THE A1 vs A2 MILK STORY

In September 2007 Keith Woodford's book, *Devil in the Milk*, hit the book shops, creating a burst of publicity about the link between the type of milk New Zealanders drink and a range of serious illnesses, including heart disease, Type 1 diabetes, autism and schizophrenia. The story starts with the remarkable epidemiological evidence demonstrating the strong association between countries that have a high intake of A1 milk and a high incidence of both Type 1 diabetes and heart disease.

The book reveals how these diseases and a number of other health problems are linked to a tiny protein fragment that is formed during the digestion of the A1 beta-casein, a milk protein produced by cows in New Zealand, Australia and many other western countries. Milk that contains A1 beta-casein is known as A1 milk, whereas milk that is not is called A2 milk. Originally all milk was A2 until a mutation affecting some European cattle occurred some thousands of years ago. Herds in much of Asia, Africa and part of southern Europe remain naturally high in A2 cows.

BCM7

The effects on human health of this tiny protein fragment called beta-casomorphin-7 (BCM7), which is a powerful opioid or narcotic as well as being an oxidant, are explained clearly and simply by Keith Woodford, Professor of Farm Management and Agribusiness at Lincoln University in New Zealand. He brings together the evidence published in more than 100 scientific papers, examines both the population studies and the research undertaken with animals and humans, and explains the science that under-pins the A1/A2 hypothesis. He also points to the increasing evidence that BCM7 is associated with milk intolerance and an additional range of auto-immune diseases, including Type 1 diabetes, an auto-immune disease in which the body destroys its own insulin-producing cells. Type 1 diabetes usually occurs in childhood or early adulthood.

Human milk vs cows milk

The book also contains a number of references to the differences between human milk and cows milk and the impact this can have on the health and future well-being of babies. One of the differences has to do with protein differences. As Keith Woodford explains:

"The protein level of human milk is about 1.6% in the first few days following birth and then drops to about 0.9%. In comparison, bovine milk is typically 3-4%, depending on both the breed and individual differences. The specific balance between the proteins is also quite different. In bovine milk about 80% of the proteins are casein proteins whereas in humans the major proteins are whey proteins." (1)

There is also an important difference between the human casein protein and the beta-casein produced by cows. All human beta-casein is more like the A2 type rather than the A1 type which means that human milk releases much less BCM7. When testing human milk, New Zealand researchers found that they got less than 1% of the BCM7 that could be released from the same amount of A1 milk, meaning that when it comes to the relative opioid effect, human milk has less than one-thousandth the potential potency of A1 cows' milk.

Leaky gut syndrome

Part of the puzzle of how BCM7 gets into the bloodstream involves what happens to BCM7 when it is released into the gut. It should be difficult for BCM7 to get through the gut wall and into the bloodstream because the molecule is too large. However, some people suffer from leaky gut syndrome which enables BCM7 and other peptides to pass very easily through the gut wall and into the bloodstream.

Keith Woodford describes how in people with a leaky gut it is possible to detect BCM7 in the urine. He states that this condition has been closely associated with the symptoms of autism and schizophrenia due to the known opioid effects of BCM7, an association confirmed by the presence of BCM7 in their urine.

"*There is also very strong circumstantial evidence that people with stomach ulcers or untreated coeliac disease absorb BCM7 through the gut wall. It is also likely that babies can absorb BCM7 the*

same way; in fact newborn babies need to be able to pass large molecules through the gut wall. Otherwise they would not be able to absorb the colostrum in their mother's milk." (1)

Effects of BCM7 on babies

If newborns are able to pass large molecules through the gut wall then this increases their vulnerability and susceptibility to the effects of BCM7 in A1 milk and to infant milk formula products made with milk from A1 cows.

It is well known that opioids including BCM7 can reduce the rate of passage through the gut which explains why babies fed on cows milk formula products rather that human milk are susceptible to constipation and in extreme cases can suffer anal fissures. Keith Woodford suggests it is also possible, but at this stage unproven, that the slower passage of A1 milk through the digestive system (due to the release of BCM7), increases problems of lactose intolerance.

