

Protein Alternatives to Meat

Protein is necessary in the diet to build strong muscles, maintain organs and aid the immune system. Eating enough protein is especially important for the growth and development of children and pregnant women. However, by decreasing or eliminating animal sources of protein (i.e., meat) from your diet, you can lower your risk for high cholesterol, high blood pressure, and other heart disease. Non-meat protein is a healthy alternative that is often healthier for your wallet too!



Additionally, decreasing meat consumption reduces the emission of greenhouse gases, which is healthier for our planet. For example, it takes approximately 10 kg of grass and grain to produce 1 kg of beef. In addition, according to the USDA, a typical meat based diet uses 4.5 times the land required for a vegan diet.

What is protein?

Amino acids are the building blocks of protein. There are 20 amino acids in the body. These can be classified as essential or non-essential. All amino acids are important, but those the body is unable to make on its own are called *essential* amino acids. The only way your body can get them is by eating protein. Most plant-based proteins are missing at least one essential amino acid, but by combining certain plant foods in the same day (not necessarily the same meal), you can provide your body with all the necessary amino acids. You can do this, for example, by eating rice and beans together or by eating peanut butter on whole grain toast.

Essential amino acids	Non-essential amino acids
Histidine	Alanine
Isoleucine	Arginine
Leucine	Asparagine
Lysine	Aspartate
Methionine	Glutamate
Phenylalanine	Glutamine
Threonine	Glycine
Tryptophan	Proline
Valine	Serine
	Cysteine*
	Tyrosine*

*Essential for infants & growing children

How much protein do I need?²



The amount of protein needed each day depends on a person's age, gender and level of physical activity. Generally 10–35% of your daily calories should come from protein. The quick and easy way to determine how much protein you should have is to look at your plate each time you eat. When you sit down to a meal, about 1/4 of your plate should be a source of protein.

Another way is to determine how much protein you need for your age group (See the Recommended Dietary Allowances table on page 2), and then divide that by the number of meals you eat a day so you will know how many grams of protein you should have at each meal. For example, an adult needs 45-55 grams of protein a day, which would be 15-20 grams of protein per meal if eating 3 meals a day. Note: 1 cup of milk or 1 serving of peanut butter equals 8-9 grams of protein each. Eaten together that is 16-18g of protein, which is enough protein for 1 meal.

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Recommended Dietary Allowance for Protein*	
Age	Grams of protein needed each day
Children ages 1 – 3	13
Children ages 4 – 8	19
Children ages 9 – 13	34
Girls ages 14 – 18	46
Boys ages 14 – 18	52
Women ages 19 – 70+	46
Men ages 19 – 70+	56

*This is for people who get less than 30 minutes of physical activity a day on top of their regular daily activities. People who are more active should increase their protein while staying within their recommended needed calories.

What are some good sources of non-meat protein?

A variety of good sources of non-meat protein are listed below. Please see the chart on page 6 for information on serving size and whether the protein is vegan or gluten-free.

- **Quinoa and Other Whole Grains**

Whole grains are an important source of protein. The best is quinoa (pronounced KEEN-wah or kee-NOH-uh), which is originally from South America. It contains all nine essential amino acids. Hence it is considered a “complete protein” just like meat. Although quinoa is technically a seed, it is usually regarded as a grain and can be found next to other grains in your local grocery store or co-op. Other good whole grains are **brown rice, barley, buckwheat and whole wheat**. These grains lack the amino acid lysine and are best eaten with nuts or legumes (for example--beans, lentils, peanuts, peas).

Eating Tips: Quinoa is simple and quick to make. Just add one cup of quinoa to 1 cup of water. Bring the water to a boil. Then reduce it to a simmer until the outer rings on the quinoa grains begin to separate and look like a halo (10-15 minutes). If the water boils off before the quinoa is ready, add a little more water. Add any sauce, oil, seasonings, or vegetables to suit your taste!

