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Marilynn Schnepf

University of Nebraska-Lincoln, mschnepf1@unl.edu

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IMPROVING HUMAN HEALTH WITH BEEF PRODUCTS

Marilynn Schnepf
College of Education and Human Sciences
Department of Nutrition and Health Sciences
University of Nebraska

Introduction

The optimum diet for humans has been the subject of much debate ever since it was discovered in the nineteenth century that certain nutrients in food were essential for human health. Nutrition science is a relatively young science with new information being presented about the role that foods and the nutrients they contain play in human health. The connection between the foods we eat and overall health is becoming more evident. The role that meat and specifically beef plays in our diets continues to be a topic of interest among the public as well as nutrition researchers. The purpose of this paper is to discuss some of the nutritional benefits of beef as well as some of the novel new research findings that are of interest.

Nutrients in Beef

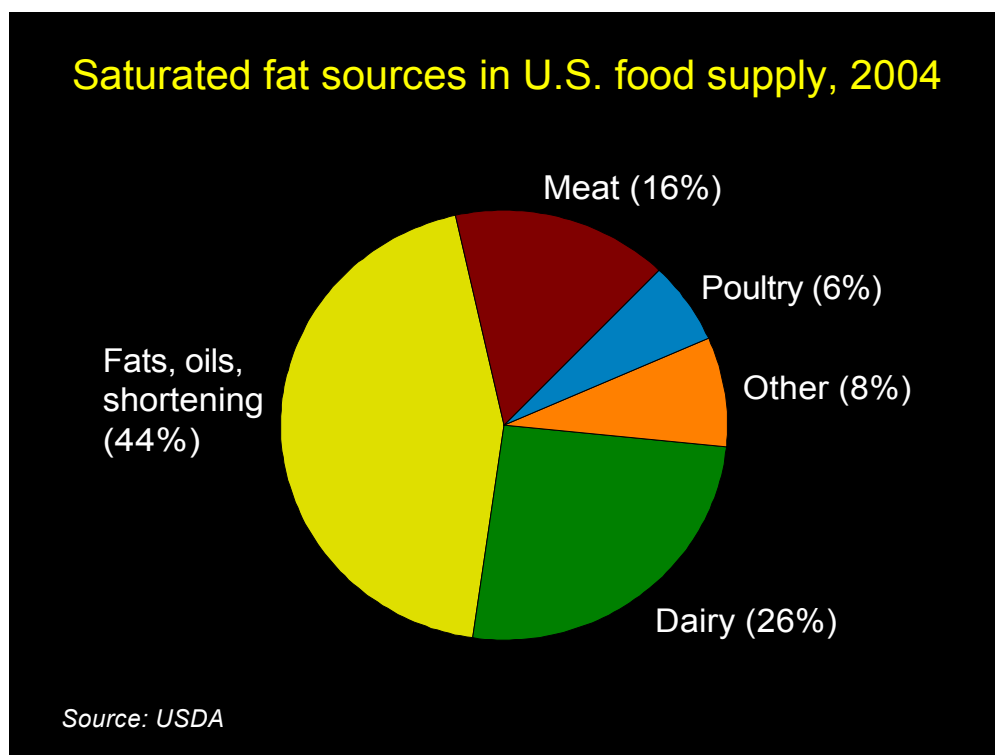
Over 50 different nutrients are important to human health with no food providing all of the nutrients. For a food to be labeled a high source a serving must contain 20% or more of the nutrient. Beef is a high source of protein, Selenium, Vitamin B-12, Phosphorus and Zinc. Beef is a good source of Niacin, Riboflavin, Iron and Vitamin B-6. A good source must contain 10% to 19% of the nutrient. Zinc is critical to growth and development, immune system maintenance, wound healing, and taste acuity. Iron is critical for cognitive development, intellectual performance, a healthy pregnancy and immune defense. The iron found in meat is in the form of heme iron which is better absorbed than the non-heme iron found in plant foods. Animal protein contains all of the nine essential amino acids which are the building blocks for muscles, organs and bones. A three ounce serving of meat provides 51% of the recommended daily protein. The B-vitamins help the body use energy and regulate many of the chemical reactions for growth and health maintenance. Selenium acts as an antioxidant which may reduce the risk of certain cancers and protect against heart disease. Phosphorus is important for formation of bones and teeth and maintenance and repair of cells. As a high or good source of these important nutrients beef is an important food to include in diets.

The Role of Fat in Human Health

At one time, fat was considered to be a nutrient that should be avoided for optimum human health. We now realize that not all fats are created equal. Fats are classified as either saturated, monounsaturated or polyunsaturated depending on how many double bonds they contain. The more double bonds a fat contains the softer or more liquid it becomes. Saturated fats are solid at room temperature and have been associated with an increased risk of developing heart disease. The consumption of unsaturated fats may have a protective effect. Monounsaturated fats are considered to be neutral. All fats and oils contain mixtures of both saturated and unsaturated fatty acids.

