

meat scientist
PROF. STEPHEN SMITH

MYTHS AND MISUNDERSTANDINGS ABOUT OMEGA 3, OLEIC ACIDS IN BEEF NEED TO BE ADDRESSED

Grainfed beef is getting a bad rap in the popular belief that grassfed beef is a healthier option based on its higher levels of omega 3 oils, says a respected US meat scientist visiting Australia for the 2016 Wagyu Revolution Conference.

Jon Condon of Beef Central attended the conference - this is one of his reports.

Professor Stephen Smith, from the Department of Animal Science at Texas A&M University is regarded as a global expert in fatty acid profiles in beef. He has studied oleic acids in beef in the US, Japan, Australia and China for the past 30 years.

He spent much of his presentation to Wagyu conference delegates highlighting the exciting potential to exploit high levels of beneficial oleic acid in grainfed beef, and especially Wagyu.

While the abundance of oleic acid in grainfed beef was a positive dietary story that would benefit the industry, he also admitted, with some frustration, that much consumer attention continues to focus on the widely perceived dietary benefit in grassfed beef, because of its higher levels of omega 3 oils.

Prof Smith dismissed the omega 3 impact as insignificant, in comparison with grainfed beef's oleic acid advantages.

He referenced a US trial using 20-month old grain and grassfed Angus cattle.

The grainfed beef sample contained 30mg of alpha-Linolenic acid (the only significant omega 3 oil found in beef) per 100g pattie sample. The equivalent grassfed sample contained triple the amount - 90mg.

"There's no contesting that the omega 3 in grassfed beef is higher. But the key point is, a woman's requirement for alpha-Linolenic acid is 1600mg per day, while a man needs 1800mg," he said.

"I absolutely agree with the need to eat



more omega 3 oils, but beef (regardless of whether it is grass or grainfed) will never be a good source of omega 3s, or omega 6s."

"Yes, you can change the ratio of omega 6 to omega 3 in beef through grassfeeding - no question. But it has zero dietary implications."

"That's because grassfed beef is unable to satisfy a person's nutritional requirements for omega 3. Just a teaspoon of canola oil has all the daily dietary requirements for omega 3 that a human needs. You simply can't get that from beef - only proteins like salmon offer any real dietary benefit," Prof Smith said.

"But that's why I'm so excited about the oleic acid story with beef. We can tweak the oleic acid levels to increase concentrations by grams per sample, versus just milligram quantities per sample with omega 3."

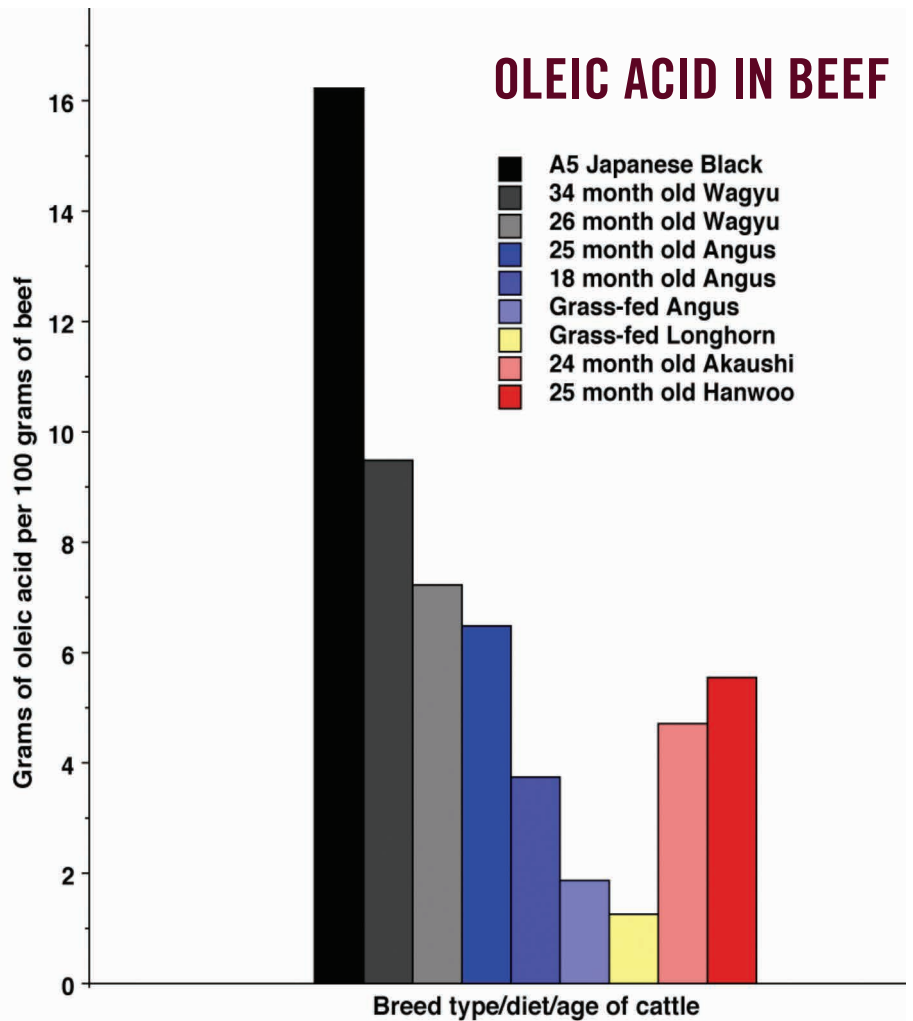
Prof Smith said he was greatly frustrated by the amount of misinformation on social media and elsewhere about the relative value of grain and grassfed beef, led by misleading information about omega 3.

