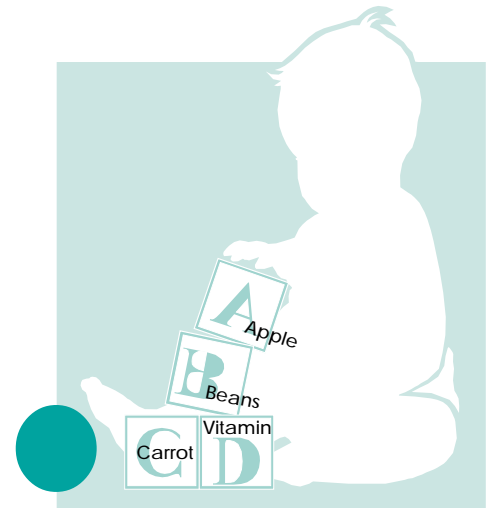


Raising Vegetarian Children



Although people have been eating vegetarian foods throughout recorded history, interest in this eating style has risen dramatically in recent years. Today's cookbooks, magazines, and restaurant menus are full of recipes for vegetarian dishes created with nutritious and flavorful food combinations. Examples include:

- Black bean chili
- Zucchini-carrot bread
- Vegetable-pasta salad
- Bruschetta with tomatoes and basil
- Cheesy spinach lasagna
- Bean burritos
- Roasted portobello mushroom over polenta
- Split pea soup with rye bread
- Vegetable-cheese pizza
- Moroccan lentil and chickpea soup
- Eggplant parmesan

As vegetarian diets have become more popular, many parents wonder if kids can safely follow a vegetarian diet and still get all of the nutrients they need for growing up healthy and strong. This fact sheet describes ways to design healthful vegetarian diets for infants, children, and teenagers, based on their respective nutritional needs.

What Is a Vegetarian?

For some people, being a vegetarian is a way of eating. For others, it's a whole lifestyle. And some people simply enjoy the flavors and varieties of food in vegetarian meals—on a regular basis or as an occasional switch from their everyday fare. *So just what does it mean to be a vegetarian?*

A vegetarian is a person who does not eat any foods of animal origin. Vegetarians have different dietary practices, but most of the practices can be categorized into one of the following groups:

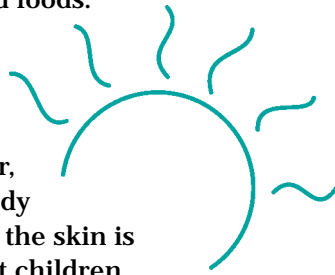
- Lacto-ovo-vegetarians eat plant foods, milk, milk products, and eggs, but they avoid flesh foods (meat, poultry, and fish).
- Lacto-vegetarians eat plant foods, milk, and milk products, but they avoid eggs and flesh foods.
- Ovo-vegetarians eat plant foods and eggs, but they avoid milk, milk products, and flesh foods.
- Vegans eat plant foods only.

The majority of pediatric experts say that a lacto-ovo vegetarian diet is a healthy choice for most children, including infants. Feeding young children a diet filled with a variety of fruits, vegetables, and grains helps them learn healthy eating habits that may last a lifetime. In addition, a vegetarian diet may help reduce the risk of developing medical conditions such as obesity, heart disease, high blood pressure, and diabetes.

Planning a Healthful Vegetarian Diet

Well-planned vegan and lacto-ovo-vegetarian diets are appropriate for all stages of the life cycle, including pregnancy and lactation. Appropriately planned vegan and lacto-ovo-vegetarian diets will satisfy the nutrient needs of infants, children, and adolescents while promoting normal growth. But there are risks in limiting all animal products. For one thing, designing a healthful vegetarian diet for children takes more planning and nutritional knowledge than designing a diet featuring meat and other animal products. And although vegetarian children generally can get enough nutrients from their food choices, some nutrients may require special attention:

