

What to Know About Vegan Diets



Over the past decade recommendations for following a plant-based diet have been made by medical and health professionals including the United States Department of Agriculture (USDA) and the Academy of Nutrition and Dietetics (AND). As a result, more people are adopting a lifestyle that incorporates a vegetarian diet. Child care providers should have a good understanding of what a vegetarian diet looks like, nutrients of concern for children on a vegetarian diet, and how to prepare well-balanced, nutritious meals for children while following various vegetarian guidelines.

When a person says they're on a vegetarian diet, what does that mean? Three categories of vegetarian diets are primarily followed – none of which include meat, poultry or fish (1).

1. **Lacto-ovo-vegetarians** eat plant foods and include eggs and dairy products in their diet.
2. **Lacto-vegetarians** eat plant foods and dairy products but do not eat eggs.
3. **Vegans** eat plant foods only and do not eat eggs, dairy products, or honey.

When a child's diet is restricted their needs for optimal growth and development are more difficult to meet. Children can be well nourished on any of the three types of vegetarian diets. However, achieving nutritional balance becomes even more difficult when dairy products and eggs are eliminated from the diet, as in the case of vegan diets (1). In order to ensure vegan children receive all essential nutrients (in adequate amounts) during their critical growing years, child care providers need to manage their special dietary needs.

In the following pages the focus will be on vegan diets. Topics of discussion include essential nutrients of note, dietary recommended allowances (DRIs) of macro- and micronutrients, and nutritious plant-based food sources for vegans. In addition, a list of vegan resources and two credited vegan recipes are included for you and your children to try. Providing plant-based foods at every meal promotes healthy eating habits that benefit children and adults alike. With a little knowledge and practice, feeding vegan children will become much simpler.

Vegan Nutrition



Following a vegan diet during childhood can help form healthy eating habits for life. Including wholegrains, vegetables and fruits in a child's daily meal plan – while limiting foods high in saturated fat, sugar, and salt – is important for achieving good health. However, certain nutrients are a little harder to come by and require special attention to ensure children are receiving all essential nutrients in adequate amounts to achieve optimal health and growth.

Calorie Needs and Growth

Children experience times of rapid growth and/or increased physical activity. Eating extra calories is necessary for maintaining growth and providing fuel when physically active. Vegan diets are often high in fiber and low in fat, which can cause children to feel full before they eat enough calories needed for growing and playing. Be on the lookout for sudden changes in growth and activity levels in vegan children, as some changes might indicate inadequate calorie intake. Include nutrient and calorie-dense foods in vegan children's diets and provide nutritious snacks to help ensure proper calorie intake. Examples of foods high in nutrients and calories include avocados, nuts and nut butters, seeds and seed butters, dried fruit, full-fat soybean products*, bean spreads, and fruit juices (1).

Preventing Nutrient Deficiencies

For one reason or another, certain nutrients are harder to come by in vegan diets. Therefore, child care providers need to make sure children on vegan diets are receiving a well-balanced, nourishing diet despite their food restrictions. Nutrients of concern in vegan diets include protein, vitamin B-12, iron, calcium, vitamin D, and zinc. Vegan diets can be a part of a healthy lifestyle, but foods that are omitted must be balanced out. Incorporating plant sources of specific nutrients is one of the best ways to compensate for possible nutrient deficiencies associated with vegan diets. Fortified foods* and multivitamins are additional ways to obtain missing nutrients needed for a well-balanced vegan diet (1). The following paragraphs address each nutrient of concern.



