

Vegetarian Diets

Nearly three percent of adult Americans “never eat meat, fish, or fowl” and thus are vegetarians according to a 2006 Vegetarian Resource Group survey. The number of people who report foregoing meat for a vegetarian diet has nearly doubled (3.7 million in 1990 to 6.1 million in 2003).

More than half (57 percent) the population sometimes, often, or always orders a vegetarian entree when eating out. Restaurants have responded to this interest. Eight of 10 restaurants with table service in the United States offer vegetarian entrees.

Appropriately planned vegetarian diets are healthful, nutritionally adequate, and provide health benefits in the prevention and treatment of certain diseases.

Why do people choose a plant-based diet?

Most individuals choose a plant-based diet for one of three reasons: lifestyle, ethics, or health.

Religion and parental or individual preferences are the most common lifestyle reasons. Individuals interested or concerned about the environment, animal welfare, or world hunger issues also are more likely to choose a vegetarian lifestyle for ethical reasons.

What is a vegetarian diet?

Vegetarian diets can take different forms—from least to most restrictive of animal products. Nutrition concerns tend to increase as the diet becomes more restrictive.



	Red meat	Animal Products	Eggs	Dairy
Semi-vegetarian	Excludes	Limited amounts	Limited amounts	Limited amounts
Lacto-ovo-vegetarian	Excludes	Excludes	Allows	Allows
Lacto-vegetarian	Excludes	Excludes	Excludes	Allows
Vegan	Excludes	Excludes	Excludes	Excludes

Disease prevention, particularly cardiovascular disease and cancer, has recently become a more popular reason for choosing a vegetarian lifestyle. Others believe that following a vegetarian diet helps with weight management and gives them increased energy.

Is there a relationship between vegetarian diets and chronic diseases?

Studies have consistently found that a generous intake of plant-based foods, especially fruits and vegetables, is associated with optimal health. However, there is no evidence that meat is harmful unless it consistently replaces other nutritious food options in the diet. The following examples show how vegetarian choices are related to several chronic health conditions.

Cancer—Research suggests that vegetarian diets more closely match the dietary guidelines issued by the American Cancer Institute, particularly in regard to fat and fiber intake. Higher fiber intake may decrease the risk for certain types of cancer, such as colon, breast, and prostate.

Cardiovascular Disease—

Vegetarian diets are associated with lower rates of heart disease. Blood cholesterol levels tend to be lower due to a lower intake of cholesterol and saturated fat and higher intake of fiber.

Diabetes—Vegetarian diets can meet guidelines for the treatment of diabetes and some research suggests that plant-based diets can reduce the risk for type 2 diabetes.

Diabetics also may benefit from the high magnesium and chromium in a vegetarian diet; these micronutrients play a role in carbohydrate metabolism.

Hypertension—Many studies have shown that vegetarians have lower systolic and diastolic pressures. Vegetarian diets tend to be higher in potassium. This mineral is known to counteract the effect of sodium.

Obesity—Vegetarian diets are associated with a lower Body Mass Index (BMI). In addition, vegetarian diets that are high in fiber-rich foods, such as grains, beans, fruits, and vegetables, are associated with lower percent body fat.

Osteoporosis—Many studies have shown that high intake of animal protein increases excretion of calcium. Despite lower animal protein content, however, data suggest that a vegetarian diet does not necessarily protect against osteoporosis.

What are the nutrition concerns with following a vegetarian diet?

Without proper planning, vegetarians can be at risk for some nutrient deficiencies.

Vitamin B-12 is necessary for the synthesis of red blood cells, the maintenance of the nervous system, and growth and development in children. Deficiency can cause anemia.

Why is vitamin B-12 a concern for vegetarians?

Vitamin B-12 is only in animals and animal-derived foods, such as meat, milk, and eggs. Vegans are at risk for misdiagnosed anemia because their diets are typically high in folic acid, which masks anemia caused by vitamin B-12 deficiency.

What can vegetarians do?

Vegetarians, particularly vegans, should consume foods fortified with B-12, such as yeast extracts, veggieburger mixes, textured vegetable protein, soy milks, and fortified breakfast cereals.

Iron and zinc are two minerals that often are not consumed in recommended amounts because their best source is lean meat, particularly beef. However, the incidence of iron deficiency anemia is similar between vegetarians and nonvegetarians.

Iron is part of hemoglobin, a protein that carries oxygen in the blood. Iron deficiency anemia is a worldwide health problem and is especially common in young women and children.

Why is iron a concern for vegetarians?

The recommended intake for iron assumes that 75 percent of iron intake is from heme iron sources (meat, fish, and poultry). Ten to 30 percent of heme iron is absorbed, compared to only two to 10 percent of non-heme iron. Non-heme iron is found mainly in fruits, vegetables, grains, and other non-animal sources.

What can vegetarians do?

Because they eat mostly the non-heme form of iron, vegetarians should consume twice the recommended amount or the following amounts.

Men*	
14-18 yr	22 mg/day
19+ yr	16 mg/day
Women*	
14-18 yr	30 mg/day
19-50 yr	36 mg/day
50+ yr	16 mg/day

Vegetarian food sources of iron include green leafy vegetables, such as spinach; sun-dried tomatoes; soybeans; lentils; tofu; nuts and seeds; and beans.

Zinc is present in every part of the body. It helps with healing wounds and is involved in many metabolic pathways.