- **Calories.** A growing child may not be able to eat enough plant foods to get the energy needed for proper growth and normal activity, especially in early childhood.
- **Protein,** needed for building muscle and other body tissue, must be obtained by balancing foods, such as grains and legumes, to get the range of amino acids that make up high-quality, or complete, proteins.
- **Vitamin B₁₂,** which can be absorbed only from animal products, must be gotten from supplements or fortified foods.
- **Vitamin D,** found in egg yolks, fish and fish liver oil, and fortified milk and butter, may be lacking. The body makes vitamin D when the skin is exposed to sunlight, but children in northern climates may have difficulty getting enough sun.
- **Calcium,** whose best sources are milk and milk products, must be obtained from plant sources or supplements.
- **Zinc,** whose best sources are beef, liver, and yogurt, may be lacking.



The Vegetarian Infant

Breast-feeding is the best source of nutrition for the vegetarian infant, as it is for all infants. Breast-fed vegan infants should receive a source of vitamin B₁₂ if the mother's diet is not supplemented and a source of vitamin D if sun exposure is inadequate. Commercial cow's milk and soy-based formulas are satisfactory alternatives to breast milk. Soy milk, rice milk, and homemade formulas should not be used to replace breast milk or commercial infant formula during the first year. These foods do not contain the proper ratio of protein, fat, and carbohydrate, nor do they have enough of many vitamins and minerals to be used as a significant part of the diet during the first year. An infant feeding guide is shown in table 1.



Cereal

Serve only whole-grain beans and cereals once your baby graduates from beginner baby cereals. These provide more than their refined counterparts of the vitamins, minerals, and protein ordinarily obtained from animal products.

Vegetarian infants should be fed the same variety of vegetables, fruits, and cereals as other infants, but alternate foods can be added to replace meat, fish, poultry, and dairy products. Use tofu and other soy-based products to provide added protein when your baby moves on to solids. Near the end of the first year, brown rice cooked fairly soft, mashed chickpeas or other legumes (beans and peas), and high-protein or whole-grain pastas can also be added as sources of protein.



Supplements

Guidelines for giving iron and vitamin D supplements and for introducing solid foods are the same for both vegetarian and non-vegetarian infants. When it is time for protein-rich foods to be introduced, vegetarian infants can have pureed tofu, cottage cheese, and legumes (pureed and strained).

Table 1: Feeding Schedule for Vegetarian Babies Ages 4–12 Months.

FOOD	4–6 MONTHS *	6–8 MONTHS	7–10 MONTHS	10–12 MONTHS
Milk	Breast milk or soy formula	Breast milk or soy formula	Breast milk or soy formula	Breast milk or soy formula (24–32 oz)
Cereal and bread	Begin with iron-fortified baby cereal mixed with milk.	Continue baby cereal; begin other breads and cereals.	Baby cereal; other breads and cereals	Baby cereal until 18 mos. Total of 4 servings (1 svg = 1/4 slice bread or 2–4 Tbsp cereal).
Fruits and vegetables	None	Begin with juice from cup: 2–4 oz vitamin C source. Begin mashed vegetables and fruits.	4 oz juice; pieces of soft or cooked fruits and vegetables	Table food, 4 svgs per day (1 svg = 1 Tbsp fruit and vegetable, 4 oz juice)
Legumes and nut butters	None	None	Gradually introduce tofu. Begin casseroles, pureed legumes, soy cheese, and soy yogurt.	2 svgs daily, each about 1/2 oz. Nut butters should not be started before 1 year.

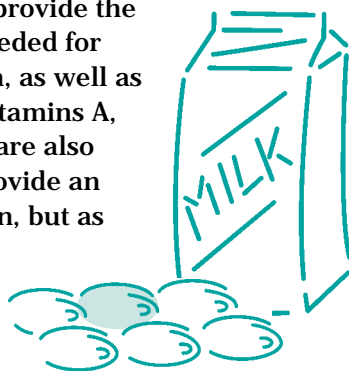
*Overlap of ages occurs because of varying rate of development.

