

# BEEF PLUS

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You look at the raw steak and see all of the fat—literally, like a light frost upon the meat—and you figure it has to be bad for your heart and other precious innards.

That's the only logical conclusion, given what you've been told by experts and quacks about fat, relative to our bulging waistlines and arteries.

For three decades headlines have warned us to avoid fats in the diet, first because of concerns about cholesterol (more later) and more recently as it relates to the obesity epidemic. Our own doctors—few of them trained in human nutrition—often reinforce the notion, advising us to reduce the consumption of fat in general, without informing us about the specifics.

Yet, this steak frosted with marbling, primer than prime, is healthy for you, just like all beef. Plus, this particular steak—Wagyu beef—comes with some added advantages.

Understanding these added benefits requires wrapping your arms around the reality few of us consumers understand: dietary fat is necessary for health, although some types of fat are more helpful or hurtful than others (see *The Skinny on Fats*).

## ***The Skinny on Fat***

For instance, research indicates that Mono-unsaturated Fatty Acids (MUFA) are either lower or are neutral to total cholesterol levels, while increasing High Density Lipoprotein levels (HDL—good cholesterol).

Information from the Mayo Clinic points out MUFA represents a healthy fat; the other two being Polyunsaturated Fatty Acids (PUFA) and Omega 3 Fatty Acids, which are a PUFA. According to the clinic, "These fats, if used in place of others, can lower your risk of heart disease by reducing the total and low-density lipoprotein (LDL-bad cholesterol) cholesterol levels in your blood."

Conversely, Saturated Fatty Acids (SFA) and Trans-fats increase the risk of cardiovascular disease by increasing

total and LDL cholesterol (see *Reducing Cholesterol with Beef*). "Intake of dietary cholesterol increases blood cholesterol levels, but not as much as saturated and trans fats do, and not to the same degree in all people," explain the folks at Mayo Clinic.

In other words, foods with higher MUFA:SFA ratios are more healthful than those with lower ratios. The reason has plenty to do with the HDLs (good) and LDLs (bad) that combine for a person's total cholesterol level.

## ***Wagyu Cattle have more Good Fat***

Tim Crowe, Ph.D., senior lecturer of nutrition at the School of Exercise and Nutrition Sciences at Deakin University in Australia, explains the Mono-unsaturated Fatty Acid to Saturated Fatty Acid ratio runs up to three times higher in Wagyu beef than other beef. Crowe says half of all marbling in a Wagyu carcass is comprised of mono-unsaturated fats.

According to Steve Smith, Ph.D., a professor of animal science at Texas A&M University (TAMU), it's the oleic acid—the primary component of MUFA—in beef that lowers LDL cholesterol levels. Icing on the cake comes with the fact that the more oleic acid there is in beef, the more palatable it is. That's one of the reasons Wagyu beef is noted for its tender and savory palatability.

"But, even the saturated fat contained in Wagyu is different. Forty percent of it is in a version called stearic acid, which is regarded as having a minimal impact in raising cholesterol levels," says Crowe. "So, really, the profile of marbled Wagyu beef is very beneficial to human health. It can be described as a healthier type of meat."

What's more, beef is an effective source of Essential Fatty Acids such as the Omega 3 (Linolenic Acid) mentioned earlier, as well as Omega 6 (Linoleic Acid). The body can manufacture most of the fats it needs except for essential fatty acids.

According to researchers at Washington State University, in animal studies, Conjugated Linoleic Acid (CLA) has prevented numerous kinds of cancers. Also in animal models it has reduced LDL cholesterol levels and triglycerides. Though CLA has yet to show strong human health benefits, according to Crowe, the promise continues to excite researchers.

This is another comparative strength of Wagyu beef, which contains the highest CLA/gram of any foodstuff. Research indicates Wagyu beef has about 30% more CLA than beef from other breeds, according to Crowe.

As for Omega 3 fatty acids, Crowe explains, "Protecting against heart disease, arthritis, depression, Alzheimer's, high blood pressure, and anti-carcinogenic properties are some of the main areas of benefit, but the list keeps growing."

Though certain kinds of nuts, fish and olive oil have long been heralded as a primary source of Omega 3, Crowe explains beef is another significant source, especially Wagyu beef because it possesses a higher proportion of monounsaturated fat, compared to other beef.

"Because of its beneficial fatty acid profile, Wagyu beef can be eaten in place of other varieties of red meat within the context of overall red meat intake recommendations as part of a healthy and balanced diet," says Crowe.

"Everything we've done so far tells us that Wagyu beef is better for you than the typical beef you can buy in the supermarket," adds Smith. "We have not yet had any negative effects of Wagyu beef on plasma cholesterol, LDL particle diameters, blood glucose, triglycerides, or body weight."

## ***Practical Dietary Applications***

Smith has conducted research comparing Wagyu beef to that derived from other breeds. One pilot project compared how cholesterol metabolism in human subjects was affected by

consuming either domestic ground beef or beef enriched with MUFA.

“What is apparent from these trials is that increasing the MUFA:SFA ratio in beef truly will lower the LDL:HDL ratio in free-living individuals,” says Smith. Spun with a different thread, the more MUFA and the less SFA, the more good cholesterol (HDL) there is and the less bad cholesterol (LDL).

In a recent study Smith and his TAMU peers tested the hypothesis that risk factors for cardiovascular disease would be higher in men after consumption of hamburger enriched with SFA and Trans-Fatty Acids (TFA) than after consumption of hamburger enriched with MUFA. The test subjects had cholesterol levels slightly above healthy levels. Ten men were fed high-SFA hamburger for a five-week period and then were rotated to high-MUFA hamburger, following a three-week transition period.

