

## Grain- versus Grass-Fed Beef

### What We Know

- › Most if not all cows begin their lives eating a diet on pasture, drinking milk and eating grass.<sup>(4)</sup> Cows that are conventionally bred or grain fed are moved to feeding lots where their diet consists of mainly soy and/or corn.<sup>(4)</sup> Grass-fed beef, in contrast, comes from animals that have never been fed any grain and have access to pasture during grazing season.<sup>(2,4)</sup> Proponents of grass-fed beef have made claims that grass-fed beef is healthier, of higher quality and nutrient content, better for animals and better for the environment.<sup>(12)</sup>
- › Research of more than 30 years confirms the notion that grass-fed beef on a gram per gram comparison of fat to grain-fed beef has a better saturated fatty acid (SFA) lipid profile, is higher in total conjugated linoleic acid (CLA), and omega-3 fatty acids.<sup>(3,4,9)</sup> However, some sources refute the claims that grass-fed beef contain higher amounts of CLA and an improved SFA lipid profile.<sup>(5,11)</sup> A review of studies specific to U.S. grass-fed beef also found that due to the lower fat content of grass-fed beef, the total amount of CLA typically found in both grass-fed or grain-fed beef are basically the same.<sup>(11)</sup>
  - Grass-fed beef also provides more precursors for vitamin A and E in comparison to grain-fed beef.<sup>(3,4,6,9,11)</sup> Grass-fed beef is also lower in fat than grain-fed beef.<sup>(3,9,11)</sup> However, a similar intake of omega-3 fatty acids and CLA can be obtained from higher fat grain-fed beef
  - Systematic reviews of the literature on the nutrient profile of grass-fed beef have come from cattle throughout the world in countries like Brazil, Argentina, Uruguay, Australia and New Zealand.<sup>(11,12)</sup> Nutrient profiles of grass-fed beef from other countries, where the grass growing season is different from the U.S., may not be applicable to grass-fed beef in the U.S. More U.S. research is needed to affirm the intake of nutrient intake from various cuts of grass-fed meat. Both lean grass-fed and grain-fed beef contribute a variety of nutrients such as amino acids, vitamins A, B6, B12, D, E, iron, zinc, and selenium to the diet and can be a part of heart-healthy eating plan.<sup>(3,4,10,11)</sup>
- › The label on grass-fed beef will indicate whether the beef came from grass-fed cattle. Some at labels may indicate partial grass-fed claims, which is within the USDA Food Safety and Inspection Service guidelines; however, this claim is not useful to the consumer since all cattle spend at least the early portion of their lives eating grass or hay.<sup>(2)</sup> The USDA-FSIS is responsible for ensuring that claims on labels, such as grass-fed beef, are truthful. Farms that claim to grass feed their cattle are not required to be expected the USDA-FSIS. According to FSIS regulations, cattle do not have to be free of antibiotics or hormones.<sup>(2)</sup>
  - In 2006 the USDA Agricultural Marketing Service (AMS) enacted a grass-fed label standard. However, this standard was revoked in January of 2016. The USDA cited that the standard was revoked because the USDA-FSIS is the agency that has responsibility for approving all claims associated with meat labels.<sup>(7,8)</sup>
  - Other voluntary regulatory bodies include the American Grassfed Association (AGA) and the Animal Welfare Approved (AWA) Grassfed, both of which have more stringent certification requirements to meet the definition of grass-fed than do the USDA-FSIS.<sup>(2)</sup>

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- Both the AGA and AWA require that cattle have been fed only grass or forage from birth to slaughter. Cattle must not have been confined to lots, given any drugs such as antibiotics and hormones. The AGA also requires an inspection of the farm<sup>(2)</sup>
- › Due to the lower fat content, grass-fed beef has a more distinct grass taste than grain-fed beef. The appearance of fat in grass-fed beef may also have a yellowish appearance because of the higher carotenoid content.<sup>(3)</sup> The overall characteristics of grass-fed beef in terms of marbling, color, texture, tenderness, juiciness, and flavor are different than grain-fedbeef<sup>(3,12)</sup>
  - › Research suggests that the ruminal wall of grass-fed versus grain-fed beef may play a role in the growth and quality of beef and therefor the flavor of the beef due to a difference in gene expressions.<sup>(6)</sup> Some animals such as sheep, cattle, and goats are ruminant animals which means they have a four chambered stomach consisting of the reticulum, rumen, omasum and abomasum. The rumen is the portion that acts as a large fermentation space where bacteria and other microorganisms are located. Themicro-organisms break down feeding material that the cow is unable to digest. The process leads to a number of by-products which can be used by the animal such as volatile fatty acids (VFAs), which are absorbed and used as energy substrates<sup>(1)</sup>
  - › Research indicates that consumers are willing to pay more for grain-fedbeef.<sup>(2,12)</sup> One study of consumer’s preferences for grass or grain-fed beef in a supermarket in several cities found that consumers were willing to pay as much as \$2 more per pound for grass-fed beef.<sup>(12)</sup> However, the same study showed that the majority of consumers in their study preferred the taste of conventional or grain-fedbeef over grass-fed beef.<sup>(12)</sup> This same study also found that nutrition knowledge significantly impacted a consumer’s willingness to pay more for grass-fedbeef along with the fact that older adults and those who consume more beef at home were willing to pay more for grass-fed beef

## What We Can Do

- › Learn about grain- versus grass-fed beef so you can accurately assess your patient's personal characteristics and health education needs; share this information with your colleagues
  - Teach clients how to read and understand meat labels for information such as calories, fat, nutrient content, best-by date, organic, no antibiotics, no synthetic hormones, etc.
  - Teach clients about beef: from farm to store to table: [Beef from Farm to Table](#)
  - Teach clients about meat and poultry terms in the U.S. [Meat and Poultry Labeling Terms](#)

## Related Guidelines

There are no guidelines associated with this topic.

## Coding Matrix

References are rated using the following codes, listed in order of strength:

<b>M</b> Published meta-analysis	<b>RV</b> Published review of the literature	<b>PP</b> Policies, procedures, protocols
<b>SR</b> Published systematic or integrative literature review	<b>RU</b> Published research utilization report	<b>X</b> Practice exemplars, stories, opinions
<b>RCT</b> Published research (randomized controlled trial)	<b>QI</b> Published quality improvement report	<b>GI</b> General or background information/texts/reports
<b>R</b> Published research (not randomized controlled trial)	<b>L</b> Legislation	<b>U</b> Unpublished research, reviews, poster presentations or other such materials
<b>C</b> Case histories, case studies	<b>PGR</b> Published government report	<b>CP</b> Conference proceedings, abstracts, presentation
<b>G</b> Published guidelines	<b>PFR</b> Published funded report	

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