New England Wagyu breeder Lock Rogers asked Prof Smith about the 'paleo' diet movement, led by superstar TV chef Pete Evans, which heavily advocated for grassfed beef over grainfed, on the basis of healthfulness.

"What you are describing is the complete opposite of what's being said: how do we reverse the message?" Mr Rogers asked Prof Smith. >>>

Graph from presentation given by Professor Stephen Smith at the 2016 Wagyu Revolution conference.

OLEIC ACID IN BEEF



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“What social media is pushing out, over and over again, is the evils of grainfed beef,” Prof Smith said.

“The messages include that it’s not sustainable, when in fact it is more sustainable than grassfed beef; that it produces more greenhouse gases, when in fact it produces less; and that grainfed beef is fattier, and hence less healthy.”

“We all have to help spread the message, by getting it out there into the social media and other channels – we have to overwhelm their message with our message. It has to get out there.”

“I’m the only one doing these type of studies – that’s not enough critical mass – we need to take the science based information we currently have and push it out there, and have more people doing similar studies to press home the message.”

“But it’s a huge, frustrating problem when people simply say, ‘Grainfed beef is bad for you,’” Prof Smith said.

“The issue we are running up against – and I’m sure it is happening as much in Australia as in the US – is that we are having to defend (the health attributes) of marbled beef. There’s a small, but very vocal minority, active in many countries, that does not want cattle fed in feedlots, using perceived health issues as part of their campaign.”

OLEIC ACID STORY BIG POSITIVE FOR BEEF

Prof Smith used much of his conference presentation to highlight the ‘healthfulness’ of fatty acids found in beef, and especially so in marbled beef.

He said worldwide in the scientific community, perceptions about beef fat had changed dramatically over recent years.

“The message used to be: ‘eat beef and die.’

Now, in the US and around the world, it’s ‘beef fat actually is better for you than its given credit for.’”

He said oleic acid was the most abundant fatty acid found in all beef. As a mono-unsaturated fatty acid, oleic acid decreased the levels of LDL (‘bad’) cholesterol, and increased HDL (‘good’) cholesterol. Saturated fatty acids do the reverse.

“The more you can increase your HDL cholesterol, the healthier you are going to be,” Prof Smith said.

So how much oleic acid is in beef?

Prof Smith presented the slide above, showing grams of oleic acid in different types of beef, based on a sample about the size of a ‘quarter pounder’ burger patty (100g). All samples contained 24pc total fat.

It shows several features:

» Oleic acid concentrations in Wagyu beef are remarkably dominant over all other

breeds. The highly marbled Japanese Wagyu sample (black column) had 16 grams of oleic acid per 100 grams of ground beef.

» Oleic acid concentrations are considerably higher in grainfed beef over grassfed (yellow and lightest blue columns). USDA Choice grade Angus beef (grainfed around 130 days) had twice as much as a grassfed Angus sample.

