

# today's dietitian

The Magazine For Nutrition Professionals

Advertising Job Bank Today's CPE Gift Shop Buyers' Guide Subscribe Contact

Home

Cover Story

Current Issue

E-Newsletter

Article Archive

Editorial Calendar

Datebook

Writers' Guidelines

Orgs/Links

Reprints

Search

## The Virtues of Vegan Nutrition ... and the Risks

By Dina Aronson, MS, RD, LDN

*Today's Dietitian*  
Vol. 8 No. 2 P. 46

*Think beyond the food groups when helping your vegan clients plan their meals—their dietary needs may be more complex than you realize.*

How do you define vegan?

**vegan (VEE-gun):**

- n. Person who consumes only foods of plant origin.
- n. Person who does not consume meat, poultry, fish, eggs, dairy products, or honey and shuns clothing and shoes made of wool, fur, leather, suede, and silk.
- adj. Term describing the diet and/or lifestyle of a vegan.

The way we think of veganism and how we approach our vegan clients strongly influence both our effectiveness as nutrition professionals and the way we are perceived by our vegan clients. Focusing on what vegans do eat, rather than wondering how they get along without what they omit, is crucial to the success of vegan nutrition counseling. Also imperative is adherence to the American Dietetic Association's (ADA) Code of Ethics, which states that we are to counsel our clients with objectivity and respect of their individual needs and values.

While these definitions are precise, in reality, vegans exist on a continuum. For example, some vegans eat honey; other vegans consume a raw diet; some are vegan in the home but will eat cheese on occasion outside the home. Classifying vegetarians based on extent of dietary stringency isn't as important as working with their needs and preferences to optimize their diets and provide suitable advice and guidelines.

Vegan diets have been steadily increasing in popularity over the last two decades. A recent Zogby poll estimates that approximately 1.7 million people in the United States consider themselves vegan. Because this is such a significant dietary change for most people, nutrition professionals are being called on more than ever before to assist clients in planning a health-supporting, well-balanced vegan diet. If a client came to you asking for a pure vegan meal plan, would you know where to begin? Would you know how to ensure that all nutrient needs are met? Would you believe the client's dietary choices are bountiful or too limited? Would you be sure that the foods you recommend are truly vegan?

### Vegan Meal Planning in a Nutshell

For those of us unfamiliar with planning vegan meals, it may be tempting to create a "regular" meal plan and substitute tofu for chicken, soy meat for beef, soy milk for milk, etc. This is not suitable; there is much more to vegan nutrition than "veganizing" a typical American diet. In fact, this approach—starting with a typical American eating pattern and swapping out animal products for the closest-tasting plant counterpart—will not ensure a well-balanced vegan diet.

Dietitians are taught to think of foods in groups and use this as a nutrition education model with clients. These groups, which have been standardized with tools such as MyPyramid and the Dietary Guidelines for Americans, are appropriate for most mixed diets. However, this food group approach becomes troublesome



...that allows you to reach more clients and work with them online or offline!



Start generating revenue NOW!

Call us toll free  
1-877-Nutrihand

The EASIEST Way to Earn Continuing Professional Education Units!

today's dietitian  
CPE Program

for a vegan diet for many reasons.

First, the entire dairy group is off limits in a vegan diet. So, if we eliminate that group, how do we make up for the calories and nutrients provided by dairy foods? Second, the protein group lists vegetarian options, such as nuts, seeds, and beans, but these foods vary greatly in their calorie and fat content, so how do we adjust when figuring out how many servings of fats to recommend? And since meat, dairy, and eggs are omitted, is it still appropriate to recommend the same number of servings from the protein group?

A Vegetarian Food Guide was published in the June 2003 issue of the Journal of the American Dietetic Association as a companion to the ADA Position Paper, which appeared in the same issue. This Food Guide is appropriate for all types of vegetarians, including vegans. The guide uses a food group approach and is similar to those used for other diets. The groups (and recommended servings) are as follows:

- Grains: six servings
- Vegetables: four servings
- Fruits: two servings
- Legumes, nuts, and other protein-rich foods: five servings
- Fats: two servings
- Calcium-rich foods: eight servings (taken from other groups)

The challenge of calcium foods appearing in more than one group is overcome by recommending a minimum of eight servings of calcium-rich foods daily (10 for adolescents); each serving also counts toward choices from another food group. A “serving” of calcium-rich food provides 100 to 150 milligrams of calcium. So, for example, a cup of cooked kale (providing 150 to 180 milligrams of calcium) counts as a serving from the calcium group as well as two servings from the vegetable group. A cup of fortified soy milk (providing approximately 350 milligrams of calcium) counts as three servings from the calcium group as well as two servings from the protein group. Using this approach ensures that calcium-rich selections are made within the five basic food groups.