- **Nuts, Seeds and Nut Butter**

Almonds, walnuts, cashews, pine nuts, and peanuts (which are classified as a legume) are all good protein sources for vegetarians, as are sesame and sunflower seeds. Unfortunately, they are also high in fat, so they should not be the main source of protein. Walnuts are a good source of omega-3 fatty acids. And some nut butters now contain added vegetarian-friendly omega-3s. (Omega-3's are healthy fats that can help reduce inflammation in the body. For more information, see our handout [Omega-3 Fats](#).)

Eating Tips: Raw, toasted or in a butter/spreadable form, nuts and seeds are a great protein source. Try adding them to your morning oatmeal or salads. Avoid ones that are heavily salted; instead reach for the unsalted or lightly salted ones.



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- **Legumes (aka Pulses)**

Kidney, garbanzo/chickpeas, white, black, pinto, edamame (green soybeans), and lentils are just a few of various beans available. These beans are easily digested and have twice as much protein as wheat and three times more than rice. But they are missing the amino acid methionine and are best eaten with a whole grain.

Eating Tips: Soak dry beans a day or two before you want to cook them. If you buy canned beans, rinse with water and drain them to remove some of the sodium added during canning. You can use frozen beans to save time and avoid extra sodium. Snack on hummus made from garbanzo beans or edamame with veggies and pita bread.

- **Tofu, Tempeh and Other Soy Products**

Soy is a bean, but because of its popularity and great health value, we are listing it separately from other beans. Tofu, tempeh (fermented soybeans) and other organic soy products are excellent low-fat sources of protein. Although tempeh has a mild nutty flavor, tofu is relatively flavorless. You can find milk, yogurt, cheese, and ice cream all made from soy. So go ahead, eat your heart out.

Eating Tips: Try adding tofu or tempeh to your next stir-fry. Crumble it in stews, soups, and pasta dishes, or lightly blend it and cook it up like scrambled eggs. Enjoy it with a nice cold glass of soy milk.

- **Imitation/Faux Meat**

Veggie burgers, seitan (aka mock duck, which comes from wheat), faux chicken patties and other fake meat products were once limited to specialty stores but are now more widely available. They are typically made from soy, wheat gluten protein, or a combination of the two. These items tend to have more fiber and less fat than the real thing. Be sure to read the package if you have gluten sensitivity and choose items made from non-wheat protein. Also check the amount of sodium per serving and limit portions appropriately.

Eating Tips: You can grill black bean burgers, make that faux turkey sandwich you have been craving, brown soy-based “ground beef” for tacos, chili or your favorite pasta dish.

- **Dairy and Eggs**

Dairy products and eggs are wonderful sources of complete protein. Dairy products include milk, cheese, yogurt, and ice cream. These can be high in fat, especially saturated fat, so be sure to choose low-fat items or limit your number of servings. Eggs are great for protein, but also contain a fair amount of cholesterol from their yolks, so either limit your weekly egg intake or stick to egg whites. Choose free-range eggs and milk from grass-fed cows if possible because they have more omega 3's.

Eating Tips: Adding one glass of milk to each meal provides half of the protein needed in a healthy diet. Yogurt alone, with fruit, cereal or added to smoothies is perfect for those sweet cravings. Eggs scrambled, poached, in an omelet or a stir-fry makes a nice addition to any meal.



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- **Greek Yogurt**

Greek yogurt is an excellent source of healthy protein. The straining process removes much of the liquid whey, lactose and sugar, giving it a richer and creamier consistency. It is higher in protein and lower in sodium and carbohydrates than other yogurts. Traditional Greek yogurt has more fat than regular yogurt, but nonfat, 1% and 2% milkfat varieties are available. Yogurt also has the benefit of providing probiotics (good bacteria) that keep the gut healthy. Greek style yogurt is now available in most locations where yogurt is sold. At this time there is no information to suggest that one brand is better than another.

