Grass-fed meat – is it a case of price before science?

We hear many claims about the meat, eggs and milk from free range, organic, grass-fed, pasture reared and similarly named animals, but how much science and substance is there to such claims? In this article we will attempt to answer this question.

However, before we proceed to do that let us consider how the consumer perceives such descriptions of our meat. Yes, he may think they are nutritionally superior and safer, but he also has other perceptions.

These centre around the esoterics of a country lifestyle and a happier life for the animals and, as such, are very much the subjective views of the individual and hard to evaluate or quantify.

Defining welfare

One of the bases for defining welfare is comparison of lifestyles but, since animals can not read or watch the television, how can this comparative basis be applied to animal welfare except anthropomorphically and subjectively by a human being.

That is, if a broiler has spent all its life in a broiler house it has not experienced another lifestyle and therefore has nothing on which to base comparisons. Therefore, comparisons to a free range lifestyle, for example, are meaningless.

Thus, much of certain aspects of our views on animal welfare are based on human opinion and we must be careful to ensure that the views of the vocal minority are not disproportionately exaggerated to the extent that they inadvertently become the views of society.

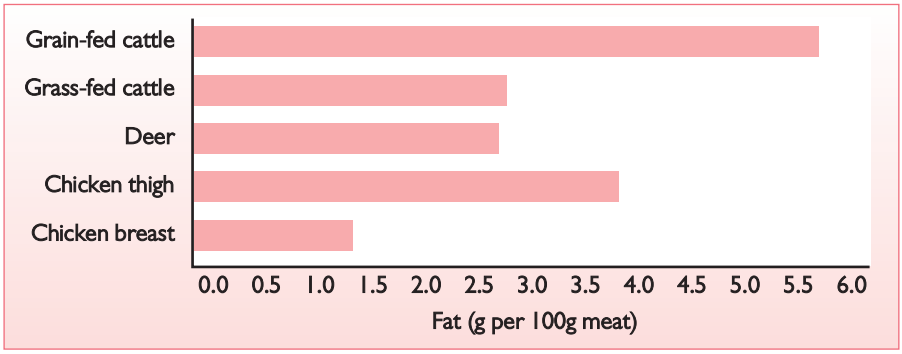
These people do not like to hear counter-claims, even if they are scientifically correct. For example, 'battery hens are kept in small social groups, which ensures that they all get their daily nutrition and water requirements; they are separated from their droppings, which minimises the build up of various enteric diseases, and they are kept in ideal environmental conditions and protected from adversaries such as the fox'. One would describe quite a different scenario for free range chickens based on the same yardsticks!

Taking this a step further, have you ever stopped to think where most of the meat producing animals are in nature's big picture? They are food sources for nature's carnivorous predators, none of whom has a slaughterman's licence! This is something the 'anti-meat brigade' will happily overlook.

If we look at the science behind grass-fed or free range products one of the most common claims heard is that they contain fewer 'bad' fats and more 'good' fats, they are richer in natural antioxidants and they do not contain added drugs and hormones.

Fats are an emotive subject and it is true that meat from grass-fed animals such as cattle and sheep tend to have lower fat contents (see Fig. 1).

Fig. 1. Fat content of meat from different animals.



Modern diets

Modern diets in intensive animal production do not produce excessive fat in the animal because to do so adds to production costs and is not desired by modern livestock farmers. However, there has to be a balance because fat, and especially intramuscular fat or marbling, contributes to taste, texture, tenderness and cooking qualities.

Obviously, for every attribute in meat somebody somewhere will have produced scientific data to back up their claim(s)!

So, if you will excuse the phrase, much of this data sometimes has to be 'taken with a pinch of salt'!

Fat has some nine calories per gram compared to protein which only has about four calories per gram. Thus, it can be claimed that a an eight ounce steak from a grass-fed animal has some 130-140 calories less than one from a grain-fed animal and this can help reduce your calorie intake.

But what saving is this in relation to your total daily calorie intake? In this context, we should remember that the basic nutritional data used in the human field often relates to what is in a portion on the plate which is not the same as a portion eaten. Many people trim fat off a steak and don't eat it!

We should not overlook the fact that for

Continued on page 17

Continued from page 15
some considerable time some producers of grass-fed beef have been looking for ways to increase the amount of marbling in the beef they produce to enhance its consumer acceptability.