Why is zinc a concern for vegetarians?

Animal protein enhances zinc absorption; thus, zinc absorption is lower for vegetarians.

What can vegetarians do?

As with iron, vegetarians should consume twice the recommended amount of zinc.

Men*	
14+ yr	22 mg/day
Women*	
14-18 yr	18 mg/day
19+ yr	16 mg/day

Vegetarian foods high in zinc include dairy products, beans and lentils, yeast, nuts, seeds, and whole grain or fortified cereals.

*For other ages, see the individual dietary reference intakes (DRI) for the elements iron and zinc at www.nal.usda.gov/fnic/etext/000105.html.

What are common misconceptions about vegetarian diets?

Protein—Despite the fact that animal products contain the highest quality of protein, vegetarians can meet protein needs. In fact, vegetarians with a varied diet are less likely to consume excess protein, a common problem for those eating the typical western diet.

Why is protein a concern for vegetarians?

High quality protein sources tend to be found in animal foods and include meat, poultry, fish, eggs, milk, cheese, and yogurt. Protein from plant sources tends to be a lower quality protein, commonly referred to as an incomplete protein because it is missing one or more of the eight essential amino acids, or a disproportionate amount is present. The concept of “complementary proteins” evolved in the early 1970s. Complementary proteins involves pairing specific plant proteins to provide an amino acid balance similar to the high quality proteins found in animal foods. For example, grains are low in lysine but high in methionine while soybeans and other legumes are high in lysine but low in methionine. Combining these two foods creates a complementary protein with an ideal amino acid balance. Complementary proteins do not need to be consumed at the same meal as originally thought but rather during the same day.

What can vegetarians do?

The best advice is to eat a wide variety of plant food sources throughout the day. Sources of protein for vegetarians include beans, nuts, nut butters, peas, and soy products (tofu, tempeh, veggie burgers).



Vitamin A—Vegetarians tend to meet their vitamin A requirements through the consumption of beta carotene, which is a precursor to vitamin A or provitamin A. Although beta carotene is absorbed less efficiently, vegetarians have adequate levels of beta carotene in their blood so that vitamin A deficiency is not a concern. The active form of vitamin A is found only in animal foods.

Vitamin D—Few foods are naturally high in vitamin D. Milk is fortified with vitamin D; therefore vegetarians need to make sure they

are getting this vitamin from other sources. Some breakfast cereals and soy beverages are fortified with vitamin D. In addition, at least 15 minutes of sun exposure a day can produce sufficient amounts of vitamin D.

Calcium—Calcium requirements can easily be met by eating two to three servings of milk, yogurt, and cheese products. If dairy products are not consumed, calcium needs can be met through plant foods, such as broccoli, seeds, nuts, legumes, tofu processed with calcium, and other calcium-fortified foods and beverages.

Advice for those following vegetarian diets**

Excluding any type of food from a diet means the remaining food choices must be made carefully.

Eat enough calories

- Many vegetarian meals are low in fat and high in fiber—making it easy to feel “full” before eating enough calories to support growth and proper brain function.
- Including foods like nuts, peanut butter, and cheese help provide calories as well as nutrients.

Make grain dishes the centerpiece

- Make vegetarian dishes more interesting by choosing a variety of breads, like focaccia, bagels, tortillas, and pita bread.
- Add cooked grains to foods, such as stuffed vegetables, soups, stews, or stir-fry.
- Choose fortified breakfast cereals for added nutrients, such as iron, folate, vitamin B-12, and zinc.

Eat those veggies

- Aim for at least four servings of vegetables each day.
- Choose vegetables that are good sources of calcium and iron, such as dark green leafy veggies (kale, mustard, collard, or turnip greens), bok choy, and broccoli.
- Choose vegetables that are high in vitamin C, such as broccoli, tomatoes, and green pepper.

Eat fruit regularly

- Include at least three servings of fruit each day, perhaps as desserts or snacks.
- Choose fruits high in vitamin C, such as citrus fruits, melons, and berries.
- Look for calcium-fortified juices.

Save room for legumes

- Plan two to three servings of legumes and other meat alternatives every day.

Include more soy products

- Soy milk can be a good substitute for cow’s milk, but be sure it is fortified with calcium.
- Experiment with soybean products, such as tofu, tempeh, textured soy protein, and soy milk in your meal planning.
- Lacto-vegetarians (who eat dairy but no other animal products) should include two to four servings of milk, yogurt, or cheese every day

Go easy on high fat foods

- Foods derived from plants are not necessarily low in fat.
- Watch out for high fat salad dressings, cooking oils, and spreads.

Want to know more about vegetarianism?

Check these Web sites:

American Dietetic Association—
www.eatright.org

Iowa State University Extension Nutrition—
www.extension.iastate.edu/healthnutrition/

Publications—
www.extension.iastate.edu/store

United States Department of Agriculture (USDA) National Agricultural Library Food and Nutrition Information Center—
<http://fnic.nal.usda.gov/>
(Click on “See Topics A-Z)

United States Department of Health and Human Services—
www.healthfinder.gov/scripts/SearchContext.asp?topic=897&super=112&Branch=5

Vegetarian Nutrition Resource List (August 2007)—
www.nal.usda.gov/fnic/pubs/bibs/gen/vegetarian07.pdf

Vegetarian Resource Group—
www.vrg.org/

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