Early and prolonged exposure to BCM7 in infant formulas may therefore be a significant factor in the rising incidence of autism, Asperger's syndrome, Type 1 diabetes, heart disease, and a range of other auto-immune diseases. Research on the presence of BCM7 in infant formula has not been done and is urgently needed.

Until then, mothers would be well advised to breastfeed their babies for as long as possible, and to insist on breastmilk substitutes made with A2 milk, not A1 milk.

It is also not known whether BCM7 is likely to be a problem in cheese, or in ice-cream, yoghurt, and various other milk products. Until the research has been done, New Zealand consumers need to be aware that they may also pose similar risks to health that drinking A1 milk does.

The solution

The solution to the problem is both simple and unbelievably cheap. All that is required is for farmers to ensure that their cows are inseminated, naturally or artificially, with semen from A2A2 bulls. Given the majority of top bulls in New Zealand happen to be A2A2 this would not be difficult. Some of the smaller groups of New Zealand dairy farmers, predicting the increase in consumer demand for A2 milk, have already converted their herds to A2 cows. An added bonus for them is that some recently published research revealed than on average New Zealand A2 cows actually produce more milk than A1 cows. Keith Woodford has calculated that if farmers used only A2A2 bull semen for their herds it would take less than a decade to make the switch.

The question that then springs to mind is why has this not been carried out already? This is where the politics of public health and the vested interests of big business come into conflict.

NZFSA

The New Zealand Food Standards Authority is a government organisation charged with both protecting and promoting public health and safety, **and** facilitating access to markets for New Zealand food and food products. Herein lies the most astounding conflict of interest one could imagine.

NZFSA's response to the link between the consumption of A1 milk and Type 1 diabetes and heart disease raised in the publication of a paper by Dr Murray Laugeson and Professor Bob Elliott in the *NZ Medical Journal* in early 2003 demonstrated very clearly that in the battle between the interests of the dairy industry and those of public health, the industry's interests won hands down. NZFSA attempted to put a lid on this particular Pandora's box.

In 2003 Fonterra/the dairy industry and A2 Corporation were slogging it out in the courts, as A2 Corporation was claiming that ordinary milk should carry a health warning. Not an unreasonable position for the A2 Corporation to take, notwithstanding their vested interests in the issue.

Only two years prior to this – in September 2001 to be exact – Fonterra in its previous incarnation as the NZ Dairy Research Institute had applied for a patent claiming that A1 beta-casein was associated

the death from mental illnesses in general, and was strongly associated with autism in particular. This was because it was believed that BCM7 “may induce or aggravate a neurological/mental disorder such as autism or Asperger’s syndrome.” Epidemiology from 10 countries revealed that intake of A1 milk correlated very closely with WHO data on the level of deaths from mental disorders in those countries. The NZDRI’s patent application was subsequently abandoned.

During the years between the publication of the paper by Laugeson and Elliott in the *NZ Medical Journal* and the publication of Keith Woodford’s book, the NZFSA has continued to place the interests of the dairy industry above the considerable public health issues that the continuing consumption of A1 milk represents to the New Zealand public.

In conclusion, the A2 milk story is truly an amazing tale, one that is not just about the health issues surrounding A1 milk. It is also a story that reveals how scientific evidence can be moulded and withheld by vested interests, and how consumer choices are influenced and manipulated by the interests of corporate business.

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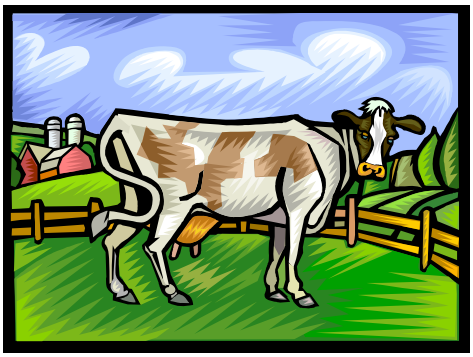
References

1. “Devil in the Milk” by Keith Woodford 2007. Craig Potton Publishing



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