

## VII. The Misunderstood Fat Profile of Beef

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Attention to nutrition issues by both the media and health professionals, while intended to stress moderation, has generated a fat phobia. In consumers' pursuit of nonfat foods they often mistakenly sacrifice nutrient-dense foods, such as beef.

To help prevent and treat heart disease, the National Cholesterol Education Program (NCEP) has issued new guidelines to achieve desirable blood lipid levels (i.e., total cholesterol less than 200 milligrams/deciliter, LDL cholesterol below 100 milligrams/deciliter, HDL cholesterol 60 milligrams/deciliter or higher).<sup>1</sup> The guidelines emphasize a therapeutic lifestyle change involving diet, weight reduction, and physical activity.

The diet calls for a reduction of fat intake to 25% to 35% of total calories, saturated fat to <7% of calories, and <200 mg/day of cholesterol.<sup>1</sup> To keep saturated fat intake within a healthy range, individuals are counseled to choose lean meats over fatty meats. However, this recommendation is often misinterpreted as “cut back or eliminate” red meat and substitute fish or skinless poultry for red meat.

Clinical trials have found that it is unnecessary to substitute fish or poultry for lean red meat choices to achieve desirable blood lipid profiles.<sup>2,4</sup> Short- and long-term studies have demonstrated that lean beef can be effectively incorporated into lowfat diet plans designed to lower blood cholesterol levels.<sup>2,4</sup>

Results of a 76-week randomized, cross-over clinical trial of free-living hypercholesterolemic adults demonstrate that Americans can consume 6 ounces of lean red meat five to seven days a week as part of a cholesterol-lowering diet (i.e., 30% or less of total calories from fat, 8% to 10% of calories from saturated fat, and no more than 300 mg/day of cholesterol).<sup>3,4</sup> No differences in blood lipid responses occurred between the adults consuming either lean red meat (beef, pork, veal) or lean white meat (poultry, fish) as part of this diet.<sup>3,4</sup> In both groups, total cholesterol was reduced by 1%, LDL cholesterol decreased by 2%, and HDL cholesterol increased by 2% to 3%.<sup>3,4</sup> Considering that beef is one of the most popular meats consumed in the U.S., the researchers suggest that inclusion of beef in a lowfat diet may provide the additional variety to the diet to help improve long-term adherence.<sup>4</sup>

1. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA* 285: 2486-2497; 2001.
2. National Cattlemen's Beef Association. Beef facts: Nutrition. Parity of Beef with Other Dietary Protein Sources. Chicago. National Cattlemen's Beef Association; 1999.
3. Davidson, M.H.; Hunninghake, D.; Maki, K.C.; Kwiterovich, P.O.; Kafonek, S. Comparison of the effects of lean red meat vs. lean white meat on serum lipid levels among free-living persons with hypercholesterolemia. *Arch. Intern. Med.* 159: 1331-1338, 1999.
4. Hunninghake, D.; Maki, K.C.; Kwiterovich, Jr., P.O.; Davidson, M.H.; Dicklin, M.R.; Kafonek, S.D. Incorporation of lean red meat into a National Cholesterol Education Program Step I diet: a long-term, randomized clinical trial in free-living persons with hypercholesterolemia. *J. Am. Coll. Nutr.* 19: 351-360, 2000.

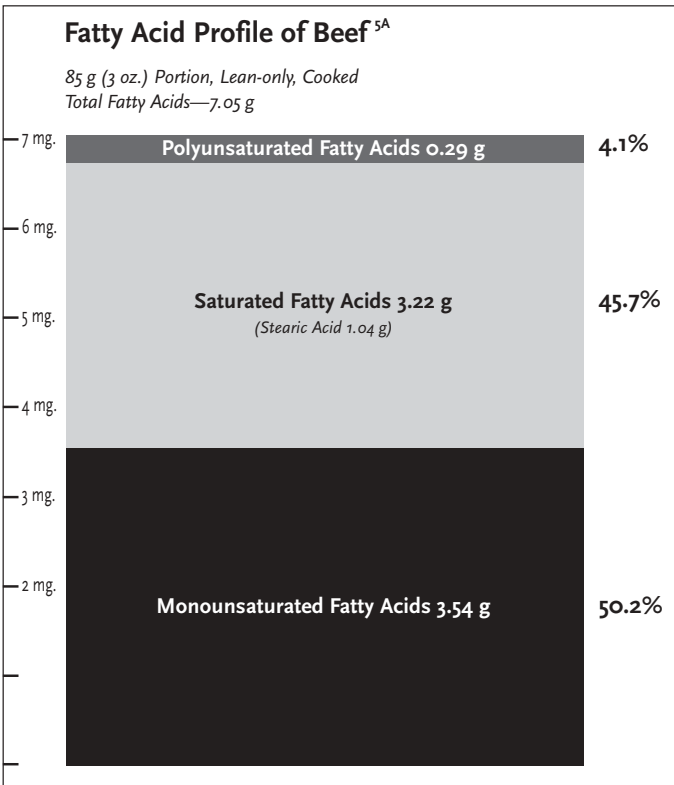


TABLE 17

Lean beef supplies significant amounts of high-quality protein, iron, zinc and many B-vitamins for each 100 calories consumed.<sup>5</sup> Restricting beef consumption in an attempt to follow a cholesterol-lowering plan may actually lower an individual's intake of these important nutrients.