According to this guide, fats include foods such as oil, margarine, and mayonnaise. But what about high-fat foods such as nuts and seeds? According to the guide, servings of nuts and seeds may be used in place of servings from the fats group. Thus, seven servings from the protein group (including at least two high-fat choices) is appropriate if the client chooses not to consume concentrated fats such as oils.

### **Which Foods Get the Vegan Green Light?**

When in doubt about whether a food is vegan, especially a packaged food, always consider the original sources of all the ingredients. If everything comes from a plant, the food is probably, but not always, vegan. Unfortunately, it's not always clear whether the food was processed with animal matter. Also, some vegans will consume foods that may have come into contact with animal products, while others will not. For example, some refined sugar is processed using cow bone char. And since sugar ends up in thousands of products, it is difficult to determine which products contain sugar refined with bone char and which do not. Another common example is wine—many wines are refined using egg whites. Some vegans will consume the wine (the end product is vegan) and others will not (nonvegan ingredients were part of the production). Thus, be aware of and sensitive to the particular preferences of the vegan client when making recommendations.

Fortunately, the vast majority of “health foods” (those sold at Whole Foods Market and other health food markets) contain pure ingredients of obvious origin. Many food companies use the word “vegan” on their labels so people don't have to question the origin of the ingredients. And, it turns out that ingredients of dubious origin (is stearyoxytrimethylsilane vegan?) aren't usually components of health-supporting foods.

Also keep in mind that many vitamin supplements contain animal products (eg, gelatin capsules) or are derived from animal products (eg, vitamin D3 [cholecalciferol] from sheep lanolin—D2 [(ergocalciferol] is usually vegan). So when recommending a supplement, be sure to find one that is vegan (the label will usually say so).

Vegan foods may seem exotic but don't have to be. Breakfast cereal with soy milk, pasta with tomato sauce, chili with beans, pizza with vegetables (soy cheese optional), burritos with beans and rice, peanut butter and jelly sandwiches, and veggie or tofu burgers are all familiar and nutritious vegan foods.

### **The Real Benefits of a Vegan Diet**

According to the ADA's position, "Appropriately planned vegetarian diets are healthful, nutritionally adequate, and provide health benefits in the prevention and treatment of certain diseases." Indeed, hundreds of studies have compared health outcomes of vegetarians and vegans with those of nonvegans and nonvegetarians. In general, what we have learned from these studies is that vegetarians and vegans have a lower-than-average risk of the following:

- obesity;
- cardiovascular disease;
- hypercholesterolemia;
- hypertension;
- type 2 diabetes;
- cancer;
- diverticular disease; and
- gallstones.

The Oxford Vegetarian Study is the largest study ever conducted on vegetarian diets. It analyzes diets and outcomes of 6,000 vegetarians and vegans compared with 5,000 control subjects in the United Kingdom. Still ongoing, the study thus far has reported many favorable outcomes for vegetarians, including lower low-density lipoprotein concentrations and lower mortality rates from various conditions. More studies are needed to examine rates of specific cancers and other diseases.

Even with the data we have, keep in mind the limitations of extrapolating the information to individuals. A vegan diet can be health supporting or a nutritional disaster. The "vegan" label does not automatically make a diet or a food healthy. Refined flour dough deep fried in shortening and then coated in sugar is still vegan, and if this is the staple of choice in a person's diet, the diet will not be protective. On the other hand, a wide variety of beans, whole grains, vegetables, fruits, soy products, nuts, and seeds offers significant disease risk-reducing benefits.

We urge all our clients to consume more plant foods to protect against chronic disease. The vegan diet represents the epitome of plant food consumption. We should urge our vegan clients, as we do our nonvegan clients, to consume more whole foods such as beans, nuts, seeds, fruits, and vegetables and fewer refined grains, sweets, and empty calories such as soda. Recommendations should be customized to meet clients' needs for achieving healthy weight, meal satisfaction, and overall wellness. It should also address special populations such as athletes, lactating women, and those with a genetic disorder.

Many people turn to vegan eating plans for therapeutic reasons (eg, to treat arthritis or migraines). Even

when the literature does not suggest a proven benefit, there is no reason to discourage a vegan diet, as long as it is nutritionally adequate.