Eating Tips: You can add Greek yogurt to fruit or cereal, enjoy as a topping for chili, stews and soups, try it with walnuts and honey for dessert, or even use it as a healthy, protein-packed replacement for sour cream or cream cheese in recipes.

Recipes - Enjoy!

Greek Yogurt

- 1 cup of nonfat or lowfat plain Greek yogurt (available at most grocery stores)
- 1-2 teaspoons of honey
- 1 small handful of frozen or fresh berries of your choice (e.g., blueberries)

Red Quinoa and Avocado Salad

(Recipe provided by www.Allrecipes.com; submitted by Gitano)

Ingredients

- 1/3 cup red quinoa
 - 2/3 cup water
 - 1 cup cherry tomatoes, halved
 - 1/2 cup diced cucumber
 - 1/4 cup diced red onion
 - 2 tablespoons lime juice
 - 1/2 teaspoon ground cumin seed
 - Salt and pepper to taste
 - 2 cups baby spinach leaves
 - 1 avocado—peeled, pitted and sliced
1. Bring the quinoa and water to a boil in a saucepan over high heat. Reduce heat to medium-low, cover, and simmer until the quinoa is tender, and the water has been absorbed, about 15-20 minutes. Spread into a mixing bowl, and refrigerate until cold.
 2. Once the quinoa has chilled, gently stir in the tomatoes, cucumber, and onion. Season with lime juice, cumin, salt, and pepper; stir to combine. Divide the spinach leaves onto salad plates, and top with the quinoa salad. Garnish with the avocado slices. 2 servings.

Approximate nutrition information per serving: Protein: 8.1g, Total Fat: 17.3g, Cholesterol: 0mg, Carbohydrates: 37.1g (fiber: 11.5g), Sodium: 240 mg, Calories: 311.



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Mock Tuna Salad

(Recipe provided by www.Allrecipes.com; submitted by NICE_GIRL 1965)

Ingredients

- 1 (19 oz) can garbanzo beans (chickpeas), drained and mashed
- 2 tablespoons mayonnaise
- 2 teaspoons spicy brown mustard
- 1 tablespoon sweet pickle relish
- 2 green onions, chopped
- salt and pepper to taste

In a medium bowl, combine garbanzo beans, mayonnaise, mustard, relish, chopped green onions, salt and pepper. Mix well. Serve in a salad or on crackers or toast. 4 servings.

Approximate nutrition information per serving: Protein: 7g, Total Fat: 7.2g, Cholesterol: 3mg, Carbohydrates: 32.7g (fiber: 6.2g), Sodium: 507mg, Calories: 220.

[Clinician note: For an even healthier alternative, omit the pickle relish to reduce sodium and use light mayo or vegan mayo to reduce the amount of fat.]

Barley Bake

(Recipe provided by www.Allrecipes.com; submitted by KATINHAT)

Ingredients

- ¼ cup butter
- 1 medium onion, diced
- 1 cup uncooked pearl barley
- ½ cup pine nuts
- 2 green onions, thinly sliced
- ½ cup sliced fresh mushrooms
- ½ cup chopped fresh parsley
- ¼ teaspoon salt and 1/8 teaspoon pepper
- 2 (14.5 ounce) cans vegetable broth

1. Preheat oven to 350 degrees F (175 degrees C).
2. Melt butter in a skillet over medium-high heat. Stir in onion, barley, and pine nuts. Cook and stir until barley is lightly browned. Mix in green onions, mushrooms, and parsley. Season with salt and pepper. Transfer mixture to a 2 quart casserole dish. Stir in the vegetable broth.
3. Bake 1 hour and 15 minutes in the preheated oven or until liquid has been absorbed and barley is tender. 6 servings.

Approximate nutrition information per serving: Protein: 7.4g, Total Fat: 14.2g, Cholesterol: 20mg, Carbohydrates: 33.2g (fiber: 7g), Sodium: 437mg, Calories: 280.

