

Not all energy is created equal

by Dianna Malcolm

Everyone who dairies has struggled with fresh cows that are sluggish and not achieving enough Dry Matter Intake (DMI) after calving.

It's the nightmare start to a poor lactation – and often the gateway to a number of post-calving complications that can end with an unnecessary fatality.

However, Australian nutritionist Ian Sawyer, of Feedworks, says there is now well-documented

scientific evidence that explains the reasons why this happens – including an easy way to avoid it.

And, it's so logical that it begs the question, 'why hasn't it been widely shared before now?'....

» *Metabolic changes in the liver post-calving mean most fresh cows aren't achieving enough Dry Matter Intake.*



HISTORICALLY, IAN SAYS, the two things few people talk about in fresh cows are blood glucose levels and liver performance. The conversation is more commonly about DMI and rumen performance.

However, some of the best animal nutritionists in North America have proven that all four are intricately linked. And, it is the cow's energy status and liver performance that ultimately drives her DMI and rumen health.

It was the HOT theory (Hepatic Oxidation Theory) developed by Professor Mike Allen at Michigan State University, which showed liver metabolic changes post-calving meant most fresh cows weren't achieving enough DMI.

So, although cows weren't physically full, they were unwilling to eat, thus challenging their energy status and making them vulnerable to post-calving complications. It was game-changing data.

Ian says, "The liver has been grossly underestimated in this whole conversation. It expands 40% during lactation, and the best way I can put it into perspective is that if a cow was a car, the rumen is her fuel tank, but the liver is her engine.

"And, her appetite limitations as a fresh cow come from her liver.

"If you get that right, the DMI will be right and many, many good things will happen around her health, production and reproduction."

Pre-calving truth

When a cow's DMI drops pre-calving, many think it's because they are so heavy in calf that there is no physical room for more feed.

"That's not what's happening," Ian says. "Their DMI drops because the cow goes into a mild condition not unlike gestational diabetes. Her insulin levels and insulin sensitivity drops away – and this is the same for all female mammals before giving birth. Insulin slows the break-down of fat, and when it goes away, the fat flows off the cow.

"Before she calves, there are large amounts of glucose and amino acids flowing across the placenta and she is giving up body condition to favour the calf. At the same time, she is getting a metabolic satiety signal – which stops her eating."

Any challenges during calving or post-calving can then destabilise her recovery and her appetite, and potentially compromise her whole season. Or cost her her life.

However, blood glucose delivered in the right form at the right rates around calving time, changes that conversation.

Up and going

Ian has formulated a new oral supplement, Keta-go, which is having a significant impact on-farm.



Photo: Simon Tognola

➤ **Feedworks' Ian Sawyer is at the epicentre of a break-through treatment for fresh cows.**

"All energy is not created equal. We want glucose delivered, without it having to be created in the cow's liver post-calving," Ian says, "because the liver has plenty going on already at that time.

"The good news, is we can manipulate glucose to manipulate insulin post-calving, and we can slow the rate of body-condition loss. I'm happy for cows to give me body condition, but I want it over six weeks – not in two to three weeks. Body condition is there to help drive the cow to peak production."

The product uses glycerol and propylene glycol (two highly effective tools for raising blood glucose) added to specially targeted vitamins, minerals and a scientifically proven yeast metabolite Diamond V (which supports feed digestibility and efficiency, plus supports recovery from injury or stress by promoting a healthy balance of bacteria in the lower gastrointestinal tract). Diamond V also has a US Food and Drug Administration approval for promoting DMI after calving.

Ian says, "Does every cow need Keta-go? Probably not. In North America, they'd probably give it to every cow as a matter of course. But every time there is a cow that has some risk, intervention or if she's over-conditioned, they are probably not going to eat, and that can start to cascade and be quite profound.

"The secret to a cow's health is getting them to eat, and the secret to getting them to eat is giving them the 'right' energy."

Rapidly fermenting grains

He confirms feeding rapidly fermenting grains post-calving in the dairy suppresses DMI.

"For example, if you feed seven kilograms of wheat to a fresh cow, they will voluntarily graze less, than if you fed that grain as a spread of carbohydrates [wheat, barley and corn].

"A slower, steadier breakdown of carbohydrates is good for all cows – but it's particularly good for fresh cows. And, with

many dairies now having cow collars, it's not as big a deal as it used to be to tailor a fresh-cow grain-mix."


Brain power

Ian says blood glucose also vital for a cow's cognitive function – easily identified in a downer cow.

"So, those cows that are down with milk fever, that also present disoriented and struggling big-time, need blood glucose [for brain function] as well as calcium [to stand].

"If they can't get up, yet they are bright and responsive in themselves, that's more solely a milk fever problem.

"However, we know milk fever is the gateway to seven post-calving conditions, so treating them with enough of the right energy at the same time is an insurance worth considering."

Given that half the profit per lactation per cow is generated in the first 100 days post-calving – and the most important time for reproductive performance is three weeks either side of calving – supporting cows with more energy post-calving is certainly food for thought. 

References

For the scientifically minded, these references cite some of the research behind Keta-go:

Allen Michael S., and Paiantoni Paola 2014. "Physiological mechanisms controlling feeding behaviour". Presentation, Veterinary Clinics of North America: Food Animal Practice.

Allen Michael S., and Paiantoni Paola 2013. *Metabolic control of feed intake: implications for metabolic disease of fresh cows*. Published by Veterinary Clinics of North America: Food Animal Practice.

Allen Michael S., 1996. "Physical Constraints on Voluntary Intake of Forages by Ruminants". In *The Journal of Animal Science* 74:3063–3075.