Adapted from The Pediatric Nutrition Practice Group. The American Dietetic Association. Pediatric Manual of Clinical Dietetics. Chicago, IL: The American Dietetic Association, 1998; 49–68.

Calcium

Once you wean your baby, be sure that she gets adequate calcium in her diet to promote strong, healthy bones and teeth. Good vegetarian sources include tofu prepared with calcium; broccoli and other green leafy vegetables; and finely ground almonds and pine nuts. Since these foods are not an infant's standard favorites, you may have to add a calcium supplement to the diet if you prefer not to give her milk.

Vegetarians who use milk products have a much easier time ensuring good nutrition for their babies and children than those who do not. Dairy products provide the protein and calcium needed for growth and good health, as well as adequate amounts of vitamins A, B₁₂, and D. If egg yolks are also part of the diet, they provide an additional source of iron, but as for most children, iron supplementation may still be a good idea.



Children and Vegetarianism

A vegetarian diet for children must be chosen carefully. If well-planned, a vegetarian eating style can fuel children's rapid growth and provide for their relatively high nutrient needs. Table 2 shows a diet plan that has been used successfully for vegetarian children.

Adequate calories are important to support children's growth and development. Making sure that a young child gets enough calories can be challenging, as vegetarian diets are often high in fiber and low in fat. This filling effect may prevent a child from taking in enough calories to sustain adequate growth. Parents can prevent this problem by offering frequent small meals and snacks, nutrient-dense foods such as peanut butter, avocado, and dried fruit, and some lower-fiber foods along with higher-fiber foods. For example, substitute some fruit juice for whole pieces of fruit.

Along with adequate calories, providing good sources of protein helps to ensure normal growth and development. Milk, cheese, and eggs are excellent sources for the lacto-ovo-vegetarian. Vegans will want to consume legumes (lentils, peas, beans) and grains (whole wheat, rice, barley, corn), seeds, and nuts. All vegan children should have a reliable source of vitamin B₁₂, and if sun exposure is limited, vitamin D supplements or fortified foods should be used. Emphasize foods rich in calcium, iron, and zinc.



Table 2. Diet Plans for Vegetarian Children.

Toddlers and Preschoolers (Ages 1–4)

FOOD GROUP	NUMBER OF SERVINGS
Grains	6 or more (a serving is 1/2 to 1 slice of bread or 1/4 to 1/2 cup cooked cereal or grain or pasta or 1/2 to 1 cup ready-to-eat cereal)
Legumes, nuts, seeds	2 or more (a serving is 1/4 to 1/2 cup cooked beans, tofu, tempeh, or textured vegetable protein; or 1 1/2 to 3 oz of meat analogue; or 1 to 2 Tbsp nuts, seeds, or nut or seed butter)
Fortified soymilk, etc.	3 (a serving is 1 cup fortified soymilk, infant formula, or breast milk)
Vegetables	2 or more (a serving is 1/4 to 1/2 cup cooked or 1/2 to 1 cup raw vegetables)
Fruits	3 or more (a serving is 1/4 to 1/2 cup canned fruit or 1/2 cup juice, or 1 medium fruit)
Fats	3 (1 tsp margarine or oil)

School-Age Children

FOOD GROUP	NUMBER OF SERVINGS
Grains	6 or more for 4–6 yr olds; 7 or more for 7–12 yr olds (a serving is 1 slice of bread or 1/2 cup cooked cereal or grain or pasta or 3/4 to 1 cup ready-to-eat cereal)
Legumes, nuts, seeds	1 1/2 to 3 for 4–6 yr olds; 3 or more for 7–12 yr olds (a serving is 1/2 cup cooked beans, tofu, tempeh, or textured vegetable protein; or 3 oz of meat analogue; or 2 Tbsp nuts, seeds, or nut or seed butter)
Fortified soymilk, etc.	3 (a serving is 1 cup fortified soymilk)
Vegetables	1 1/2 to 3 for 4–6 yr olds; 4 or more for 7–12 yr olds (a serving is 1/2 cup cooked or 1 cup raw vegetables)
Fruits	2 to 4 for 4–6 yr olds; 3 or more for 7–12 yr olds (a serving is 1/2 cup canned fruit or 3/4 cup juice, or 1 medium fruit)
Fats	4 for 4–6 yr olds; 5 for 7–12 yr olds (a serving is 1 tsp margarine or oil)

