a sufficient amount to protect children from rickets in climates where most of the body is covered by clothing.

IV. A Daily Food Guide

If you are a follower of vegetarianism, it is particularly important that you use a wide variety of foods in your diet so that you get a balance of the needed nutrients.

A Pattern For A Daily Food Guide

Food Group	Basic Food Group Servings	Suggested Daily Servings	What Counts As A Serving
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Breads, cereals, and other grain products, whole-grain, enriched

4	6 to 11 (include several servings of whole-grain products)	1 slice of bread 1/2 hamburger bun or English muffin 1 small roll, biscuit, or muffin 1 small piece of cornbread 3 to 4 small or 2 large crackers 1/2 cup of cooked cereal, rice, macaroni, or pasta 1 ounce of ready-to-eat breakfast cereal (1 ounce = 1/2 to 1 cup)
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Fruits and vegetables

4 5 to 9

Fruits (Eat 1 vitamin C food every day such as citrus, melon, berries)

2 2 to 4 1 whole fruit such as a medium apple, banana, or orange

Other fruits

- 1/2 grapefruit
- 1 melon wedge
- 1/2 cup of juice
- 1/2 cup of berries
- 1/2 cup of cooked or canned fruit
- 1/4 cup of dried fruit

Vegetables

2 3 to 5 1/2 cup of cooked vegetables

Dark-green leafy

1/2 cup chopped raw vegetables

Deep-yellow

1 cup of leafy raw vegetables, such as lettuce or spinach

Dry beans and peas (legumes)

Starchy

1 medium-sized potato

Other vegetables

(Include all types regularly; use dark-green leafy vegetables and dry beans and peas several times a week)

Meat, poultry, fish, and alternates (eggs, dry beans and peas, nuts and seeds)

2

2 to 3

2 to 3 ounces of lean cooked meat, poultry, or fish (without bone)

2 for children, teens, and adults

2 eggs

2 to 3 for pregnant and nursing females

1 cup of cooked dry beans or peas

1/4 cup (4 tablespoons) of peanut butter

4 ounces of soy cheese or curd

1 ounce of textured vegetable protein (TVP)

2 to 3 ounces of meat analogues

Milk, cheese, and yogurt

2

2

1 cup of milk

2 servings for adults and children through 10 years

8 ounces of yogurt

3 servings for persons between 11 and 24 years and all pregnant and nursing females

1-1/2 ounces of natural cheese (2 ounces = 2 slices)

2 cups of cottage cheese

1-1/2 cups of ice milk or ice cream

1/2 cup of evaporated milk

1/3 cup of dry skim milk powder

1 cup of soy milk

1/4 cup of dry soy milk powder

4 ounces of soy cheese curd

Fats, sweets, and

Avoid too many fats and sweets. If you drink

alcoholic beverages

alcoholic beverages, do so in moderation

Butter or margarine,
bacon, all nuts (such as
peanuts and pecans),
cream cheese, cream, salt
pork or chitterlings, fats,
sweet drinks, salad
dressings, candy, oils,
jams, syrup, mayonnaise,
jellies, sugar, all other
sweets

V. Summary

A vegetarian diet can meet daily nutrient needs. Those who follow vegetarianism need more knowledge of food composition than the average person. More attention must be given to planning vegetarian meals. The best safeguard is to include a wide variety of foods that provide the necessary nutrients and give close attention to selecting foods containing some critical nutrients. For those who wish to follow a vegetarian diet, the nutritional needs are more easily met if a lacto-ovo-vegetarian or lacto-vegetarian diet is practiced. As a safeguard against marginal nutritional deficiencies, a vitamin mineral supplement may be desirable.

VI. Sources

American Dietetic Association. 1988. Position of The American Dietetic Association: Vegetarian diets. *Journal of The American Dietetic Association* 88:351.

American Dietetic Association. 1988. Position of the American Dietetic Association: Vegetarian diets technical support paper. *Journal of The American Dietetic Association* 88:352-55.

Weiner, Leslie. 1984. Vegetarian diets -- issues and concerns. *Nutrition and the M.D.* 10:1-6.

Weiner, Leslie. 1986. Understanding vegetarianism. *Forecast* 31:45-49.

Weiner, Leslie. 1988. Vegetarianism and health. Special Report. *Nutrition Research Newsletter* 8:123-27.

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