Protein

As long as calorie intake is adequate and a variety of foods are eaten, meeting a child's protein needs while following a vegan diet is fairly easy to do. Most vegetables, legumes, whole grains, nuts, and seeds contain some amount of protein. Amino acids are the building blocks of protein. Our bodies cannot make 9 of the 20 required amino acids. Therefore, amino acids that our body cannot make are considered *essential* and must be obtained through the food we eat. Animal-sourced protein is considered to be 'complete protein', meaning it contains all essential amino acids in optimal amounts. Most plant-based protein sources are considered to be 'incomplete proteins', because they do not contain all 9 essential amino acids in optimal amounts. However, a few plant sources are considered to be 'complete protein' sources and are great options for vegans. Quinoa, amaranth, soybeans, buckwheat, hempseed, and chia seed are all 'complete protein' sources that vegans can eat and are reimbursement-approved. 'Complete proteins' can be made in the body when a person eats different sources of 'incomplete proteins'. For example, both rice and beans are missing certain amino acids and are, therefore, 'incomplete protein' sources. When eaten together or during separate meals in a single day, the body will pool the amino acids available in rice and beans to make a 'complete protein'. Additional plant sources of 'incomplete protein' that are reimbursement-approved include beans, lentils, peas, whole-grains, nuts/nut butters, and seeds/seed butters (3).

* "Soybean milk may be served as a milk substitute because of medical or other special dietary needs. See FNS instruction 783 -2 Rev.2. Nondairy beverages offered as fluid milk substitutes must be nutritionally equivalent to milk and provide specific levels of calcium, protein, vitamins A and D, magnesium, phosphorus, potassium, riboflavin, and vitamin B-12. Use of this product must be requested by parents or supported by a statement from a recognized medical authority that includes recommended alternate foods" (2).

Vitamin B-12

Vitamin B-12, also called cobalamin, is needed by the body for proper synthesis of DNA and formation of red blood cells. A long-term deficiency in vitamin B-12 can lead to pernicious anemia (4). The recommended dietary allowances (RDA) for vitamin B-12 in children is not very high. However, vitamin B-12 is mostly found in animal products, making vitamin B-12 a nutrient of concern for vegans. Plant-based sources that are often fortified with vitamin B-12 and are reimbursement-approved include soybean milk* and cereals (E.g., multi-grain Cheerios, 3). Other vitamin B-12-fortified plant sources (but are not reimbursable) include: nutritional yeast, meat analogues, and vitamin B-12 supplements that do not contain animal products (2). Vitamin B-12 is easily destroyed by heat during cooking, especially microwave cooking. Prepare foods containing vitamin B-12 without heat or use the stove-top or oven for cooking instead of the microwave (4).



Iron



Providing enough dietary iron to children is very important, especially during times of growth. A deficiency in iron can lead to iron-deficiency anemia. There are two types of iron: heme and nonheme. Heme iron is found only in foods of animal origin such as meat, poultry, and fish. Nonheme iron is found in both animal-derived and plant-derived foods. The main difference between heme and nonheme iron is how well the body absorbs it. Heme iron is well absorbed from food, whereas nonheme iron is absorbed less efficiently. Reimbursement-approved plant sources of nonheme iron include dried/canned beans, dark greens, nuts, dried fruit, potatoes, and enriched or fortified grain products. Blackstrap molasses is another iron-rich source. Foods containing phytates, certain vegetable proteins, calcium, and polyphenols reduce iron absorption during digestion (see insert for examples of foods containing these iron-binders). Vitamin C enhances absorption of both heme and nonheme iron. Serving sources of vitamin C at each meal will help vegans absorb plant-based nonheme iron (see insert for examples of foods containing vitamin C, 4).

Calcium

Vegan diets exclude dairy products, a major source of calcium for growing children. Adequate calcium intake, especially in childhood, is needed for strong bone and teeth formation. Corn tortillas, almonds, sesame seeds, mustard and turnip greens, bok choy, kale, parsley, watercress, and broccoli all contain calcium that is easy to absorb. However, not all dark green vegetables are good sources of calcium, because of the binders they contain which inhibit calcium absorption. For example, spinach and Swiss chard appear to be good sources of calcium, but the binders they contain dramatically reduce the amount of calcium the body can absorb during digestion (see insert for a list of factors that enhance or inhibit calcium absorption). In addition to naturally occurring plant sources of calcium, vegans can obtain calcium via fortified foods, such as calcium-fortified orange juice, calcium-fortified soybean milk*, and calcium-fortified cereals. Calcium supplements are another option (4).