Adapted from Messina, M., and Messina, V., *The Dietitian's Guide to Vegetarian Diets*. Gaithersburg, MD: Aspen Publishers, Inc, 1996. And from Fact Sheets on Vegetarian Toddlers and Preschoolers, *Vegetarian Nutrition for School-Aged Children*. Vegetarian Nutrition Dietetic Practice Group, 1996.

Notes

- Serving sizes vary depending on child's age.
- The calorie content of the diet can be increased by using greater amounts of nut butters, dried fruits, soy products, and other high-calorie foods.
- A regular source of vitamin B₁₂ like vitamin B₁₂-fortified soymilk, vitamin B₁₂-fortified breakfast cereal, vitamin B₁₂-fortified meat analogue, or vitamin B₁₂ supplements should be used.
- Adequate exposure to sunlight—20 to 30 minutes of summer sun on hands and face two to three times a week—is recommended to promote vitamin D synthesis. If sunlight exposure is limited, dietary or supplemental vitamin D should be used.

Teenage Vegetarians

Teenage vegetarians have the same nutritional needs as any other teenager. The years between 13 and 19 are times of especially rapid growth and change, and nutritional needs are high. The teenage vegetarian should follow the same recommendations as for all vegetarians, namely, to eat a wide variety of foods, including fruits, vegetables, plenty of leafy greens, whole grain products, nuts, seeds, and legumes.

Protein, calcium, iron, and vitamin B₁₂ are nutrients teenage vegetarians should be aware of.



Protein

The recommendation for protein is 0.5 gram per pound for 11- to 14-year-olds and 0.4 gram per pound for 15- to 18-year-olds. Those who exercise strenuously (marathon runners, for example) may need slightly more protein. A 16-year-old who weighs 120 pounds needs about 44 grams of protein daily. In terms of food, 1 cup of cooked dried beans has 14 grams of protein, a cup of soy milk or soy yogurt has 8–10 grams, 4 ounces of tofu has 9 grams, a tablespoon of peanut butter or peanuts has 4 grams, and a slice of bread or 1 cup of grain has about 3 grams.

Fruits, fats, and alcohol do not provide much protein, so a diet based only on these foods is probably too low in protein. Vegetarians with varied diets containing

vegetables,
beans,
grains,
nuts,
and

seeds rarely have difficulty getting enough protein as long as their diet contains enough energy (calories) to support growth. There is no need to take protein supplements. No health benefits are gained by having a very high protein diet; a high-protein diet will not help build muscles.



Calcium

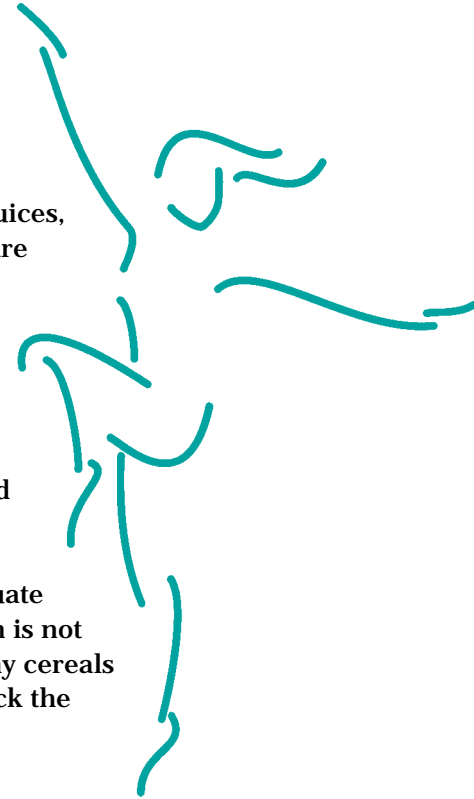
During adolescence, calcium is important for building bones. Bone density is determined in adolescence and young adulthood, so a teenager's diet should include three or more good sources of calcium every day. Cow's milk and dairy products contain calcium, but there are other good sources: tofu processed with calcium sulfate; green leafy vegetables including collard greens, mustard greens, and kale; tahini (sesame butter); fortified soymilk; and fortified orange juice.