[Clinician note: For an even healthier alternative, use olive oil in place of butter, decrease salt, and/or use low sodium vegetable broth.]

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AMOUNT OF PROTEIN IN A SERVING ^{1,3}								
Food	Serving Size*	Equivalent Size	Protein	Fat	Carbo- hydrates (Fiber)	Calories (kcal)	Vegan	Gluten- Free
Brown Rice, medium grn (cooked)	1/2 c	Woman's cupped palm	2.3 g	0.8 g	23 g (2 g)	109	Yes	Yes
Quinoa (cooked)	1/2 c	Woman's palm	4 g	1.8 g	20 g (2.6 g)	111	Yes	Yes
Buckwheat (cooked)	1/2 c	Woman's palm	2.8 g	0.5 g	17 g (2.3 g)	77	Yes	Yes
Whole wheat bread	25 g	1 slice	2.7 g	0.9 g	12 g (1g)	66	Depends	No
Walnuts, English (raw)	¼ c or 1 oz	14 halves	4.4 g	19 g	4 g (2 g)	190	Yes	Yes
Peanut Butter, smooth	2 Tbsp	1 whole walnut shell	8 g	16 g	6 g (2 g)	188	Yes	Yes
Almond Butter	2 Tbsp	1 whole walnut shell	6.7 g	17.8 g	6 g (3.3 g)	196	Yes	Yes
Lentils (cooked)	½ c	Woman's palm	9 g	0.4 g	20 g (7.8 g)	115	Yes	Yes
Kidney beans (cooked)	½ c or 4 oz	Woman's cupped palm	7.7 g	0.4 g	20 g (5.7g)	112	Yes	Yes
Black beans	½ c or 4 oz	Woman's palm	7.6 g	0.5 g	20 g (7.5 g)	114	Yes	Yes
Hummus (chickpeas)	2 Tbsp	1 whole walnut shell	2.4 g	2.9 g	4 g (2 g)	40-50	Yes	Yes
Tempeh (cooked)	100 g	Deck of cards	18 g	11.3 g	9.4 g	196	Yes	Yes
Tofu (firm)	84 g	Deck of cards	5.8 g	2.3 g	2 g (0.1 g)	52	Yes	Yes
Veggie Burger	70 g	1 patty	11 g	4.4 g	10 g (3.4 g)	124	Yes	No
Egg: hardboiled	50 g	1 large egg	6.3 g	5.3 g	0.6 g	78	No	Yes
Milk 1%: low fat	8 oz	1 glass	8.2 g	2.3 g	12 g	102	No	Yes
Yogurt Nonfat	8oz/ 1 cup	1 individual container	8g	0.45g	22g	125	No	Yes
Greek Yogurt Nonfat	8oz/ 1 cup	1 individual container	23g	0g	9g	130	No	Yes

* c=cup; g=gram; oz=ounce; Tbsp=tablespoon

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References

1. Agricultural Research Service. Dec. 12, 2010 (last update). Search the USDA National Nutrient Database for Standard Reference. U.S.D.A. www.nal.usda.gov/fnic/foodcomp/search/
2. CDC. Feb. 23, 2011 (last update). Nutrition for Everyone: Protein. www.cdc.gov/nutrition/everyone/basics/protein.html
3. Center for Nutrition Policy and Promotion. Mar. 2002. How much are you eating? Dietary guidelines for Americans. U.S.D.A. www.cnpp.usda.gov/Publications/DietaryGuidelines/2000/2000DGBrochureHowMuch.pdf

The information in this handout is for general education. Please work with your health care practitioner to use this information in the best way possible to promote your health.

This handout was created by Rebecca McSorley M4, Luke Fortney MD, Asst. Professor, and Charlene Luchterhand MSSW. All three are in the Integrative Medicine Program, Dept. of Family Medicine, University of Wisconsin-Madison School of Medicine and Public Health.

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