Vitamin D

Vitamin D is a fat-soluble vitamin needed by the body to promote calcium absorption and bone growth, along with many other important bodily functions. There are two forms of vitamin D: ergocalciferol (D2) and cholecalciferol (D3). Vitamin D3 is the more potent and bioavailable form of vitamin D compared to D2. Vitamin D3 can be made by the body when exposed to sunlight (4). Despite



our ability to produce vitamin D3 via sun exposure, approximately 40-75% of people are vitamin D-deficient. A variety of factors interfere with the body's ability to convert sunlight into vitamin D3: season, time of day, altitude, air pollution, cloud cover, sunscreen, body parts exposed/unexposed, color, and age. Some researchers suggest sun exposure 2-3 times per week, 5-30 minutes per day between 10 AM and 3 PM, might be sufficient exposure for the body to produce adequate vitamin D3 (5). Many dermatologists,

however, recommend limiting sun exposure due to increased risk of skin cancer (6). Fatty fish and fish liver oils are the only natural food sources of vitamin D3. A lot of people turn to vitamin D-fortified milk, or in the case of vegans, vitamin D-fortified non-dairy milks (E.g., soybean milk*). Other reimbursement-approved vitamin D- fortified food options include orange juice and ready-to-eat cereals (5). Plants exposed to ultraviolet light produce small amounts of vitamin D2. Another option for vegans is taking daily vitamin D supplements. Since research suggests that vitamin D2 is not as potent as vitamin D3, look for vegan supplements made with D3 (7).

Zinc

Zinc is a cofactor for over 100 enzymes, meaning it supports protein in the body so that protein can do its various jobs properly. Zinc is involved in cell membrane stabilization, defends against free-radical attacks, and assists in immune function, growth and development. In addition, zinc is needed to produce the active form of vitamin A and is essential for taste perception, wound healing, and many other bodily functions. Due to their rapid growth, young children are at higher risk of zinc deficiency. Foods of animal origin contain higher amounts of zinc compared to plant sources. In addition, fiber and phytates found in cereals and grains bind zinc and limit its absorption. Therefore, vegan diets, which exclude zinc-rich meats and include high amounts of legumes, breads and other whole-grain foods high in fiber and phytates, make zinc a nutrient of particular concern. The best plant sources of zinc are whole-grain products, fortified cereals, beans, and nuts (4).



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Tips for Feeding Vegan Children



As mentioned earlier, children have high energy needs required for growth and playing, as well as limited dietary capacity. Vegan diets are often high in fiber and low in fat. High fiber intake makes children feel full quicker and reduces their appetite. Low dietary fat limits the amount of calories vegan children receive, as well as impacts their visual and brain development.

Feeding vegan children adequate amounts of food containing all essential nutrients for optimal development can be tricky. With a little knowledge and planning, feeding children a nutritious vegan diet can become less daunting. The following are tips for feeding vegan children and meeting their dietary needs.

