



NUTRITION / DETOXIFICATION

Meat in the Middle

TEACHING YOUR PATIENTS ABOUT MEAT CONSUMPTION

Marlene Merritt, DOM, LAc, ACN

Have you ever wondered what's the truth about meat? Is it really as bad as many people think?

When I teach critical thinking and how to analyze research, I point out that despite what we think is true, *if an exception exists* (and I don't mean an individual, but an entire culture) then what we believe is simply not true. It means there is more investigation to be done, to see what's different and why. Mostly, though, what we tend to do is ignore what we disagree with, disregard science and keep marching forward with our beliefs, incorrect or not. Keep this in mind as we look at what's true and false about meat.

First, it's true that meat is inflammatory. Perhaps the best way to say this is, how we eat meat now is inflammatory. And it's inflammatory for multiple reasons. The first is the concern about arachidonic acid (AA). Just so you know, arachidonic acid is a necessary Omega-6 fatty acid — it's present in the brain in amounts equaling DHA and it's necessary to maintain hippocampal cell membrane fluidity for memory and for intelligence in infants. Studies have shown that ingesting 1,200 mg of AA (which is 12 times more than the average intake in the U.S.) has no effect on inflammatory markers. However, AA has a delicate balance between Omega-3 and Omega-6 fatty acids, so disparities of any of these cause unwelcome effects. An analysis of a Paleolithic culture (who did not have the level of inflammatory disease that we now have) shows an AA intake that is double ours. So, again, what's wrong with us or our meat that gives us a different result? Guesses, anyone?



What about those Advanced Glycation Endproducts that conveniently have an acronym that tells us what they do? (AGE). These can be formed when meat is cooked a certain way (more on this in a second) or with glycation, when a protein binds with a sugar. A sugar, you say? Well, imagine that — where do you think that protein is running into a sugar? In our bloodstream, with all the sugar and refined carbohydrates we eat. The worst reactions are with glucose, fructose (both of which form sucrose, which is table sugar) and galactose.

Despite the mental picture we have of a caveman holding a leg of something over an open flame, that's not actually how they cooked a lot of their food — they preferred boiling or wrapping meat in leaves for cooking. Grilling isn't actually good for our health. Every time you cook meat at high temperatures, especially over an open flame, you create compounds that are potentially carcinogenic. Those compounds include:

- Heterocyclic amines (HAs): these form when amino acids, sugars and creatine react at high temps (typically over 300 degrees)
- Polycyclic aromatic hydrocarbons (PAHs): these form during grilling, when meat juices and fat drip onto the fire below, causing PAH-containing flames to leap up and coat the surface of the meat. You can find PAHs in nearly any food that's been charred or smoked.

HAs and PAHs are also found environmentally, like in cigarette smoke, diesel exhaust, airborne particles and rain water. The problem with these two compounds is that they can cause DNA mutations when enzymes in your body "activate" them, creating an opportunity for cancer. Animal studies show HAs causing cancer quite consistently (especially colon, skin, breast and prostate cancer), and lung and leukemia show up with PAHs. And, observational studies have definitely shown pretty solid links between well-done, barbecued, or fried meat, and cancers. High temperature-cooked meat, especially over an open flame, is something to limit (especially since you don't know your exposure from other sources). This dry type of cooking is what also increases AGEs in the body.

People will also argue that eating meat is awful for the environment, and it definitely is, no question about it. But again, it's how we eat meat now that's the problem. Conventionally raised animals in feed lots eat an enormous amount of grains, instead of grass, changing it's nutritional profile for the worse, and driving a structure that requires a lot of farming. Much of the carbon footprint worldwide from cow products comes from clear-cutting rain forests to create grazing lands, which we don't do here, and we import very little from those countries. It's actually not cow farts that cause methane, but cow burps, but again, landfills easily lead for methane production and it's actually mostly from kitchen waste. When composted, kitchen waste makes carbon dioxide, but when it rots in a landfill? methane. It's been reported that raising cows on grass reduces reduced greenhouse gas emissions by 40 percent, consumes 85 percent less energy and if done correctly can sequester large amounts of carbon into the fields. And we don't take into account the transport and production of our vegetables. This study pointed out that "long-distance air transport, deep-freezing, and some horticultural practices for producing fresh vegetables may lead to environmental burdens for vegetarian foods exceeding those of locally produced organic meat." Just keep that in mind when you're thinking you're committed to the environment yet are debating between local, organic and out-of-state foods.