Domestic and Wagyu steers were fed pasture-based diets to produce beef high in SFA and TFA, which was used to formulate high-SFA hamburger. A second set of domestic and Wagyu steers were fed a corn-based diet to produce beef high in MUFA, which was used to formulate high-MUFA hamburger. Grain-feeding increases MUFA, while forage-feeding increases SFA and TFA. Keep in mind, genetically, Wagyu yields beef higher in MUFA than non-Wagyu beef.

The researchers found that plasma triglycerides tended to increase after consumption of the high SFA hamburger (HDL decreased 8.3% and triglycerides increased 66.2%) and then returned to normal after consuming the hamburger high in monounsaturated fat. Plasma concentrations of Oleic acid increased further (+29.7%) with the ground beef high in mono-unsaturated fat.

“This study has for the first time demonstrated the ability of hamburger naturally enriched with MUFA and reduced in TFA to provide possible health benefits,” says Smith. “Cattle with a genetic predisposition to deposit MUFA in their lean and fat tissues, such as Wagyu cattle can be used to produce beef products that are especially enriched with oleic acid and lower in SFA and TFA. Feeding practices can further enhance the composition of beef fat. This indicates that ground beef or hamburger products can be produced

that are naturally enriched with oleic acid, and conversely that certain production practices can impair the nutritional quality of beef fat.”

### **Back at the Ranch**

All of this is why U.S. Wagyu breeders, like Robert Estrin at Lone Mountain Ranch in Golden, NM are so bullish about the future of Wagyu beef production as a growing and sustainable niche beef category.

“Demand for the product is so strong that we can’t possibly supply what the industry requires for the foreseeable future,” says Estrin. “We (the industry) may not end up with a huge domestic herd, but building to 25,000 to 30,000 head of fullblood females nationally would allow us to get close to satisfying the demand from white tablecloth restaurants in the U.S. that are begging for quality Wagyu beef.”

That’s what led Estrin to replace the commercial cow-calf production on his ranch to Wagyu seedstock production four years ago. Mired in too many years of drought at the time, he was trying to figure out how to add value, how to produce and retrieve more value per acre of production.

Most industry estimates place the number of fullblood Wagyu in the United States at 3,000-5,000 head. According to Steve Kay, renowned market analyst, there were approximately 24,000 head of Wagyu-influenced cattle being fed in U.S. feedlots as of September 1, 2008. There were approximately 10 million head of all cattle on feed at the time.

Market prices reflect the supply and demand fundamentals. According to Estrin, the feedlots seeking F1 Wagyu cattle are currently paying \$20/cwt. more to get them; \$100 per head for a calf weighing 500 lbs.

“What scares some producers is that they think it’s a fad,” says Estrin. But, he points out the price for Wagyu beef internationally has continued to grow in emerging markets and has remained stable in mature markets such as Japan where the price has been about \$300 per pound for more than a decade.

“Cattle producers look at the bottom line, and the bottom line for Wagyu makes sense because the health benefits make sense,” says Estrin.



### Lowering Cholesterol with Beef

High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL) both carry cholesterol—which can’t be dissolved in the blood—to and from cells. These two lipids, along with triglycerides (a form of fat made by the body) and Lp(a)—a genetic variation of LDL—comprise your total cholesterol count.

According to the American Heart Association, medical experts believe HDL tends to deliver cholesterol away from the arteries and to the liver where the body can get rid of it. Some experts also believe HDL removes excess cholesterol from arterial plaque, thus slowing its build-up. So, high levels of HDL are associated with reduced risk for heart disease and heart attacks, whereas low levels of HDL (<40 mg/dL) are associated with increased risk of heart disease.

LDL, on the other hand, circulates slowly in the blood and can build up on the inner walls of arteries that carry blood to the brain and heart. It’s this stuff along with other gunk that can form plaque, which can narrow the arteries and make them less flexible. If a clot forms and blocks a narrowed artery, a heart attack or stroke can result.

So, foods that either elevate HDL in proportion to LDL or remain neutral in their influence represent healthier diet choices. Consequently, despite what a lot of us heard over the past few decades, beef represents a heart-healthy diet choice.

### The Skinny on Fats Monounsaturated Fatty Acids

(MUFA)—proven by research to be either neutral to cholesterol levels, or to lower them, while increasing High Density Lipoprotein (HDL-good cholesterol) levels. Oleic Acid, the primary component in the mono-unsaturated fat found in beef lowers Low Density Lipoprotein (LDL-bad cholesterol) without affecting HDL. It is associated with decreased risk of cardiovascular disease. Wagyu beef contains a higher proportion of monounsaturated fats than other beef; the mono-unsaturated fat to saturated fat ratio is up to three times higher for Wagyu beef than that from other breeds.

Saturated Fatty Acids—proven by research to raise cholesterol levels and may increase the risk of Cardiovascular disease. 40% of the saturated fats in Wagyu beef are in the form of stearic acids which has a minimum impact on cholesterol.

Essential Fatty Acids—The body can make most types of fatty acids except these, which must come via the diet. Among this group, most of the health benefits have been tied to:

Linoleic acid (Omega 6)—Conjugated Linoleic Acid (CLA) is a component of this group. The best source of CLA is beef or dairy products. Wagyu beef contains the highest CLA/gram of any foodstuff, about 30% more than beef from other breeds, due to the higher levels of Linoleic acid.

Linolenic (Omega 3)—fish contain the highest levels, but beef is also a valuable source, especially when considering the B vitamins beef supplies that fish doesn’t.