More omega-3 fatty acids

Meat from grass-fed animals does contain more omega-3 fatty acids than meat from grain-fed counterparts and we know that omega-3 fatty acids are good for us in terms of reduced blood pressure and likelihood of heart attacks as well as reducing the risks of certain cancers.

What the advocates of grass-fed meat tend to overlook is that in recent years the nutritionists have often been bolstering the omega-3 fatty acids content of the diets of animals reared intensively for meat.

However, it must be remembered that other foods, such as seafoods and certain nuts and seeds, are also a good source of omega-3 fatty acids.

In the cattle context it must be remembered that feed lot cattle are not true grass-fed cattle and, interestingly, when cattle are moved from range to feedlot their stocks of omega-3 fatty acids decline.

One hears claims from the grass-fed beef lobby that over 50% of Americans consumed inadequate levels of omega-3 fatty acids and this needs to be restored, but they do not back up their argument by highlighting the consequences of such a deficiency. If there are no consequences how can you say people have consumed inadequate amounts of omega-3 fatty acids?

Recent research published in the British Journal of Nutrition this year suggests that eating only moderate amounts gives you a healthier essential fats profile within a month – blood levels of omega-3 fatty acids increased, whereas those of the pro-inflammatory omega-6 fatty acids decreased. The converse happened with eating grain-fed beef. Interestingly, the book The Omega Diet was published in the late 1990s and addressed this subject, yet many in the meat sector have never heard of this book.

There are claims that the meat from grass-fed animals contains more (by three or four times) conjugated linoleic acid than meat from intensively reared animals. There is evidence that conjugated linoleic acid may have some beneficial role in relation to cancer prevention. How strong is this evidence? If it was strong then surely we would all now be taking our daily dose of conjugated linoleic acid!

When it comes to human nutritional research one of the problems is that in many areas for every bit of research championing a particular position there is often another championing the counter position or the research is based on small, not necessarily representative, samples.

In man vitamin E is associated with a lower risk of heart disease and cancer and it has been shown that grass-fed beef contains four times more vitamin E than grain-fed beef but this is dramatically reduced when the grain-fed animals are fed extra vitamin E.

In an interesting review of their work in 2009 in the Journal of Animal Science, S. K. Duckett et al made 10 conclusions about grass-fed beef. These are listed in Table 1.

Ironically, in some parts of the world cultural requirements go against grass-fed beef. For example the Japanese have a strong preference for beef with very white fat. This is virtually impossible to obtain in grass-fed animals because they consume more β-carotene which adds a creamy colour to their fat.

Table 1. The beneficial attributes of grass-fed beef (when compared to grain-fed beef).

- Lower total fat content.
- Higher β-carotene content.
- Higher vitamin E content.
- Higher thiamine and riboflavin (B vitamins) content.
- Higher calcium, magnesium and potassium content.
- Higher total omega-3 content.
- Better ratio of omega-3 to omega-6.
- Better content of conjugated linoleic acid content.
- Better vaccenic acid (a pre-cursor of conjugated linoleic acid) content.
- Lower content of saturated fats.

Product safety

Another angle used to champion outdoor production is product safety in that intensively reared animals are more likely to receive contaminants through their man made feed – but is this the case?

Yes, there have been accidents with dioxins, as recently highlighted in Germany, and with melamine in China, but both these incidents probably related to negligence or criminal activities and if such people could find a way to profit from grass-fed animals they probably would!

Conversely, grass-fed animals were particularly adversely affected from the nuclear fall out from the Chernobyl disaster and there have been many cases of elevated lead levels in animals that grazed pasture in which old car batteries had been buried or old, lead painted wood had previously been burnt.

Fortunately, these two sources of lead have now been virtually confined to the history books. On another front, intensively housed, grain-fed cattle tend to carry higher levels of E. coli, including higher levels of the important cause of human food poisoning – E. coli O157:H7. Historically, studies have shown outdoor pigs less likely to carry antibiotic resistant bacteria.

So, there is a lot of evidence that highlights the attributes of grass-fed meat, but has this been pre-selected and championed by groups with vested interests? Yes, much of the nutritional evidence has some substance behind it, but is this substantiation of the facts rather than the proof of the consequences of those facts on human health?

One has to keep an open mind and one tends to think that if the case for grass-fed meat was so strong, why are we not all eating it? The answer probably lies in the fact that there is a price differential and for many people the question is 'which meat can I afford?' rather than 'which meat is best for the health of my family?' ■