Human dietary studies using ground beef from a variety of production systems were used on several study groups including men with high cholesterol; post-menopausal women; and older men. Participants consumed five serves of ground beef per week, for six weeks.

The grainfed ground beef patties used in the trial contained much more oleic acid than grassfed samples, while the grassfed patties had more saturated (bad) and trans fatty acids. >>>



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Patties containing Wagyu had the most oleic acid of all – effectively trading-away trans fat and saturated fat for oleic acid.

One of the key points Prof Smith made was that while Wagyu beef is in fact healthier than beef from conventional breeds, this did not mean that beef from conventional cattle, especially grainfed samples higher in mono-unsaturated fatty acids, was unhealthy.

“Some beef is just healthier than others,” he said.

The trials showed that men and women tended to respond differently to the diets, with men’s results tending to rise more than women, who already had higher baseline HDL cholesterol.

The trials showed all types of ground beef increased HDL (good) cholesterol, but grainfed beef increased HDL cholesterol twice as much as grassfed. In doing so, it was lowering risk factors for diseases like type 2 diabetes.

While dietary fat also increased LDL (bad) cholesterol, the rise was insignificant in terms of heightened cardio-vascular disease, when compared with other factors like hypertension, hyperglycemia, smoking, or low HDL, which represented a ‘huge risk.’

“An increase of HDL (good) cholesterol of 4mg/day in fact strongly decreases your risk of cardio-vascular disease,” Prof Smith said.

CHANGED EATING PATTERNS

Prof Smith’s diet data also illustrated that as total fat intake rose in adopting the ground beef diet during the trials, eating patterns changed: carbohydrate intake among the test subjects voluntarily declined, when they ate more ground beef.

The conclusion was that as the participants went through the study, they were adjusting their diets, because in eating higher fat protein, they felt less hungry.

“It shows that as we consume more fats, we consume much less carbs. I consider this to be a healthy approach. It’s a message that we, as scientists are trying to get across to those who set the dietary guidelines. Backing-off on carbs is a good thing,” he said.

Prof Smith referenced a 2012 study backed by the US National Cattleman’s Beef Association based on a consumer study using lean (low fat) beef. While the study did indeed note a decline in LDL (bad) cholesterol among test subjects, it completely ignored the fact that there was also a significant decline in HDL (good) cholesterol.

“The US Beef Board is promoting lean beef based on this study. Not only does promotion of lean beef ignore at least half of the carcass, but it also reduces the good HDL cholesterol levels. This data is taking people in the wrong direction,” he said.

MUFA:SFA RATIOS

Prof Smith also discussed ratios of mono-unsaturated fatty acids (mostly oleic acid) to saturated (bad) fatty acids, which increase on a grain-based diet. Fullblood Japanese Wagyu cattle typically had ratios of 2:1 or higher, while commercial cattle had ratios around 1:1 or less.

Certain cuts, like brisket, contained the highest ratios of good fats of all, for reasons yet unexplained. “Briskets should be seen as a health food,” he said.

He suggested low lipid (fat) melting point was often a good indicator of beef containing high levels of oleic acid.

Under Stage 3 of the Australian Wagyu Association’s research project, Prof Smith plans to examine genetic relationships with lipid melting points, and whether sire lines in Australian Wagyu cattle can be identified that consistently produce low melting-point fat.

During question time, Prof Smith was asked about indications from Japan that NIRS devices were now being used by processors to routinely measure fatty acid profiles on carcasses in the chiller.

“It’s brand new – I’ve only just heard about it,” he said. “If it works the way they say it does, it will change life as I know it – the gas chromatograph I currently use for this purpose in the laboratory is obsolete,” he said.

“If it’s true, it’s an enormous leap forward for people like Wagyu breeders who are interested in documenting fatty acid composition. But can that device distinguish between different kinds of saturated fats? Palmitic acid, for example, stays the same in all beef at about 25pc. But stearic acid can go from 4pc to 40pc. Can the Japanese device distinguish this? We need to learn more.”



Professor Stephen Smith, from the Department of Animal Science at Texas A&M University is regarded as a global expert in fatty acid profiles in beef. Catch up on his informative talk given at the 2016 Wagyu Revolution conference.

Jon Condon
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