



A Quest for the Facts: Feeding Ionophores & Using Implants in Our Cattle

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FOR
IONOPHORES
AND
IMPLANTS

It seems that every time I turn on the news or read an article, the topic of our food and where it comes from makes the headlines. Sometimes we hear good news stories, often bad stories, and then there is the odd story that makes me wonder if it's good or bad. The latest story that has left me puzzled is A & W Canada's announcement that all of their beef will now be 'Better Beef:' hormone and antibiotic free. I first heard it on the radio and then have received countless email articles as well as seen posts on Facebook and Twitter in response to the announcement.

The campaign has been labelled as one of the latest fear mongering marketing techniques used in the food industry: marketing with a purpose of scaring consumers into thinking that food not produced a specific way is harmful. Since this is something that gets my tail feathers quite ruffled, I decided to do a bit of research, and discovered that A & W has an entire website dedicated to their 'Better Beef' campaign: www.awaddedbeef.com. The website is very well put together, and there is information on the beef product and the ranches it comes from. At a quick glance, it seems like a very idealistic program, but with a closer examination and a look at the big picture, how ideal is a campaign such as this for the Canadian beef industry? There is only one Canadian ranch listed on the website, which leads one to believe that a burger from A & W could be from Montana or Australia; when sustainability is mentioned on the website, I question this when I think of the great distance to bring a commodity to our country from Down Under. And another question, is it leading consumers to believe that the rest of the beef produced in Canada is unsafe? Is meat from animals fed growth promotants and animals raised with implants harmful?

Canada has very stringent and rigorous regulations regarding food production, and the beef industry is no exception. Before a feed additive, implant or any other additive can be approved for use in our food system, it must be scientifically proven to not cause harm to humans consuming it. We have all heard this many times, and we trust that it is so, but it is also important to understand the mechanisms and way that feed additives and implants work to help us make the right decisions for raising our livestock and feeding our families.

The Facts on Implants

There has been a lot of hype and controversy over the use of hormones in livestock production. In the beef industry, we use hormones in the form of growth implants. Many studies have been done over the past forty years on the use of growth implants in cattle. I referred to an article written by a researcher at Oklahoma State University, Dr. Josh Payne. Hormones are naturally found in all plants and animals and they perform many cell activities necessary for a plant and animal to function normally. Growth implants are compounds containing natural or synthetic hormonal stimulants used to improve the growth of beef cattle and therefore increase the efficiency of beef production.

To begin, as long as they are used properly, the current growth implants available and approved for use in Canada increase the growth rate of calves anywhere between 5% and 20%, according to work done by Alberta Agriculture. Implants can be used in all calves, from suckling to the feedlot. They should not be used in replacement heifers, as they could affect reproductive development. In 1980 and 1981, trials were done across Alberta involving 1840 suckling calves. The results showed that heifer and steer calves gained 5% more than the non-implanted calves. Trials were also done with yearling steers on pasture and gains were 13%-22% higher in the implanted steers. Many studies have been done over the past 40 years on the use of implants in feedlots, showing on average, a 14.5% increase in gains.

The basic benefits of implants are recognized by the beef industry, but how do they work and more importantly, how is the end product, our steak, affected? The increase in gains on implanted calves is due to the increased feed conversion; implants cause the cattle to eat more, use feed more efficiently and put on more lean tissue. There are several different implants approved for use in Canada with different modes of action that all affect the levels of naturally occurring hormones. Estrogen based implants cause the level of growth hormone in the endocrine system to increase and the animal's cells will proliferate at an increased rate, which results in increased muscle and skeletal growth rates. The other common type of implants are androgenic and they cause more protein formation which leads to increased muscle mass. There are also other types of implants that contain synthetic compounds that are chemically similar to natural hormones and they have similar effects on an animal.

The impact of implants on the meat from these animals has been widely studied. There is a common misconception that meat from an implanted animal has higher levels of hormones and can affect hormone levels in our own bodies when we eat it. However, our own bodies produce hormones at very high rates to carry out normal body functions; for example, the average man produces 136,000 nanograms of estrogen a day. The implant pellets we use in our cattle release small amounts of hormone as the animal grows keeping the hormone level low, and as a result, the use of implants in beef animals has very little impact on the hormone levels in the meat.