What about the claim that animal protein causes cancer? If that was true, then the traditional Inuit would have had rampant cancer (instead of their .01% rate) because they ate mostly animal protein and fat, as the permafrost kept them from planting vegetables. Of course, they're not the only example, but it's good to keep your critical thinking skills sharp by realizing that a large exception to a claim means that claim is wrong. The problem is, there are certain nutrients that you simply cannot get from plant sources so you are risking poor health by not eating meat, although clearly you are also risking poor health if you eat meat incorrectly. Despite what you might read on the Internet regarding being healthy as a vegan/vegetarian, there is negligible amounts of B12 in the soil, you don't convert beta-carotene to vitamin A nearly as well as you might think, vitamin D2 (found in plants) is not as effective as D3, etc.

So, what do you do? When you cook, try to not cook your meat on open flames or temps over 300, and limit charred or smoked foods (cut off any charred bits before eating). I recently saw a grilling mat that was used to prevent flare-ups — something like that could be helpful. Use a marinade with lemon juice, red wine, onion or garlic, which can cut levels of HAs substantially. If you're cooking on a high heat surface, turn the meat continuously or partially cook it using gentler methods like lower temps and steaming beforehand. Learn to use a crock-pot to make soups (using real stock made from bones) and stews. Buy local (this includes vegetables), and as clean a source as you can get.

It's probably not necessary to eat as much protein as we do, depending on your circumstances. There are a million reasons why we need more vegetables, but when your mouth is trained to want sweet things, and grilled proteins, then it's hard to want to eat vegetables. But keep trying — it's like when I work with kids, and I train the parents that the kids have to "Take a bite. Just a bite. You don't have to like it, but you have to have a bite." And just keep going from there.

Resources:

1. Crawford, MA; Sinclair, AJ (1971). "Nutritional influences in the evolution of mammalian brain. In: lipids, malnutrition & the developing brain". Ciba Foundation symposium: 267-92.
2. Fukaya, T.; Gondaira, T.; Kashiya, Y.; Kotani, S.; Ishikura, Y.; Fujikawa, S.; Kiso, Y.; Sakakibara, M. (2007). "Arachidonic acid preserves hippocampal neuron membrane fluidity in senescent rats". *Neurobiology of Aging* 28 (8): 1179-1186.
3. Birch, Eileen E., et al. "A randomized controlled trial of early dietary supply of long-chain polyunsaturated fatty acids and mental development in term infants." *Developmental*

Medicine & Child Neurology 42.3 (2000): 174-181.

4. Kelley, Darshan S., et al. "Arachidonic acid supplementation enhances synthesis of eicosanoids without suppressing immune functions in young healthy men." *Lipids* 33.2 (1998): 125-130.
5. Pischon, Tobias, et al. "Habitual dietary intake of n-3 and n-6 fatty acids in relation to inflammatory markers among US men and women." *Circulation* 108.2 (2003): 155-160.
6. Kuipers, Remko S., et al. "Estimated macronutrient and fatty acid intakes from an East African Paleolithic diet." *British Journal of Nutrition* 104.11 (2010): 1666-1687.
7. Reijnders, Lucas, and Sam Soret. "Quantification of the environmental impact of different dietary protein choices1-3." *Am J Clin Nutr* 78 (2003): 664S-8S.
8. Seyfried, Thomas N., et al. "Targeting energy metabolism in brain cancer with calorically restricted ketogenic diets." *Epilepsia* 49.s8 (2008): 114-116.

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