- Thicken home-prepared cereals, like oatmeal, to a porridge-like consistency instead of a thin gruel. Adding a little oil, such as olive oil, to a bowl of cooked grains increases the calorie content and makes the meal more palatable as it cools.
- Both omega-3 and omega-6 fatty acids are needed for good health. The general consensus among scientists is for people to consume a 1:1 or 2:1 ratio of omega-6s to omega-3s. Many foods in an average person's diet, however, are higher in omega-6s compared to omega-3s that the ratio is often imbalanced. Opt for foods higher in omega-3 fatty acids versus omega-6 fatty acids to promote brain and heart health while restoring a better omega-3 to omega-6 ratio in the diet (8).
 - Omega-3 sources include: flaxseed, walnuts, soybeans, wheat germ, oils (canola, flaxseed, walnut).
 - Omega-6 sources include: oils (corn, sunflower, safflower, soybean), pine nuts, walnuts, sunflower seeds, soybeans.
- Provide children with 5-30 minutes of playtime in the sunshine before applying sunblock. Sunshine is a good source of vitamin D3 and can be an important source for vegan children. Vitamin D supplements might be needed, especially with vegan children. As vitamin D3 is superior to vitamin D2, opt for vegan sources of vitamin D3 (cholecalciferol) supplements if needed.
- Incorporate fortified non-dairy beverages (E.g., soybean milk*) into meals that are nutritionally equivalent to milk and provide specific levels of calcium, protein, vitamins A and D, magnesium, phosphorus, potassium, riboflavin, and vitamin B-12.
- Include servings of green vegetables in children's diet every day as a source of iron, calcium, and antioxidants. If your child isn't keen on eating his/her greens, try blending them into a tomato-based sauce or into juices or smoothies.
- To help ensure your vegan child eats adequate calories, do not allow him/her to fill up on liquids before a meal.
- Increase the amount of calories provided during meals by using high-calorie, high-fat spreads (E.g., avocado, nut/seed butters).
- Lentils and beans are a great source of protein. Increase children's ability to digest them by removing their skins after cooking— Simply strain lentils and beans through a sieve.
- Add blackstrap molasses to dishes to increase intakes of iron, calcium, and magnesium.

Dietary Recommended Allowances (DRIs)

AGE (yr.)	Protein RDA (g/day)
1 - 3	13.0 (males/females)
4 - 8	19.0 (males/females)
9 - 13	34.0 (males/females)
14 - 18	52.0 (males) 46.0 (females)

AGE (yr.)	Vitamin B-12 RDA (mg/day)
1 - 3	0.9 (males/females)
4 - 8	1.2 (males/females)
9 - 13	1.8 (males/females)
14 - 18	2.4 (males/females)

AGE (yr.)	Vitamin D AI* (mg/day)
1 - 18	5 (males/females)
* Adequate Intakes (AI)	

AGE (yr.)	Zinc RDA (mg/day)
1 - 3	3 (males/females)
4 - 8	5 (males/females)
9 - 13	8 (males/females)
14 - 18	11 (males) 9 (females)

AGE (yr.)	Iron RDA (mg/day)
1 - 3	7.0 (males/females)
4 - 8	10.0 (males/females)
9 - 13	8.0 (males/females)
14 - 18	11.0 (males) 15.0 (females)

AGE (yr.)	Calcium AI (mg/day)
1 - 3	500 (males/females)
4 - 8	800 (males/females)
9 - 13	1300 (males/females)
14 - 18	1300 (males/females)

Factors that *enhance* iron absorption (4)

- Heme iron (found in foods of animal origin, not appropriate for vegans)
- Vitamin C (found in strawberries, citrus fruits, broccoli, tomatoes, etc.)

Factors that *inhibit* iron absorption (4)

- Phytates (found in legumes, whole grains, rice)
- Vegetable protein (found in legumes, nuts)
- Calcium (found in fortified non-dairy milks*)
- Polyphenols (E.g. Tannic acid found in tea, coffee, grain products, oregano)

Factors that *enhance* calcium absorption (4)

- Stomach acid
- Vitamin D
- Lactose (found in dairy, not appropriate for vegans)

Factors that *inhibit* calcium absorption (4)

- Lack of stomach acid
- Vitamin D deficiency
- High phosphorus intake
- Phytates (found in seeds, nuts, grains)
- Oxalates (found in beet greens, spinach, Swiss chard)

VEGAN RESOURCES FOR CHILD CARE PROVIDERS

Vegan diets are becoming more popular. As a result, a wide variety of resources are available to child care providers. Finding new ideas, recipes, and information concerning vegan diets and children can make what seems to be a huge obstacle a little less daunting. The following is a short list of resources appropriate for child care providers who feed vegan children. Have fun exploring the many ways of providing healthy, tasty meals to children on diets restricted to plant-based foods.