A common misperception is that the majority of the fatty acids in beef are saturated. In fact, half of the fatty acids in lean beef are monounsaturated,<sup>5A</sup> which most experts believe can lower blood cholesterol and reduce risk of heart disease.<sup>6</sup> A 3-ounce serving of cooked, lean beef typically contains more monounsaturated fatty acids than saturated fatty acids.<sup>5A</sup>

5. U.S. Department of Agriculture, Agricultural Research Service. 2001. USDA Nutrient Database for Standard Reference, Release 14. Nutrient Laboratory Home Page, [www.nal.usda.gov/fnic/foodcomp](http://www.nal.usda.gov/fnic/foodcomp). (A: Beef, composite of trimmed retail cuts, separable lean only, trimmed to 1/4" fat all grades, cooked, NDB No: 13012. B: Beef, round, top round, separable lean only, trimmed to 1/4" fat, all grades, cooked, broiled, NDB No: 13217; pork, fresh, loin, top loin, boneless, separable lean only, cooked, broiled, NDB No: 10068; chicken, broilers or fryers, breast meat only, cooked, roasted, NDB No: 05064; butter, with salt, NDB No: 01001; candies, milk chocolate, NDB No: 19120; crackers, standard snack-type, regular, NDB No: 18229; C: based on separable lean only, trimmed to 1/4" fat (tenderloin o" fat) all grades cooked: eye round NDB No: 13184; top round NDB No: 13217; round tip NDB No: 13200; top sirloin NDB No: 13287; bottom round NDB No: 13406; top loin NDB No: 13270; tenderloin NDB No: 13442. Chicken, broilers or fryers, breast, meat only, cooked, roasted, NDB No: 05064; chicken, broilers or fryers, thigh, meat only, cooked, roasted, NDB No: 05098. D. Based on separable lean only, trimmed to 0" fat, choice, cooked, broiled, NDB No. 13070)

Research demonstrates that individual saturated fatty acids differ in their effects on blood cholesterol levels. In contrast to the predominant saturated fatty acids in the diet that raise blood cholesterol levels (lauric, myristic and palmitic),<sup>6</sup> studies show that stearic acid has a neutral effect on blood cholesterol in humans.<sup>7,8</sup> Approximately one-third of beef's total saturated fat is stearic acid. When this is taken into account, the amount of potentially hypercholesterolemic fatty acids is comparable in beef, fish, and chicken.<sup>5</sup> Stearic acid is considered a major dietary saturated fatty acid, comprising approximately 26% of the total saturated fatty acids consumed.<sup>9</sup> Principal food sources of stearic acid include meats, fat-containing dairy products, processed grain products and cocoa butter.

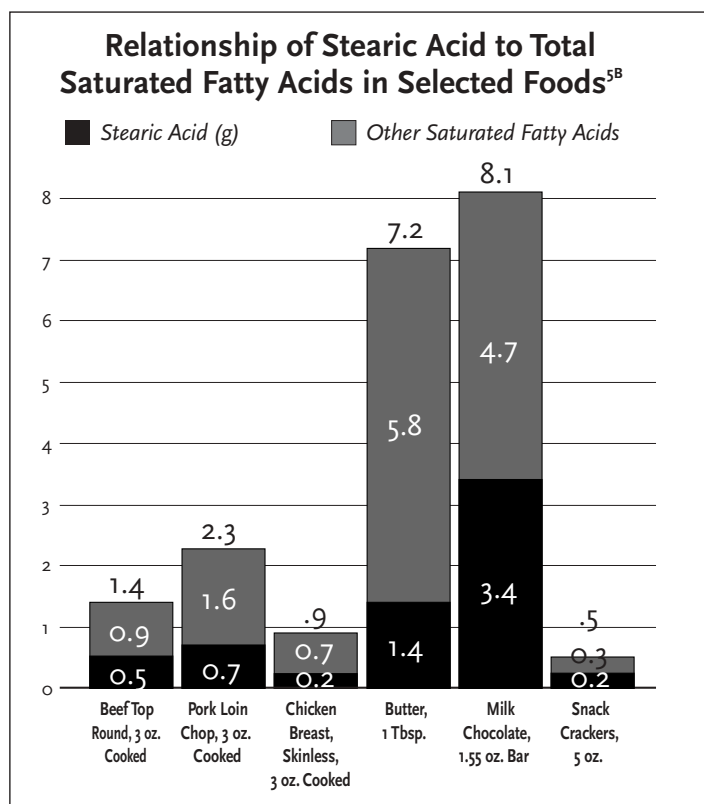


TABLE 18

6. Kris-Etherton, P.; Burns, J.H. (eds.) Cardiovascular Nutrition, Strategies and Tools for Disease Management and Prevention. Chicago: American Dietetic Association; 1998.

