The key to solving the health debate about A1 beta casein, and hence resolving the controversy about A1 versus A2 milk, lies with a little protein fragment called beta-casomorphin7. In short hand, it is written BCM7. I call it ‘the milk devil’.

Scientists have known about this protein fragment, or ‘peptide’, for more than 30 years. It is unique to casein, and hence the ‘caso’ in its name. It is also an opioid which attaches readily to opioid receptors in the brain, and hence the ‘morphin’. The ‘7’ indicates that it comprises seven amino acids. There are other casomorphins of different lengths, but BCM7 is the one of greatest interest because of its apparent links to many health conditions.

It is widely accepted that BCM7 is released only from digestion of A1 beta casein (produced by A1 cows) and not from digestion of A2 beta casein (produced by A2 cows). This has been shown by several scientific groups and was accepted by the European Food Safety Authority (EFSA) in their January 2009 report. The possibility of a very small release of BCM7 from A2 cows cannot be totally excluded, but if it occurs, both laboratory results and the underlying biochemical theory indicate it should only be minor.

It is also widely accepted that originally all cows were A2. The A1 cows that are found amongst herds of European origin (but are not found in pure African or Asian cattle) are the result of a mutation.

But BCM7 is a tricky devil. It is difficult to measure, and although it has been found in stomach contents, urine, and even in brain post mortems, it has not previously been identified in human blood. The European Food Safety Authority (EFSA) relied heavily on this fact, saying that without proof that it was being absorbed into the blood system there could be no proven link between intake of A1 milk, the absorption of BCM7 and human health.

Now a group of 12 Russian scientists from four leading research institutions has developed a test for measuring BCM7 in the blood. They have also shown that babies fed formula milk do indeed absorb BCM7 into their blood. Both of these are huge breakthroughs (although the absorption is exactly what would be expected on theoretical grounds given the permeability of babies digestive systems). But the Russians have gone much further than that. They have shown that some of the babies can get rid of the BCM7 rapidly from their systems, but that other babies retain
it in the bloodstream. And then comes the final blow. **Those babies who are unable to rapidly breakdown and excrete the BCM7 from their systems are at very high risk of delayed psychomotor development.**

The Russians found 30% of the babies fed formula had developmental delay whereas only 3% of breast fed babies were in that category.

There is a lot more of importance in the Russian paper. For example, they have shown that the human form of BCM7 (which is actually considerably different in its biochemical structure to the bovine form found in A1 milk), and which is found only in breast milk, is actually a good casomorphin, that enhances psychomotor development and works best in those children who don’t break it down quickly. It is only the bovine form, released in large quantities from A1 cows, that is the ‘devil’.

The Russian research is peer reviewed and has been published in the international journal ‘Peptides’. (The citation is: Kost NV, et al. B-casomorphins-7 in infants on different types of feeding and different levels of psychomotor development. Peptides 2009 Oct; 30(10):1854-60.) It is also available online from the publishers (Elsevier), and readers with access to university or research institute libraries will in general have ready access to the paper. Of course the paper is written for other scientists, and will therefore be hard going for those who do not have a background in biochemistry and statistics. For copyright reasons I cannot post the paper here.

When history looks back on the saga of A1 beta-casein and the ‘milk devil’ I think the verdict will be that this Kost et al paper is the most significant breakthrough for at least five years. It is not only the results themselves, but that the Russians have given major new insights which others can now follow up. For example, the insight that it is not just a case of whether the BCM7 is absorbed, but also whether or not the individual has the ability to rapidly metabolise and excrete the little devil, will open the door to new research pathways.

Of course much of the mainstream industry will attempt to downplay this research. Dairy Australia, when it became aware of this research, was quick to emphasise the earlier and greatly flawed EFSA report which attempted to hose down the A1 milk issue. The New Zealand Food Authority said that the Russian research was just one paper and that the results needed confirmation. But the bell is already tolling. This is not just a report by some mad scientist with a ‘bee in his bonnet’. It is a peer reviewed paper in an international journal by 12 scientists from four leading research institutions, with funding from the Russian Foundation for Basic Research. All praise to the Russians!

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