



ROGEL CANCER CENTER
MICHIGAN MEDICINE

Increasing Protein in the Diet

What is protein?

Protein is a nutrient essential for:

- Growth
- Healing
- Immune system
- Maintenance of tissue, skin, hair, and nails

At times, when your appetite is low, or when your body is under stress, you may require more protein from foods you eat to preserve your muscle and lean body mass. Maintaining your lean body mass is a nutritional goal for anyone going through cancer treatments. **People who maintain their muscle generally have fewer side effects and do better after treatment is over.** However, protein isn't the only nutrient to eat; calories from carbohydrates and fats are important to use for energy, so that the protein that you *do* eat can be used for muscle and strength.

What foods contain higher amounts of protein?

Fish, poultry, lean red meat (beef/pork/lamb), soy foods such as tofu and tempeh, eggs, dairy, nuts & nut butter and legumes (beans, peas, lentils and peanuts)

What is a protein serving size?

1 ounce of meat = size of a matchbox

3 ounces of meat = size of a deck of cards

1 ounce of cheese = size of 4 dice, 1 slice

2 Tbsp. of nut butter = size of a ping pong ball

½ cup of beans = ½ size of a computer mouse

Protein Source	Grams of Protein	Vegetarian Equivalent
4 ounce hamburger	28	1 ½ cup of firm tofu
4 ounces fish	28	1 cup tempeh (fermented soy product)
3 ounces of chicken, beef or turkey	21	¾ cup of Boca® Meatless Ground burger
½ cup cottage cheese	14	1 cup pinto beans
6 ounces Greek Yogurt	12	2/3 cup cooked lentils
8 ounces of milk	8	8 ounces of soy milk
1/3 cup dry milk powder	8	1 cup cooked peas or cooked quinoa
1 egg or ¼ cup egg substitute	7	1 cup of cooked oatmeal
1 ounce cheese	7	2 tablespoons nut butter
6 ounces yogurt	6	6 ounces of soy yogurt
¼ cup of almonds	6	¼ cup sunflower seeds

What about protein powders?

Protein powders have become a popular protein source for people trying to improve athletic performance and build muscle mass. For people with cancer, they can provide necessary protein to the diet and help maintain muscle tissue during treatments when experiencing a lack of appetite for eating meats or other high-protein foods. Avoid protein powders that contain other ingredients such as creatine, vitamins, minerals, etc. While these may be high in protein, they tend to be low in calories, so adding higher-calorie additions can be beneficial.

- **Whey protein concentrate** is very common and the most affordable form of whey protein. It does contain some lactose.
- **Whey protein isolate** is a more concentrated form of whey protein with little to no fat or lactose. It is an acceptable protein source for people on a lactose-restricted diet or with lactose intolerance.
- **Hemp Protein** is a near-complete plant-based (vegan) protein that offers the inflammation-fighting power of omega-3 essential fatty acids and is high in fiber.
- **Pea Protein Powder** is a plant-based protein (vegan) and highly digestible. It has a fluffy texture.
- **Soy protein powder** comes in either soy protein isolate or soy protein concentrate. Compared to dairy-based protein powders, soy protein powders do not dissolve as well, may have a beany taste and can cause gas to people sensitive to soy sugars.

How do I include protein powders in my diet?

- Check the label on the can as to how much protein is provided per scoop. It can range from 16-20+ grams per scoop.
- Mix it into your favorite beverage, oral supplement or smoothie or add it to a variety of soft foods to increase the protein content.
- It can be used as an egg replacement in baked goods and cooked items such as pancakes, omelets, breads and oatmeal.

Warning: Avoid adding too much protein powder to foods and beverages. Excessive protein in the diet may be harmful. Ask your dietitian how much protein you should eat daily.

What are other ways to add more protein in my diet?