EVENTS

Keep an Eye Out For:

“A Field Day in the Corn”

Wed, Nov 20, 2013
GPRC Fairview Campus
FAC 144

Start time: 10:30 am
Lunch Included

RSVP to Monika
@ (780) 523-4033

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Dr. Payne and many other researchers have studied levels of hormones in different types of beef. A producer in Illinois, Mike Martz, who participates in a program to educate urban consumers about modern agriculture, came up with the below demonstration to illustrate the levels of estrogen found in a few common items; the photo below shows the comparison between the items, where one M&M represents one nanogram of estrogen:

Beef from a steer not treated with implants: 1.3 nanograms of estrogen in a 3 oz. steak
Beef from a steer treated with implants: 1.9 nanograms of estrogen in a 3 oz. steak
Baked potato: 225 nanograms of estrogen
Birth control pill: 29,400 nanograms of estrogen (a nanogram is equal to 1 billionth of a gram)



A Word About Ionophores

The common feed additives, Rumensin, or monensin sodium and Bovatec, or lasalocid sodium are both antibiotics classified into the group of compounds called ionophores. Ionophores are naturally occurring compounds that were discovered in the 1960s. They are salts that are synthesized from a bacteria in a complex medium consisting of glucose, soybean oil and grit (Lowicki et al, 2013). Monensin works on certain parts and functions of animal cells, and affects different animals differently, depending on factors such as dose and administration method. It is toxic at low levels to animals such as horses and dogs, but not to others, including ruminants. Ionophores are classified as antibiotics because they kill something living, or biotic, but they are not in the same class of antibiotics as those that we use for treating infections in livestock and humans, such as penicillin. Monensin selectively inhibits the growth of cells; some cell types are not affected by monensin, other types are, which makes ionophores a very useful tool in livestock production.

Ionophores are used in livestock production as coccidiostats and non-hormonal growth promotants. Monensin is very useful as a coccidiostat because it will kill the parasitic protozoa that live in the intestines and cause coccidiosis. When monensin is fed, not only are the coccidiosis-causing protozoa killed off in the infected animal, but it is an excellent method of prevention, as infection is passed on through feces so if the manure isn't infected, other cows and in particular, calves, are less likely to be infected.

Ionophores are also very effective growth promotants in ruminants. The rumen is full of thousands and thousands of tiny microbes of all different types. When we are feeding a ruminant, we are 'feeding the microbes;' the microbes utilize what the cow eats to provide her with the protein, energy, vitamins and minerals that she needs for growth, maintenance and reproduction. When we feed an ionophore, we alter the microbe population in the rumen because the ionophore kills some microbes and not others. Some of the microbes have cell walls that the ionophore can get through, and those cells are killed off; other microbes are left unaffected. The resulting microbe population is very efficient and uses the feed the cow ingests very effectively and there is less waste as more protein and energy are available to the animal. In feedlot cattle, feeding an ionophore helps to put on more pounds as well as lean tissue onto the cattle. In a cow or breeding heifer, the microbes can use the feed more efficiently so the animal doesn't need to consume as many pounds of dry matter per day and can still maintain body condition. Ionophores will also help to prevent bloat and conditions such as acidosis, as it helps to keep the microbes under control should conditions become unfavorable in the rumen as a result of a feeding mishap.

Ionophores are a very useful tool, but should be fed with caution and only for recommended uses and at recommended levels. It is important to note that if an animal is being fed an ionophore and the ionophore is taken out of the diet, the microbes that were killed off will immediately grow back. There is also no genetic mutation of microbes susceptible to ionophores, which is what would cause antibiotic resistance (Lowicki et al, 2013). Ionophores are not used at all in human medicine, and since they only affect the microbes in the rumen, there are no antibiotic residues in the meat of an animal fed an ionophore.

A statement was issued by the Canadian Cattlemen's Association shortly after A & W made their announcement, "The Canadian Cattlemen's Association (CCA) appreciates efforts to connect consumers to farmers and farming practices, provided such marketing campaigns do not misinform the consumer. On behalf of the producers who raise cattle on Canada's 68,500 beef farms, the CCA would like consumers to know that all beef produced in Canada is safe, wholesome and nutritious."

I have to agree with the CCA and I believe that farmers and ranchers do their best every day to produce safe, healthy food. So whether it's organic, natural, or conventional, we are all producers of food and stewards of the land, trying to make a living and raise our families. I hope that fear mongering does not become the mainstream in the marketing of our food products but that we can continue to help educate our consumers and allow them to make their own choices without feeling fearful of the grocery store.

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