The amount of total fat available in the U.S. food supply has increased since the early 1900's, with the increase largely due to fat from vegetable sources (such as corn, soybean, palm, sunflower and olive oils). The amount of fat from animal sources has decreased slightly (1).

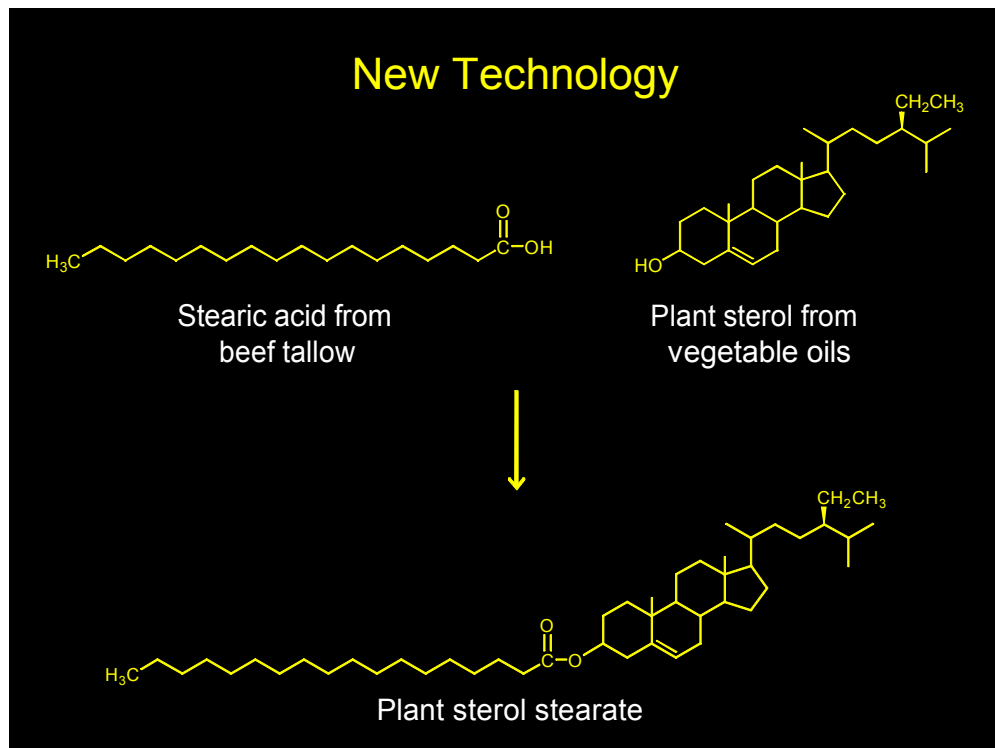
Meat is not the major source of saturated fat in the U.S. food supply (2). In 2004 it accounted for 16% of the saturated fat. Plant sources of fat contain more unsaturated fat but because they are consumed in high quantities they still account for much of the saturated fat intake.



Researchers have demonstrated that consumption of saturated fatty acids with chains longer than 10 carbons has resulted in elevated serum cholesterol levels. However, careful review of these studies revealed that stearic acid, a fatty acid with a chain length of 18 carbons, had a no effect on serum cholesterol or a lowered serum cholesterol. Beef, and other meat

including pork, lamb, and veal, contain about 9% to 12% stearic acid. Beef tallow is about 18% stearic acid. Some researchers feel that stearic acid has such unique properties that it should not be included together with the other saturated fatty acids on the food label.

Another unique use of stearic acid from beef tallow is in the production of plant sterol stearate. Plant sterols are components found in plants that are known to reduce serum cholesterol levels. Dr. Tim Carr, Department of Nutrition and Health Sciences at the University of Nebraska, has found a way to create a new compound that has been shown to lower cholesterol in hamsters and humans.



Another fatty acid found in beef which has unique health benefits is conjugated linoleic acid (CLA). CLA's are naturally occurring isomers of linoleic acid, an unsaturated fatty acid. CLA's are formed in the rumen of animals and were first identified for their anti-carcinogenic effects (3). Most naturally occurring anti-carcinogenic substances are of plant origin. Since that initial discovery, other beneficial effects of CLA are being studied. Dr. Jess Miner, a faculty member in the Department of Animal Science at the University of Nebraska, is trying to determine why mice fed a diet containing 1% CLA lost 50 to 80% of their body fat. This level of CLA in the diet cannot be achieved by eating beef products, but understanding how CLA's cause this reduction in body fat will advance our understanding of fat metabolism. This may one day lead to the development of a dietary product that could reduce body fat in humans and help control obesity.

Conclusion

Beef has some unique nutritional benefits which can improve diet quality for many people. The dietary advice of moderation, variety and balancing calories consumed with calories expended will usually result in a healthy diet. We still have much to learn about nutrients and their impact on health.

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