Internet Resources:

1. Academy of Nutrition and Dietetics (AND, www.eatright.org)
2. United States Department of Agriculture (USDA, www.usda.gov)
3. The Vegan Society (www.vegansociety.com)
4. The Vegetarian Resource Group (VRG, www.vrg.org)
5. American Academy of Pediatrics' HealthyChildren.org (www.healthychildren.org)
6. People For The Ethical Treatment of Animals (PETA, www.peta.org)
7. Jamie Oliver's Vegan Recipes (www.jamieoliver.com)
8. Vegetarian Times (www.vegetariantimes.com)



Family-Friendly Vegan Cookbooks:

1. *Straight From the Earth*, by Myra Goodman & Marea Goodman
2. *The Joy of Vegan Baking*, by Colleen Patrick-Goudreau
3. *Vegan Ice Cream*, by Jeff Rogers
4. *The Tropical Vegan Kitchen*, by Donna Klein
5. *Fresh and Fast Vegan: Quick, delicious, and creative recipes to nourish aspiring and devoted vegans*, by Amanda Grant



Tasty, Nutritious, Vegan Recipes

Vegan Burritos

Ingredients:

2 c. red potatoes, skin intact, diced ¼"
2 c. red bell pepper strips, sliced 2" long
¼ c. water
½ tsp. sea salt
1 c. canned black beans, rinsed and drained
1 c. frozen corn, thawed
½ c. fresh cilantro, chopped
1 c. smooth salsa, mild
1 tsp. ground cumin
¼ tsp. chili powder (optional)
10 whole-wheat tortillas

Avocado Cumin Sauce:

1 large avocado
½ tsp. ground cumin
2 Tbsp. mild salsa
1 ½ Tbsp. water
¼ tsp. sea salt

Directions:

1. Preheat oven to 400 degrees F. Line a sheet pan with parchment paper and spread the chopped potatoes out evenly. Season with salt and pepper. Bake for 20 minutes until tender and starting to brown.
2. While potatoes are cooking, slice the bell peppers into strips and chop the cilantro. Have the beans, corn, salsa, and spices at the ready.
3. Prepare the avocado cumin cream by adding all ingredients into a food processor and blend until smooth; for faster results, use an immersion blender. Add more water if you want a thinner sauce.
4. When potatoes are 10 minutes away from being done, heat ¼ cup water in a large skillet on medium heat. Add bell peppers and cook until tender and most of the water has evaporated. Add the black beans, corn, salsa, cumin and chili powder (if using). Stir well to coat everything. Cook 5-10 minutes until everything is heated through and the sauce has thickened.
5. Add cooked veggie mixture to the tortillas, sprinkle with cilantro, and drizzle the avocado cream inside. Wrap the tortillas and serve while hot!

Recipe serves ten 3-5 year olds (Lunch/Supper)

Creditable Serving Amount of Each Food Group:

Milk: 0.00
Vegetable: 1.25
Grains: 2.00
Meat/Meat Alternate: 0.25

Chilled Bean Salad

Ingredients:

2 can (30 oz. total) black beans, rinsed and drained
2 c. frozen corn, thawed
⅓ c. red onion, chopped
1 c. zucchini, diced
3 garlic cloves, minced
½ c. balsamic vinegar
¼ c. olive oil
1 tsp. chili powder
½ tsp. honey
Juice of 1 lime, fresh squeezed

Directions:

1. In a large bowl combine the beans, corn, cilantro, bell pepper, onion, zucchini, and garlic.
2. In a small bowl whisk the vinegar, oil, chili powder, honey, and lime juice. Pour over the bean mixture; gently toss to coat. Cover and refrigerate for at least 1 hour before serving.

Recipe serves ten 3-5 year olds (Lunch/Supper)

Creditable Serving Amount of Each Food Group:

Milk: 0.00
Vegetable: 1.25
Grains: 0.00
Meat/Meat Alternate: 1.00



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