



Beef: Big Nutrient Power in a Small Package

Ten Essential Nutrients and What They Do for You

When it comes to choosing healthy proteins, lean beef is a delicious and healthy choice for beefing up your high-quality protein needs. It's also a perfect partner for fruits, vegetables and whole grains, making it even easier to enjoy a balanced diet to meet the Dietary Guidelines and MyPlate recommendations.^{1,2}

Naturally nutrient-rich foods such as lean beef also help people get more essential nutrients in fewer calories. A 3-oz serving of lean beef contributes less than 10 percent of calories to a 2,000-calorie diet, yet it supplies more than 10 percent of the Daily Value for 10 essential nutrients. You'd have to consume 18 oz of cooked chicken breast to get the same amount of zinc and at least 7½ oz of cooked chicken breast to get the same amount of iron as in 3 oz of cooked beef. In addition, lean beef supplies significantly fewer calories and more nutrients than many plant proteins. A 3-oz serving of lean beef (about 150 calories, on average) provides about the same amount of protein as 1½ cups of cooked black beans (341 calories) but in less than half the calories.³

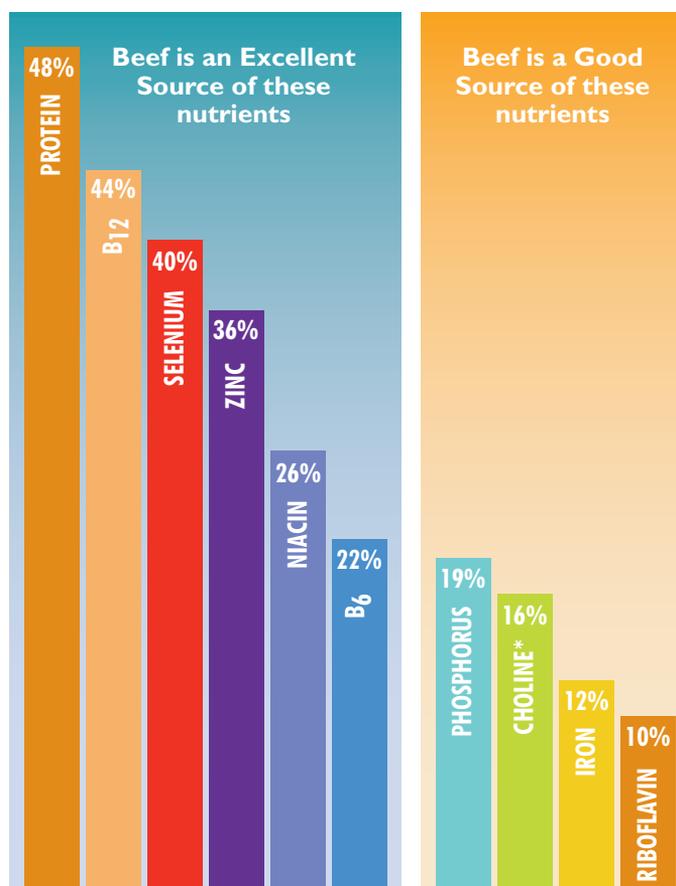
A Dietary Solution for Optimal Health

Research suggests that many of the 10 essential nutrients in lean beef, including high-quality protein, could be a dietary solution to many issues facing Americans today.

- A growing body of evidence indicates high-quality protein plays an increasingly important role in muscle maintenance, weight management, and the prevention of chronic diseases such as sarcopenia, type 2 diabetes and cardiovascular disease.^{4,6}
- Research shows the iron, zinc and B vitamins found in beef play an essential role in developing and maintaining cognitive ability in children and across the lifecycle.⁷⁻¹³

Protein

A 3-oz serving of lean beef is an excellent source of protein, supplying nearly half the protein most people need each day. In addition, the protein in lean beef is a complete, high-quality protein which means it supplies all of the essential amino acids the body needs to build, maintain and repair body tissue. In addition, coupled with physical activity, the high-quality protein in lean beef can help you maintain a healthy weight, sustain weight loss and keep a favorable body composition over time, and also promote satiety to help you feel full longer.^{14,15}



Dietary Reference Intakes, Institute of Medicine of the National Academies, National Academies Press, Washington, DC, 2006.

U.S. Department of Agriculture, Agricultural Research Service, USDA Nutrient Data Laboratory. 2012. USDA National Nutrient Database for Standard Reference, Release 25.

* A 3 oz serving of lean beef provides approximately 17% of the highest adequate intake for choline (550 mg).

Iron

A 3-oz serving of beef is a good source of iron. Unlike plant proteins, beef is the food supply's most readily available and easily absorbed source of iron. Iron not only helps red blood cells carry oxygen to body tissue, it also plays an important role in cognitive health, including memory, ability to learn and reasoning.¹⁶

Beef: Big Nutrient Power in a Small Package

Zinc

A 3-oz serving of beef is an excellent source of zinc, which is an essential nutrient that fuels thousands of bodily processes, including building muscles and healing wounds, maintaining the immune system, and contributing to cognitive health. In addition to containing a high level of absorbable zinc, beef also increases the absorption of zinc from other foods when eaten at the same meal.¹⁷

Vitamin B₁₂

A 3-oz serving of beef is an excellent source of vitamin B₁₂, which is needed for normal functioning of body cells and of the nervous system, as well as lowering blood homocysteine levels, an amino acid that increases risk for heart disease and dementia. Vitamin B₁₂ works closely with folate to form red blood cells.

