

'Superhero' protein struggling in the Australian market

It's faster than a speeding bullet and able to leap tall buildings at a single bound. It's not a bird, or a plane, or a bloke in a red cape. It's lactoferrin, a potent dairy protein. There seems to be little this protein can't do, but the Australian market is proving its kryptonite. Margaret Langdon found out more.

Lactoferrin is a whey-based glycoprotein with a powerful iron-binding capacity found in the milk of various mammals, including cows and humans. It is also found in other secretions, such as saliva, colostrum, tears, mucus and blood.

These secretions have an important job to do in protecting their host. Since the secretions are in contact with the body's external environment, they function as its first line of defence for the immune system when facing potentially dangerous invaders. Lactoferrin has been found to work as an inhibitor of human pathogens such as bacteria, viruses and fungi.

Research has shown lactoferrin to have antibacterial, antiviral, antifungal, anti-inflammatory, antioxidant and immunomodulatory effects.

One of lactoferrin's key pathogen-fighting properties is its ability to sequester iron. Many pathogenic bacteria thrive on iron, and

lactoferrin stop the bacteria's progress by making iron unavailable to them. It also functions as a natural antioxidant by binding to free ferric ions and inhibiting the formation of free radicals.

Lactoferrin has a demonstrated inhibitory effect on a number of viruses and is thought to bind directly to viral particles and inhibit their replication. It has been shown to have anti-inflammatory effects.

One of the most promising uses for lactoferrin may lie in its potential as a cancer treatment. Studies have found that the protein could be used as a safe and well-tolerated anti-cancer agent with demonstrated anti-tumour activity.

Breast-fed babies may be more resistant to infection than bottle-fed babies, partly due to the work of lactoferrin, which is present in colostrum and, in relatively high concentrations, in human breast milk.

Supply outstrips demand

Lactoferrin's functional properties make it highly attractive to dairy ingredient manufacturers. Bovine lactoferrin (BLF) is a key ingredient in infant formula and has many more applications in the steadily growing functional foods market and pharmaceutical products.

Lactoferrin has been marketed as a nutritional supplement in adult nutritional powders as well as dairy drinks, yogurts and sports formulations. It's also an ingredient in many cosmetics and dental products, particularly in Asia and North America.

Tatura Milk Industries is a major processor and exporter of the protein. Technical manager **Wayne Wilton** said the company



Pravana Biojen 9 hair treatment with lactoferrin, US.



Oxy Milk Whip face and neck wash and shaving cream for men with lactoferrin by Rohto Pharmaceutical, Japan.



Alterna Caviar Anti-Aging White Truffle Haircare treatment with lactoferrin, US.



Yoplait Hokkaido Milk Yogurt Drink with lactoferrin, Taiwan.

“The plant is working really hard, but nearly all of our lactoferrin is being sold to customers in Asia.”

– Wayne Wilton, Tatura

produced about 10 metric tonnes of lactoferrin per year, making the protein a key part of Tatura’s nutritional strategy.

“We can’t make enough lactoferrin,” Mr Wilton said. “The plant is working really hard, but nearly all of our lactoferrin is being sold to customers in Asia.”

“Most of our lactoferrin goes into baby formula. We know that lactoferrin is present in relatively high levels in human breast milk, especially in the early stages of breast feeding, so now it’s about really understanding the benefits babies get from those levels of lactoferrin and matching them in the formulae.”

The demand for the product has significantly increased over the past few years, Mr Wilton said.

“People are now realising the benefits of this product. It’s a bit like with colostrum, which is also going through the roof because people now understand its health benefits.”

Australia lags behind

While sales of lactoferrin are surging ahead in Asian markets, the demand is not nearly as strong at home.

“The Australian market is lagging behind,” Mr Wilton said. “Part of the problem in Australia is issues with labelling and the claims you can make on the packaging.”