Iron and Vitamin B₁₂

By eating a varied diet, vegetarians can meet their iron needs while avoiding the excess fat and cholesterol found in

red meats such as beef or pork. To increase the amount of iron absorbed from a meal, eat a food containing vitamin C as part of the meal. Citrus fruits and juices, tomatoes, and broccoli are all good sources of vitamin C. Foods high in iron include broccoli, raisins, watermelon, spinach, black-eyed peas, blackstrap molasses, chickpeas, and pinto beans.

An adolescent also needs to consume adequate vitamin B₁₂. This vitamin is not found in plants, but many cereals are fortified with it (check the label).



Meal Planning for the Whole Family

A variety of approaches to menu planning can provide vegetarians with adequate nutrition. Use the food guide pyramid for vegetarian meal planning to help guide you (see back page). The following guidelines also can help you plan a healthful diet for your family.

- Choose a variety of foods, including whole grains, vegetables, fruits, legumes, nuts, seeds and, if desired, dairy products and eggs.
- Choose whole, unrefined foods often and minimize your intake of highly sweetened, fatty, and heavily refined foods.
- Choose a variety of fruits and vegetables.

- If you eat animal foods such as dairy products and eggs, choose the lower-fat versions.
- Vegans should include a regular source of vitamin B₁₂ in their diets along with a source of vitamin D if sun exposure is limited.
- Infants that are breast-fed only should have supplements of iron after the age of 4–6 months and, if sun exposure is limited, a source of vitamin D. Breast-fed vegan infants should have vitamin B₁₂ supplements if the mother's diet is not fortified.
- Do not restrict dietary fat in children younger than 2 years old. For older children, include some foods higher in unsaturated fats (nuts, seeds, nut and seed butters, avocado, and vegetable oils) to help meet nutrient and energy needs.



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Below are suggested daily servings from each of the food groups in the vegetarian pyramid.

FOOD GROUP	SUGGESTED DAILY SERVINGS	SERVING SIZES
Grains	6-11 servings	1 slice bread; 1/2 cup cooked cereal, rice, or pasta; 1/2 bagel or English muffin; 6" tortilla
Vegetables	3+ servings	1/2 cup cooked, chopped, or raw vegetables; 1 cup raw leafy vegetables; 3/4 cup vegetable juice
Fruit	2-4 servings	1 medium piece of fruit; 1/2 cup canned, chopped, or cooked fruit; 3/4 cup fruit juice
Milk and milk substitutes	2-4 servings	1 cup of milk or yogurt; 1 cup calcium and soy milk fortified with vitamin B ₁₂ ; 1 1/2 oz hard cheese; 1 1/2 oz calcium and soy cheese fortified with vitamin B ₁₂
Meat and fish substitutes	2-3 servings	1 cup cooked dry beans, peas, or lentils; 2 eggs; 8 oz bean curd or tofu; 1/2 cup shelled nuts; 3-4 Tbsp peanut butter

The group at the tip of the pyramid is for vegans who do not consume fortified products. The vegetable oil is for calories and essential fatty acid; the molasses for iron and calcium; and the yeast for B vitamins, especially riboflavin. Fortified brewer's yeast has vitamin B₁₂.

Vegans should consume one serving daily of 3-5 tsp vegetable oil + 1 Tbsp blackstrap molasses + 1 Tbsp brewer's yeast.

SOURCE: Developed by New York Medical College, adapted from the food guide pyramid.

