

GIVE ME LOW-FAT AND GIVE ME TASTE

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**Richard J. Epley
Extension Animal Scientist, Meats
University of Minnesota, St. Paul**

Consumers can be difficult to understand. Marketing surveys, designed to find out what consumers want, often come to different conclusions regarding consumer preferences. Conclusions can vary with geographic area, economic background and, indeed, from year to year. If we have learned one thing in the past several years, it is that consumers are not a homogeneous group with respect to their purchases of food. Heterogeneity of consumers can be a problem for the beef industry but it can also be a source of opportunity for those interested in niche markets.

What do consumers want?

At the risk of sounding contradictory, we can list the following (in no particular order) as general consumer wants with respect to beef:

- ! Safe
 - ! chemical (e.g. hormones)
 - ! microbial (e.g. salmonella)
- ! Low cost
- ! Convenient
- ! Good tasting
- ! Low fat content

One can easily add several items to the above list. One can also become frustrated at the implications of trying to make sure any given food meets the above criteria. Make no mistake however that there are many players trying very hard to capture and hold a market for their product whether it be muscle foods (beef, pork, chicken, turkey and fish), fruit and produce, snacks, etc.

In the food industry, considerable attention has focused on fat reduction. Beef has always been known as a great tasting meat. Unfortunately, fat also contributes to flavor. Thus the industry is faced with a paradox: how to reduce fat content but yet maintain taste. Saying it another way: "Give me low-fat and give me taste."

Before going further, we should define fat. Few would argue that consumers want to purchase something they later throw away. Trimmable fat fits into that category. The number of retail stores that are closely or zero trimming beef increases monthly. The fat that contributes to taste is intramuscular fat or fat within the muscle (or a frankfurter). In fresh cuts of beef, visible intramuscular fat is known as marbling and is the major factor in the USDA quality grading system.

Traits that affect palatability

Palatability can be defined as the combination of flavor, juiciness and tenderness. The following is a partial list of factors that influence/can affect each. (These will be discussed in more detail.)

Flavor:

- ! genetics
- ! grain feeding
- ! days on feed
- ! marbling degree
- ! aging time
- ! type of cookery

Juiciness:

- ! lean color (pH)
- ! marbling degree
- ! degree of doneness when cooked

Tenderness:

- ! genetics
- ! age of animal
- ! muscle activity (live)
- ! electrical stimulation
- ! muscle stretch during chilling
- ! chilling rate
- ! aging
- ! degree of marbling
- ! grinding and cubing
- ! vegetable enzymes/marination
- ! freezing
- ! thawing
- ! type of cooking
- ! degree of doneness
- ! carving

Which market is for me?

As one can see from the above list, a number of factors can affect palatability. However, unless one is targeting a niche market (discussed below), most producers target for the Choice YG3 or better fed market. Because of the moderately high heritability of most traits involved, producers could make rapid progress toward eliminating "waste fat" but not "taste fat", namely Choice YG1. Currently the economic incentive to do so is not present. The day of reckoning is, however, approaching.

In the meantime, producers have another option: US Select. Since US Good was changed to US Select in 1987, the number of carcasses graded in this maturity-marbling grouping has risen dramatically. The genetics x days on feed (and hence costs) required for cattle (carcasses) to be graded US Choice varies immensely. If US Select continues to grow in popularity, an increasing number of producers will critically evaluate if more money is to be made targeting for US Select rather than US Choice.

There are other emerging markets. Certified Angus Beef™ has grown dramatically since its inception. Among other requirements, CAB carcasses must have modest marbling or higher. Most CAB is very well trimmed and the modest or higher marbling does not appear to hinder sales. Indeed, taste is the CAB selling point. Natural is another niche market being pursued by some. Under current USDA definition, natural requires that the product be no more than minimally processed and that no artificial ingredients have been added. Virtually all steaks, roasts

and ground beef qualify for "Natural."

Two potential markets are worth mentioning. The 1990 Farm Bill contained provisions for organic meat. However, it did not define organic. The definition/requirements will not likely be finalized before October of 1993. A second potential market is the "Quantity Only" market. If Meat Science progresses as planned, this market would involve producing the maximum amount of muscle and let the processor adjust palatability to desired endpoints. The industry is currently producing ground product under this concept (McDonald's McLean Deluxe™, Smart Meat™, etc.) and has the research base to produce similar products with oat bran and soybean hulls. The goal of "quantity only" is to convert muscle with very little fat to steaks, roasts and other intact muscle cuts that have acceptable palatability.

Minnesota research

Our laboratory studied wild rice/ground beef mixtures. The research, sponsored by the Minnesota Beef Council and the Minnesota Paddy Wild Rice Council, found that an acceptable, low-fat product could be produced by mixing cooked, hydrated wild rice with very lean (10% fat) ground beef. Thanks to grants from the Minnesota Beef Council, our laboratory is further refining the wild rice/ground beef concept and is also surveying rancidity levels in beef at retail. Also, the Minnesota Beef Council has funded research (just starting) to examine the technological feasibility of low-fat, calcium-fortified frankfurters. Finally, we are attempting to isolate natural antioxidants from wild rice that in turn could be used to prevent warmed-over flavor in precooked beef.