7. Pearson, T.A. (ed). Stearic acid: a unique saturated fatty acid. Am. J. Clin. Nutr. 60: 983s-1072s; 1994.

8. Kris-Etherton, P.; Mustad, V.; Derr, J.A. Effects of dietary stearic acid on plasma lipids and thrombosis. Nutr. Today 28: 30-38; 1993.

9. U.S. Department of Agriculture, Agricultural Research Service. Data tables: Intakes of 19 Individual Fatty Acids: Results from 1994-96 Continuing Survey of Food Intakes by Individuals. ARS Food Surveys Research Group. December 1997. [www.barc.usda.gov/bhnrc/foodsurvey/home.htm](http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm)

To reduce the risk of heart disease and cancer, experts recommend choosing lean cuts of meat. The 1990 Nutrition Labeling and Education Act defines lean cuts of meat as those with less than 10 grams of total fat, 4.5 grams or less of saturated fat and less than 95 milligrams of cholesterol per 100 grams.<sup>10</sup> There are at least seven

cuts of beef that meet the requirements for lean. Eye round, top round, round tip, top sirloin, bottom round, top loin and tenderloin have, on average, 6.1 grams of total fat, 2.2 grams of saturated fat, and 68 milligrams of cholesterol per 3-ounce serving.<sup>5C</sup> In addition, although it does not meet the guidelines for lean because 100 grams has 10.12 grams of total fat, a 3-ounce serving of flank steak has only 8.6 grams of total fat, 3.7 grams of saturated fat, and 57 milligrams of cholesterol.<sup>5D</sup> To further reduce fat intake from meat, trim visible fat from retail cuts, choose lowfat cooking methods and eat moderate portion sizes.

Balance, variety and moderation are essential components of a healthful diet. Choosing a variety of foods naturally low in fat and consuming the recommended number of servings from all food groups daily are the keys to achieving a balanced diet. To improve health and reduce risk for chronic diseases, health professionals focus on total lifestyle choices, not single foods.<sup>11,12</sup>

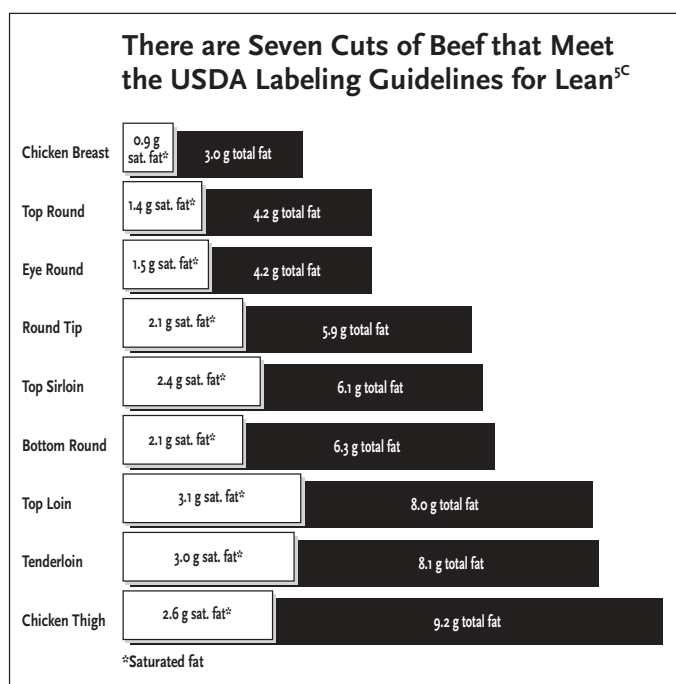


TABLE 19

10. U.S. Food and Drug Administration. The New Food Label. 1999. [www.fda.gov/opacom/backgrounders/foodlabel/newlabel.html](http://www.fda.gov/opacom/backgrounders/foodlabel/newlabel.html)

11. U.S. Department of Agriculture, U.S. Department of Health and Human Services. Nutrition and Your Health: Dietary Guidelines for Americans. 5th ed. Home and Garden Bulletin No. 232. Washington, DC: U.S. Government Printing Office; 2000. [www.ars.usda.gov/dgac/](http://www.ars.usda.gov/dgac/)

12. Krauss, R.M.; Eckel, R.H.; Howard, B.; et al. AHA dietary guidelines. Revision 2000: A statement for healthcare professionals from the Nutrition Committee of the American Heart Association. Circulation 102: 2284-2299; 2000.