### **The Possible Risks**

#### **Vitamin B12**

Unsupplemented vegan diets do not provide sufficient amounts of vitamin B12. Fortunately, many vegan foods have B12 added: fortified soy milks, breakfast cereals, whole grain snack bars, nondairy drink mixes, and more. Some vegans prefer a “clean” diet of purely unprocessed foods; these individuals should be advised to take a vitamin B12 supplement.

Vitamin B12 status among vegetarians is, on average, lower than that of nonvegetarians because this vitamin is commonly consumed through animal products. Even in the absence of a vitamin B12 deficiency, suboptimal intakes have been associated with increased levels of homocysteine, an independent risk factor for heart disease. B12 status may be assessed using urinary methylmalonic acid (the most reliable method) or serum tests.

Vitamin B12 is produced by bacteria, fungi, and algae. Neither plants nor animals can synthesize the vitamin; thus, it is not found naturally in plant products (there may be trace amounts on plant foods contaminated with B12-producing microorganisms). Animal foods contain B12 because significant amounts of B12-producing bacteria are found naturally in animals. Some foods, such as sea vegetables, contain B12 analogs, which are not active and thus not good sources. The vitamin B12 added to foods and supplements is synthetically produced in a laboratory from bacteria, not animal sources. See Table 1 [on page 50] for some foods that are typically B12-fortified (encourage your clients to read labels).

The Recommended Dietary Allowance for vitamin B12 is based on the assumption that people consume small amounts of B12 from foods over the course of the day. If a person uses a supplement as the main B12 source, needs are probably higher because of the limited capacity of B12 absorption at any one time. Most multivitamins contain 10 micrograms of B12, which is a good daily goal from supplements. Another option is to take one 2,000-microgram dose per week: the percentage absorbed from large doses is considerably decreased. The client may prefer one method over the other; either is acceptable. It is important to note that, as they age, some people (vegetarian or not) are unable to absorb B12 from foods or supplements. Such individuals need to take regular B12 injections.

#### **Omega-3 Fatty Acids**

Although the richest food source of omega-3 fatty acids (n3) is a plant food (flaxseeds and flaxseed oil), the primary source in the North American diet is fish. Studies have shown that vegetarians have considerably lower n3 status than nonvegetarians. Poor n3 status has been associated with chronic diseases such as cardiovascular disease and cancer, inflammatory disorders such as arthritis, and neurological problems such as depression. In fact, studies over the past few years have shown promise in treatment of such conditions with n3 supplements.

Vegetarian diets are not only low in n3 fats but are also typically high in the omega-6 fatty acid (n6) fats. Indeed, vegetarians consume more n6 fats than nonvegetarians. Vegetarians' typical n6:n3 ratio is higher than recommended for optimal health. Vegetarian nutrition and fatty acid expert Brenda Davis, RD, recommends that vegetarians strive for an n6:n3 ratio of 2:1 to 4:1.

In addition to striving for optimal fatty acid status by including more vegetarian food sources of n3 (see table 1) vegetarians may also opt to take supplements (such as a docosahexaenoic acid [DHA] supplement derived from algae). According to Davis, vegetarians can also maximize essential fatty acid status by maximizing overall nutrition; minimizing intake of trans fatty acids; using whole foods such as nuts, olives, and avocados for healthy sources of fat; choosing monounsaturated oils such as olive and canola over n6-rich oils such as safflower, sunflower, and grape seed; and avoiding alcohol in excess. The sample vegan meal plan provides more than 2.5 grams of n3 fats.

Given the importance of essential fatty acids for brain and neurological development prenatally and during infancy, pregnant vegetarians are encouraged to optimize their intake of n3 fats via foods and/or a DHA

supplement (200 to 300 milligrams per day). The habit should continue during lactation to ensure milk quality. Alternatively, the infant may be given a commercial formula with added DHA and arachidonic acid.

### **Vitamin D**

Sun exposure is the greatest source of vitamin D. However, in northern latitudes (including states at the latitude of Massachusetts and northward), people get enough direct exposure only in warm-weather months (the recommendation is 10 minutes per day). Add to this the recommendation to protect skin from the sun with sunblock, umbrellas, and hats, and many people fail to get enough vitamin D from the sun. Thus, they must depend on food and supplements. Vitamin D deficiency is a public health problem for everyone, not only vegetarians, and recent evidence suggests that deficiency is more widespread than once thought. Because the two main dietary sources of this essential nutrient are fish and fortified milk, vegetarians need to ensure they're getting a reliable source of vitamin D.