“For example, you can’t say on the packaging that lactoferrin inhibits microbial growth. You’re only able to make reasonably generic claims, such as ‘immune booster’ claims.”

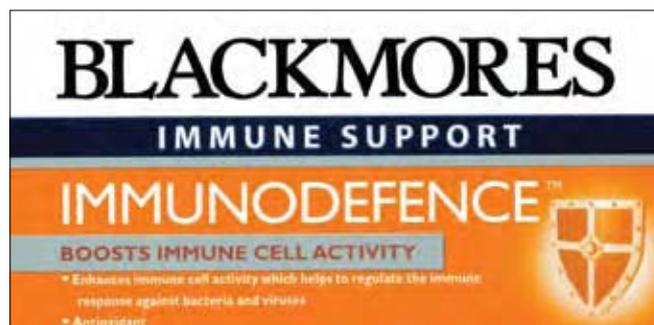
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Sara Lee’s Zendium toothpaste with lactoferrin, Belgium.



Avon Solutions Total Radiance face and neck cream with lactoferrin, sold in Brazil.



Blackmores’ Immunodefence lactoferrin caplets is one of very few ways Australians can consume lactoferrin.



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Vitalac, Vanilla flavoured 'growing up' milk, by Sari Husada, Indonesia.

Natura Start, baby formula (6-12 months), manufactured by Murray Goulburn for sale in China.

Moringa Milk's dry milk Hagukumi Baby Formula with lactoferrin, Japan.

Global product introductions with lactoferrin in product ingredients					
Category	2005	2006	2007	2008	2009
Baby food	0	8	10	13	10
Breakfast cereals	0	1	0	0	0
Colour cosmetics	0	1	0	0	0
Dairy	2	7	5	5	2
Deodorants	0	0	4	0	0
Haircare	6	5	14	13	11
Healthcare	5	9	10	7	2
Non-alcoholic beverages	0	0	1	1	2
Oral hygiene	5	17	10	12	9
Pet food	1	0	0	0	0
Pet products	0	1	2	2	1
Skincare	4	3	33	22	17
Snacks	0	1	0	1	0
Soap and bath products	0	0	0	4	0
Sugar and gum confectionery	0	0	0	1	1
Total	23	53	89	81	55
Region	2005	2006	2007	2008	2009
Asia Pacific	7	21	36	33	20
Europe	5	16	24	23	9
Latin America	0	0	4	2	4
Middle East and Africa	3	2	4	0	1
North America	8	14	21	23	21
Total	23	53	89	81	55

Source: Mintel gndp database.

"You've got to have a lot of clinical data and backup to be able to make really strong claims. There's clinical evidence out there, but it's hard to substantiate all the time.

"You can write articles about how great lactoferrin is, but in terms of printing it on infant product packaging, it's a 'no-no' domestically."

In Australia's tough regulatory environment, the real challenge is educating the public about the potential benefits of lactoferrin. While there's plenty of information about lactoferrin in scientific research papers, it's not the sort of reading material that's likely to be reaching the average consumer.

Mr Wilton said he looked to the mass media outlets to pass on the message. "On the domestic market, we have to get the message across through the media," he said.

Word-of-mouth and personal recommendations could also be a good way to spread the word, especially when it comes from the people 'in the know'.

Mr Wilton said both lactoferrin and colostrum had developed quite a following on the factory floor.

"Some people in our factory grab a couple of spoonfuls of colostrum if they get a bit of a sneeze, to boost their immune system. They swear by it and reckon they haven't had a big dose of the flu since they took that approach," he said. ■



Jin Jue Qi Fen Yang probiotic yogurt with lactoferrin, by Inner Mongolia Company, for sale in China.

Muscle Milk, lactoferrin-enriched meal replacement drink manufactured by Cytosport, USA.

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Product information in this article was supplied by Mintel GNPD. For more about the company, contact Gabrielle Comfort, (02) 9006 1062, gcomfort@mintel.com or www.gnpd.com.