



## Vegetarian Nutrition

a dietetic practice group of the  
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### RD Resources for Consumers:

# Combining Vegetarian, Vegan and Gluten-Free Diets

In celiac disease (CeD), an autoimmune disease, the protein found in wheat, rye, and barley called gluten damages the inside of the small intestine where nutrients are absorbed. This damage often results in poor absorption of certain nutrients before CeD is diagnosed or when it is not treated with a gluten-free diet.

Having CeD means zero tolerance for gluten. Wheat, rye, and barley are good protein sources and contain healthy nutrients, yet for those with CeD, the key to optimal health is to avoid these gluten-containing foods.

What if you are a vegetarian or vegan with CeD? Here are some key nutrients to keep in mind when combining these diets.

## Calcium and Vitamin D

Temporary lactose intolerance may result when small intestinal damage leads to the loss of enzymes that digest dairy products. Calcium and vitamin D are two nutrients in dairy. A primary role for calcium is to build and maintain bones and teeth and aid in blood clotting, nerve function, and muscle contraction. Vitamin D maintains normal blood levels of calcium and phosphorus to maintain strong bones. Malabsorption of calcium and vitamin D is very common in untreated and newly diagnosed CeD and if CeD is not treated, can lead to bone disease.



Vegetarians and vegans with CeD can find low-lactose or lactose-free products, calcium-rich plant foods, and non-dairy calcium-fortified options. If needed, choose non-dairy options (rice, almond, soy, or coconut milk) fortified with calcium, vitamin D, and vitamin B12 that are labeled as gluten-free. Note that these non-dairy options (except for soy) are low in protein. The Recommended Daily Allowance (RDA) for calcium is 700-1300 mg for children and teens, 1,000 mg for adult women to age 50, 1,200 mg for adult women over age 50, 1,000 mg for adult men to age 70, and 1,200 mg for adult men over age 70. If calcium needs cannot be met by food and multivitamin/mineral supplement (MVM) alone, use gluten-free calcium supplements that contain vitamin D.

Very few natural or fortified foods contain vitamin D. As many Americans have less than ideal blood levels of this vitamin, supplements are often recommended to meet vitamin D needs. Gluten-free MVMs typically do not contain enough calcium or vitamin D. Ask your doctor to check your vitamin D level and recommend the correct amount of vitamin D supplementation for you.

## Iron

Iron is one of the most important minerals in the human body. Its main role is to produce the protein that binds oxygen for delivery to the various organs. Iron deficiency due to malabsorption is the most common symptom of recently diagnosed or untreated CeD. Most Americans meet their iron needs by eating fortified grains, such as bread and cereals. However, most gluten-free products are not iron-fortified. Vegetarians and vegans with CeD can choose from many other iron-rich plant foods to meet their needs (Table 1).

### Iron Tips:

- Include iron-rich food sources in your diet.
- Add a vitamin C source (citrus fruit or juice, red pepper, or tomato) to your iron-rich meal to enhance iron absorption.
- Separate iron supplements or an iron-rich meal from calcium supplements or a calcium-rich meal by at least 2 hours as calcium and iron compete for absorption.
- Tannins, which are compounds found in tea or coffee, decrease the absorption of iron so avoid these during an iron-rich meal.
- A gluten-free iron supplement or iron in a MVM is the best way to ensure adequate iron intake. This is key for vegetarians and vegans with CeD, especially those who are low in iron. Talk to your doctor to determine if you need a supplement.

**Table 1: High Iron Gluten-Free Vegetarian Food**

*Note: Flour, meal, and grains must be labeled gluten-free.*

Food Item
Iron fortified corn flour (masa) or corn meal
Flour made from soybeans, chickpeas, buckwheat
Quinoa, amaranth, teff
Dark leafy greens: spinach, collard greens, Swiss chard, broccoli
Lentils, chickpeas/garbanzo beans, kidney beans, lima beans
Soybeans, soy nuts, edamame
Blackstrap molasses
Tahini (ground sesame seeds)
Plain, unseasoned cashew, almond, sunflower seeds
Iron fortified gluten-free pasta, cereal, or bread

Reference: Adapted from Raymond N. The gluten-free vegetarian. In: Dennis M, Leffler D, eds. Real Life with Celiac Disease: Troubleshooting and Thriving Gluten-Free. Bethesda, MD: AGA Press; 2010:111-118.

## Zinc

Zinc, a key mineral in growth and development, wound healing, and immune system health, also supports hair, skin, and nail health. Low zinc levels are common in those with newly diagnosed or untreated CeD, due to malabsorption and persistent diarrhea. Gluten-free sources of zinc include cooked dried beans and lentils, sea vegetables, gluten-free soy foods, plain nuts and seeds, and whole gluten-free grains.