Vitamin D status is inversely related to many adverse health conditions, including weakened muscles, cancer, and certain autoimmune diseases. Sufficient levels of vitamin D are needed for calcium metabolism and bone retention. We must help our vegetarian clients optimize their vitamin D intake by using supplements and/or fortified foods. Vitamin D2 is derived from plants and nonanimal sources, while vitamin D3 is derived from animals; so D2 is the form that vegetarians will accept. (Food and supplement labels usually indicate the form of vitamin D used.)

Fortified soy milk contains equivalent amounts of vitamin D to those added to cow's milk. Thus, fortified soy milk is one of the easiest ways to ensure a regular intake for vegans. Fortified rice milk is also a source and can be used by those with soy allergies. Note that the upper limit (from food and supplements) is 25 micrograms for babies and 50 micrograms for children and adults. To prevent toxicity, intakes should be carefully assessed and monitored. A supplement, plus a quart of fortified cow's milk or soy milk, fortified cereal, and a nutrition bar may put a person's intake above the limit for the day.

Breast milk is generally a poor source of vitamin D, and lactating women with suboptimal vitamin D status will have very low levels in their milk. Thus, breast-fed infants should be given a daily vitamin D supplement (available in drops). Formula-fed infants receive the required amount in the formula.

Please see Table 1 for recommended nutrient intakes and food sources.

## **Protein, Calcium, and Iron for Vegans**

### **Protein**

It was once widely believed that vegetarians were at risk for a protein deficiency and that it was necessary to combine different types of plant sources at the same meal. Now this is known to be unnecessary, as amino acids are stored in the body and drawn upon when needed. Protein deficiency among well-fed vegans is rarely a concern. A protein deficiency may be seen when there is also a calorie deficiency, but, in such a case, many nutrients would be a concern. The other possible scenario of insufficient protein intake would be if a vegan gets most of his or her calories from refined junk food such as sugary drinks, pastries, and chips.

Humans require approximately 10% to 15% of calories from protein. Most vegetables (except for root vegetables) and beans contain more than 20% of calories from protein; most grains, nuts, and seeds contain 10% to 17%; and fruits contain 1% to 10%. So a variety of these foods, in adequate amounts, will easily meet a vegan's protein needs. In addition, plant sources of protein are high in fiber, free of cholesterol, low in saturated fat, and rich in antioxidants, calcium, zinc, and other nutrients.

### **Calcium**

Dairy products are not necessary for human health or adequate calcium intake. For approximately 70% of the world's adult population, lactase production drops off after the age of weaning; lactose intolerance is a normal adult condition. People around the globe derive adequate amounts of dietary calcium from a wide assortment of plant foods.

Calcium is present in many plant and fortified foods. The best sources are low-oxalate greens (with calcium

bioavailabilities surpassing that of cow's milk), seeds, nuts, beans, figs, blackstrap molasses, calcium-set tofu, tempeh, and fortified soy milk, cereals, bars, and fruit juices.

Though we may be led to believe that humans require dairy products for optimal bone health, this is untrue and the reality is much more complex. There is more to bone health than just calcium intake. Genetic predisposition to strong bones, sufficient intakes of other vitamins and minerals, limited intakes of sodium and caffeine, moderate intakes of protein, regular physical activity, not smoking, and other lifestyle factors positively affect bone health.

Vegans should be advised to achieve the adequate intake for calcium; they can easily meet needs by consuming plenty of calcium-rich whole plant foods, calcium-fortified foods, and/or taking a calcium supplement. The good news about calcium-rich plant foods—such as seeds, greens, and beans—is that they also supply a wealth of other protective vitamins, minerals, antioxidants, phytochemicals, and fiber. The sample vegan meal plan below provides more than 1,300 milligrams of calcium.

### **Iron**

Most dietitians are surprised to learn that vegans consume more iron than ovo-lacto vegetarians, who in turn consume more iron than nonvegetarians. Furthermore, there is no more iron-deficiency anemia seen in vegans than in nonvegans. Vegans do have lower iron stores than nonvegetarians, but levels are in the normal range.

Iron deficiency is, nonetheless, a real issue—one we may see in vegan clients. Thus, we must make the same recommendations we would make for nonvegans: eat more iron-rich foods and take an iron supplement if indicated. The best plant sources of iron are legumes, spinach, potatoes, tofu, fortified cereals, grain products made with iron-fortified flour, dried fruits, nuts, seeds, some whole grains such as quinoa, and blackstrap molasses. The sample meal plan provides 31 milligrams of iron.