Vitamin B₆

A 3-oz serving of beef is an excellent source of vitamin B₆, which is important for a healthy nervous system and helps with the production of antibodies which help the body fight infection. Vitamin B₆ helps turn tryptophan into niacin and serotonin. In addition, along with vitamin B₁₂, B₆ also lowers blood homocysteine levels.

Niacin

A 3-oz serving of beef is an excellent source of niacin, which promotes healthy skin and nerves, aids digestion, releases energy from food and fosters normal appetite.

Riboflavin

A 3-oz serving of beef is a good source of riboflavin, which helps the body use energy from carbohydrates, produce oxygen-carrying red blood cells and promotes healthy skin and good vision.

Selenium

A 3-oz serving of beef is an excellent source of selenium, a trace mineral occurring naturally in many food sources. Selenium works with vitamin E to protect the body from the damaging effects of free radicals and may reduce the risk of heart disease.

Phosphorus

A 3-oz serving of beef is a good source of phosphorus, which helps build and maintain healthy bones, normal blood pH levels and muscle regulation.

Choline

A 3-oz serving of beef is a good source of choline, an essential nutrient for humans that plays a vital role in cognition and long and short-term memory functions. Choline works with folate to help promote brain and memory development in growing fetuses and newborn infants.¹⁸

1. U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2010. 7th Edition*, Washington, DC: U.S. Government Printing Office, December 2010. Available at: <http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/PolicyDoc.pdf>.
2. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. *ChooseMyPlate.gov*. 2011. Available at: <http://www.choosemyplate.gov/>.
3. U.S. Department of Agriculture, Agricultural Research Service, USDA Nutrient Data Laboratory. 2012. *USDA National Nutrient Database for Standard Reference, Release 25*. Available at: <http://www.nal.usda.gov/fnic/foodcomp/search/>.
4. Paddon-Jones D, Short KR, Campbell WW, Volpi E, Wolfe RR. Role of dietary protein in the sarcopenia of aging. *Am J Clin Nutr* 2008;87:1562S-6S.
5. Layman DK, Clifton P, Gannon MC, Krauss RM, Nuttall FQ. Protein in optimal health: Heart disease and type 2 diabetes. *Am J Clin Nutr* 2008;87:1571S-5S.
6. Roussel MA, Hill AM, Gaugler TL, West SG, Vanden Heuvel JP, Alaupovic P, Gillies PJ, and Kris-Etherton PM. Beef in an Optimal Lean Diet study: Effects on lipids, lipoproteins, and apolipoproteins. *Am J Clin Nutr* 2012;95:9-16.
7. Beard JL. Iron biology in immune function, muscle metabolism and neuronal functioning. *J Nutr* 2001; 131:568S-80S.
8. Fuglestad AJ, Rao R, Georgieff MK. The role of nutrition in cognitive development. 2nd. ed. In: Nelson CA, ed., Luciana M, ed. *Handbook in developmental cognitive neuroscience*. Cambridge, MA: MIT Press, 2008:623-41.
9. Black MM. Micronutrient deficiencies and cognitive functioning. *J Nutr* 2003;133:3927s-31s.
10. Falkingham M, Abdelhamid A, Curtis P, Fairweather-Tait S, Dye L, Hooper L. The effects of oral iron supplementation on cognition in older children and adults: a systematic review and meta-analysis. *Nutrition Journal* 2010;9:4.
11. Smith AD, Refsum H. Vitamin B-12 and cognition in the elderly. *Am J Clin Nutr* 2009;89:707S-11S.
12. Morris MS, Jacques PF, Rosenberg IH, Selhub J. Folate and vitamin B-12 status in relation to anemia, macrocytosis, and cognitive impairment in older Americans in the age of folic acid fortification. *Am J Clin Nutr* 2007;85:193-200.
13. Benton D. The influence of dietary status on the cognitive performance of children. *Mol Nutr Food Res* 2010;54:457-70.
14. Layman DK, Evans EM, Erickson D, Seyler J, Weber J, Bagshaw D, Griel A, Psota T, Kris-Etherton P. A moderate-protein diet produces sustained weight loss and long-term changes in body composition and blood lipids in obese adults. *J Nutr* 2009;139:514-21.
15. Paddon-Jones D, Westman E, Mattes RD, Wolfe RR, Astrup A, Westterp-Plantenga M. Protein, weight management, and satiety. *Am J Clin Nutr* 2008;87:1558S-61S.
16. Institute of Medicine National Research Council. *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc*. Washington, DC: The National Academies Press, 2001.
17. Johnson, J.M.; Walker, P.M. Zinc and iron utilization in young women consuming a beef-based diet. *J. Am. Diet. Assoc.* 92: 1474-1478; 1992.
18. Jensen HH, Batres-Marquez SP, Carriquiry A, Schalinske K. Choline in the diets of the US population: NHANES, 2003-2004. *FASEB Journal*. 2007; 21:1b219.



Funded by the Beef Checkoff.