<p>Hard or Semi-soft Cheese</p>	<ul style="list-style-type: none"> • Melt on sandwiches, breads, tortillas, hamburgers, hot dogs, other meats or fish, vegetables, eggs, or desserts such as stewed fruits or pies. • Grate and add to soups, sauces, casseroles, vegetable dishes, mashed potatoes, rice, noodles, or meat loaf.
<p>Cottage Cheese or Ricotta Cheese</p>	<ul style="list-style-type: none"> • Mix with or use to stuff fruits and vegetables. • Add to casseroles, spaghetti, noodles, and egg dishes such as omelets, scrambled eggs, and soufflés. • Use in gelatin, pudding-type desserts, cheesecake, and pancake batter. • Use to stuff crepes or manicotti.
<p>Milk or Soy Milk</p>	<ul style="list-style-type: none"> • Use in beverages, cooking, hot cereals, soups, cocoas, and puddings in place of water. • Add cream sauces to vegetables and other dishes.
<p>Dry Milk Powder</p>	<ul style="list-style-type: none"> • Add to regular milk and milk drinks, such as pasteurized eggnog and milkshakes (add ¼ cup of powder to every 1 cup of liquid). • Use in casseroles, meatloaf, breads, muffins, sauces, cream soups, mashed potatoes, puddings, custards, and milk-based desserts.
<p>Commercial Products</p>	<ul style="list-style-type: none"> • Use Carnation Breakfast Essentials® in milks and desserts. • Mix oral supplements (Boost® or Ensure®) with ice cream, milk, fruit or flavorings (chocolate or strawberry syrup) for a high-protein milkshake.
<p>Ice Cream, Frozen</p>	<ul style="list-style-type: none"> • Add to carbonated beverages, like ginger ale; add to milk to make a shake.

<p>Yogurt, and Yogurt</p>	<ul style="list-style-type: none"> • Add to cereals, fruits, gelatin, and pies; blend or whip with soft or cooked fruits. • Sandwich ice cream or frozen yogurt between pound cake, cookies, or graham crackers.
<p>Eggs</p>	<ul style="list-style-type: none"> • Add chopped, hard-cooked eggs to salads and dressings, vegetables, casseroles, and meat salads. • Add extra eggs or egg whites to quiches, pancakes, and French Toast. Add extra egg whites to scrambled eggs and omelets. Egg whites and Egg Beaters[®] are a great way to add protein without saturated fat or cholesterol. • Make a rich custard with eggs, milk, and sugar. • Add extra hard-cooked yolks to deviled-egg filling and sandwich spreads. • If you would like to use a raw egg product, such as in homemade eggnog, use Egg Beaters[®] egg substitute, which is pasteurized. (Do not eat raw eggs, which contain harmful bacteria, and make sure all eggs are cooked well).
<p>Nuts, Seeds, Wheat Germ, and Oats</p>	<ul style="list-style-type: none"> • Add to casseroles, breads, muffins, pancakes, cookies, and waffles. • Sprinkle on fruit, cereal, ice cream, yogurt, vegetables, salads, and toast as a crunchy topping; use in place of bread crumbs. • Blend with parsley or spinach, herbs, and cream for a noodle, pasta, or vegetable sauce. • Roll a banana in chopped nuts. Blend oats in with a smoothie or shake.
<p>Peanut / Nut Butter</p>	<ul style="list-style-type: none"> • Use as a spread on sandwiches, toast, muffins, crackers, waffles, pancakes, and fruit slices.

	<ul style="list-style-type: none"> • Use as a dip for raw vegetables and fruit such as celery and apples. • Blend with milk drinks and beverages, such as shakes and smoothies. • Swirl through soft ice cream and yogurt.
Meat and Fish	<ul style="list-style-type: none"> • Add chopped, cooked meat or fish to vegetables, salads, casseroles, soups, sauces, and biscuit dough. • Use in omelets, soufflés, quiches, sandwich fillings, and chicken and turkey stuffing. • Wrap in pie crust or biscuit dough as turnovers. • Add to stuffed baked potatoes. • Make tuna fish sandwiches or salad
Beans and Legumes	<ul style="list-style-type: none"> • Cook and use dried peas, legumes, beans, and tofu in soups, or add to casseroles, pastas, and grain dishes that also contain cheese and meat. • Use baked and refried beans alone or in different dishes. • Hummus is a high-protein spread that can be used on vegetables, bread or crackers.

Disclaimer: This document contains information and/or instructional materials developed by the University of Michigan Health System (UMHS) for the typical patient with your condition. It may include links to online content that was not created by UMHS and for which UMHS does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

Authors and Reviewers:

Danielle Karsies, RD, Melissa Shannon-Hagen RD, Nancy Burke, RD

Patient Education by [University of Michigan Health System](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License](#).

Document# 0302. Last Revised 11/2015