Nonheme iron, the kind found in plant foods, is not as readily absorbed as heme iron (from animal foods). Plus, other factors that affect absorption may negatively impact iron status. Phytates (in legumes and grains), tannins (in tea and coffee), flavonoids (in red wine), eggs, dairy foods, fiber, and zinc supplements may interfere with iron absorption. However, competing factors that enhance iron absorption (vitamin C and other organic acids) also play a role, making it difficult to assess the degree to which absorption may be compromised. In general, discouraging large intakes of inhibitors (such as tea and coffee) and encouraging enhancers (such as vitamin C) is recommended, along with encouraging consumption of iron-rich foods.

### **Veganism: A Masked Eating Disorder?**

Sometimes people with underlying eating disorder will use vegetarianism as a guise. This does not mean vegans are at risk for eating disorders; it means veganism is a convenient way to eliminate many foods. The vegan who exhibits some questionable resistance, such as complete elimination of all fats or the refusal to consume sufficient calories, should be approached with special care. In such cases, the dietitian should refer the client to a team that specializes in eating disorders.

### **Sample Vegan Meal Plan**

- Breakfast: 1 cup oatmeal with 1 tablespoon ground flaxseeds, 1 cup sliced strawberries, and 1 cup fortified soy milk (Silk Enhanced)
- Lunch: 2 cups bean soup, large salad with tahini dressing, large whole wheat roll, almond cookie
- Snack: 4 ounces baby carrots with 1/3 cup hummus
- Dinner: Calcium-set tofu (4 ounces) and mixed vegetable stir fry (1 cup broccoli florets, 1 cup sliced red peppers in 1 teaspoon canola oil) with 1 cup brown rice
- Snack: 1 orange and 1 ounce walnuts

### **Nutrient Analysis:**

Calories: 2,012

Protein: 87 grams

Fat: 75 grams

Carbohydrates: 286 grams

Fiber: 65 grams  
Omega-3 fatty acids: 2,570 milligrams  
Vitamin B12: 3 micrograms  
Iron: 31 milligrams  
Calcium: 1,312 milligrams

— *Dina Aronson, MS, RD, LDN, is a nutrition consultant, freelance writer, and speaker specializing in dietetics-related technology and vegetarian nutrition.*

### **Reliable Sources of Information on Vegetarian Nutrition**

- A Dietitian's Guide to Vegetarian Diets: Issues and Applications, 2nd Edition by Virginia Messina, MPH, RD; Reed Mangels, PhD, RD; and Mark Messina, PhD, MS; Jones and Bartlett, 2004.
- Becoming Vegan: The Complete Guide to Adopting a Healthy Plant-Based Diet by Brenda Davis, RD, and Vesanto Melina, MS, RD; Book Publishing Company, 2000.
- Raising Vegetarian Children by Jo Stepaniak, MEd, and Vesanto Melina, MS, RD; McGraw-Hill, 2002.
- The New Becoming Vegetarian: The Essential Guide to a Healthy Vegetarian Diet by Vesanto Melina, MS, RD, and Brenda Davis, RD; Book Publishing Company, 2003.
- ADA's Position Paper on Vegetarian Diets (J Am Diet Assoc. 2003;103(6):748-765), available online at [www.eatright.org/cps/rde/xchg/ada/hs.xsl/advocacy\\_933\\_ENU\\_HTML.htm](http://www.eatright.org/cps/rde/xchg/ada/hs.xsl/advocacy_933_ENU_HTML.htm).
- Loma Linda University Nutrition & Health Letter: [www.llu.edu/llu/vegetarian](http://www.llu.edu/llu/vegetarian)
- A new food guide for North American vegetarians (J Am Diet Assoc. 2003;103(6):771-775), available online at [www.eatright.org/cps/rde/xchg/ada/hs.xsl/governance\\_5105\\_ENU\\_HTML.htm](http://www.eatright.org/cps/rde/xchg/ada/hs.xsl/governance_5105_ENU_HTML.htm).
- Vegetarian Nutrition Dietetic Practice Group of the American Dietetic Association: [www.vegetariannutrition.net](http://www.vegetariannutrition.net)
- Vegetarian Resource Group: [www.vrg.org](http://www.vrg.org) (all material on vegetarian nutrition written by Reed Mangels, PhD, RD, and Suzanne Havala Hobbs, DrPH, MS, RD)

Copyright © 2007 Great Valley Publishing Co., Inc.  
3801 Schuylkill Rd • Spring City, PA 19475  
Publishers of *Today's Dietitian*  
All rights reserved.