**Table 2: High Zinc Gluten-Free Vegetarian Food**

Food Item	Serving	Zinc (mg)
Vegetarian baked beans, canned*	½ cup	2.9 mg
Yogurt, fruit	8 ounces	1.7 mg
Cashews, dry roasted	1 ounce	1.6 mg
Chickpeas, cooked	½ cup	1.3 mg
Cheese, swiss,	1 ounce	1.2 mg

*\* Check individual products for gluten*

The RDA for zinc is 3-11 mg for children and teens, 8 mg for adult women, and 11 mg for adult men. Eating extra zinc-rich foods may be needed along with a MVM containing 100% daily value of zinc.

## B12

Vitamin B12 is important for the nervous system and forming red blood cells. Fortified grain foods, often absent in the gluten-free diet, are a common source of B12. Vegetarians can find B12 in dairy products,

fortified non-dairy beverages labeled gluten free, eggs, and fortified gluten-free products. Vegan diets lack natural food sources of B12. The recommended daily intake of vitamin B12 for adults is 2.4 mcg. Choose a gluten-free MVM with at least 100% daily value of B12. Supplemental B12 may also be needed due to malabsorption in CeD.

Vitamin K	0.9 mcg
Thiamin	0.5 mg
Riboflavin	0.5 mg
Niacin	5.3 mg
Vitamin B6	0.5 mg
Folate	273 mcg
<b>Vitamin B12</b>	<b>1.7 mcg</b>
Pantothenic Acid	0.3 mg
Choline	7.3 mg
Betaine	9.7 mg

**Table 3: Hidden Sources of Gluten**

Food Item	Likely Gluten-Free	Not Gluten-Free
Tofu	Plain tofu, packed in water	Seasoned, flavored, marinated, or baked made with soy sauce; made with wheat gluten
Seitan	None	All forms of seitan are made from wheat gluten
Vegetarian Burgers, Hot Dogs, and other meat analogs	Certain varieties may be gluten-free; check individual products	Most meat substitutes contain wheat protein and soy sauce
Tempeh (fermented soybeans compacted into a firm cake)	Traditional, plain tempeh, made only with soybeans, rice, and tempeh culture	Multigrain tempeh made with wheat and barley; seasoned or flavored tempeh products made with soy sauce
Mycoprotein products (sold as Quorn)	A few Quorn products, such as turkey substitute, may be gluten-free	Most Quorn products contain wheat breeding or textured wheat protein
Textured vegetable protein (TVP)/soy protein	Plain, unflavored, textured 100% soy protein (can be used to increase the protein content of foods)	Almost all flavored TVP products contain hydrolyzed wheat or other gluten-containing ingredients
Soy, rice, or almond milk	Most are gluten-free; must be labeled gluten-free	Some brands contain malted wheat and barley extracts
Miso (paste from fermented beans and grains)	Miso made from rice, millet, amaranth, quinoa or buckwheat (labeled gluten-free)	Miso made with wheat, barley, or rye

Reference: Adapted from Raymond N. The gluten-free vegetarian. In: Dennis M, Leffler D, eds. Real Life with Celiac Disease: Troubleshooting and Thriving Gluten-Free. Bethesda, MD: AGA Press; 2010:111-118.

## Fiber and Protein

Fiber intake is often low in the gluten-free diet. Increase it through a variety of fruits, vegetables, legumes, plain nuts and seeds, and whole gluten-free grains in the daily diet.

Protein needs can be met by eating a wide variety of plant foods over the course of each day.

## Where is Gluten Hidden?

Gluten is commonly found in processed vegetarian and vegan foods such as “meat” and soy products (see Table 3). Be sure to read labels carefully.

Discuss your specific diet with your doctor and a registered dietitian nutritionist (RDN). Your doctor will likely check your levels of iron, vitamin D, calcium, B12, folate, and zinc. An RDN can help you develop a healthy gluten-free vegetarian/vegan eating plan that meets your needs. **To find an RDN in your area, visit [www.eatright.org](http://www.eatright.org)**

## Useful Resource Books

- Real Life with Celiac Disease: Troubleshooting and Thriving Gluten-Free by Melinda Dennis, MS, RD, LDN and Daniel Leffler MD, 2010.
- 125 Gluten-Free Vegetarian Recipes by Carol Fenster, 2011.

## Online Resources

[www.VegetarianNutrition.net](http://www.VegetarianNutrition.net)

### Frequently Asked Questions

- Does a vegetarian or vegan diet provide adequate protein, calcium, or other nutrients?
- Does a total vegetarian get enough Vitamin B12?
- Zinc in vegetarian diets