

# Protein ingredients power up in low-carb era

As the global protein ingredients market tops \$10 billion, SHANE STARLING explores some of the differences between soy, whey and canola, the newest rising star

A good indication of the buoyancy of the protein ingredients market is the recent deal struck between British Columbia-based ingredients developer Burcon and ADM. Under the agreement, Burcon will licence its Puratein and Supertein canola protein ingredients to ADM. The multinational will then have responsibility for developing applications for the products, obtaining regulatory approvals and constructing production facilities. It will also gain exclusive rights to produce, promote, market and sell the products worldwide.

For ADM, one of the three biggest players in plant proteins, it is an opportunity to expand its portfolio in a fast-expanding market. For Burcon, it means the kind of exposure necessary to give its products a chance of gaining a major share in the world's biggest proteins market – the US, where *Nutrition Business Journal (NBJ)* estimates the protein foods market at \$3 billion.

It is no wonder ADM jumped at the chance to be the one to bring this new plant protein to market: The global proteins ingredients market is in excess of \$10 billion, the practise of vegetarianism is growing and wariness of meat products is increasing, and the low-carb explosion has provided another boost.

## FUNCTIONALITY DIFFERENCES

“Our process extracts and purifies the

protein from the meal,” says Burcon president Johann Tergesen. “The protein in canola is excellent both nutritionally and functionally and it acts differently to soy. For example, soy works beautifully as a water-binding agent. Canola, in contrast, functions in a similar way to animal proteins such as whey, gelatine and casein, which currently dominate the market. We'll be complimentary to wheat gluten and soy. ADM already has those two products in its

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catalogue so it will allow them to use canola to take on the animal protein market.”

He says there is little similarity with the other popular crop-based protein – wheat gluten. “Wheat gluten is obviously fantastic for bread. But you couldn't take wheat gluten and whip it and foam it like egg white and you couldn't use it as an emulsifying agent to create mayonnaise. You can with canola.”

Tergesen continues: “Protein ingredients are often incorporated into foods for their function as much as their nutritional value. A cake or cookie recipe will call for an egg not only for the taste of an egg, or its nutritional value, but also for its binding properties. That is often the case for proteins. Even

the head on a beer is from a protein ingredient. From a food manufacturer's point of view, another advantage is that plant proteins are cheaper than animal proteins.”

Another multinational player, DMV International, trades in protein ingredients from the fundamental to highly specialised peptides. The company is excited by the current climate for both animal and plant protein ingredients. “Soy and dairy whey/casein-based ingredients are very strong,”

states company spokesperson Tara Russell. “Also, specialty proteins and peptides such as lactoferrin and bioactive peptides are doing well.”

Dietary supplements, dietetic foods, clinical nutrition products, infant formulas, sports nutrition products and low-carbohydrate items, such as meal replacements, are showing the strongest growth, especially in Japan, the rest of Asia and the US.

The health benefits of individual ingredients need to be emphasised as they are often very different to the commonly recognised benefits of their sources. “For example, we have a peptide that helps lower blood pressure (C12 peptide) and another that helps with muscle recovery (glutamine ►

peptide). Their benefit goes well beyond that of the protein from which they are derived," Russell points out.

## MARKETING TO DIFFERENT NICHES

Deciding what to tell different sectors of the population about ingredients is a minefield that has to be negotiated with the utmost precision. Otherwise, expensively generated information campaigns can fall on deaf ears.

"We find there are highly varied levels of understanding among consumers," Russell notes. "At one end, there are people with only a very basic understanding of nutrition. At the other end, some people know the differences in rates of absorption, amino acid profiles, the number of grams of protein needed per day, and rate-limiting amino acids for various mechanisms – for example, cysteine needed for the production of glutathione. You have to cater to that difference."

Of course all the promotion in the world will only get you so far if the quality of ingredients is not of the highest order. "It's more important that we as an industry utilise high-quality protein ingredients," says Russell. "But the flavour and functionality of proteins is improving all the time and these ingredients can enhance the nutritional quality of processed foods, which is becoming increasingly important in our obese Western cultures."

## WHEY TO GO

Other protein suppliers such as Arla (milk proteins) and Davisco (whey) are recording similarly buoyant results. Davisco has established the independent Whey Protein Institute to extol the virtues of whey proteins – even those of its competitors. So when clinical studies come in that highlight benefits, such as one recent piece of research that found whey protein isolates could reduce hypertension, the website will publicise them as well as alerting the wider media. The site is also a comprehensive source of information about all aspects of whey production,

usage and nutrition.

*NBI* estimates the US whey ingredients market at about \$470 million in 2002–03, more than double the next best selling animal protein – casein, at \$225 million. Gelatin had sales of \$200 million while dried egg white notched up \$175 million.

Ifendu A Nnanna, PhD, R&D director at the dairy ingredients division of Iowa-based Proliant, notes whey's rise is not unexpected given its unique properties. It has also benefited from a well-defined differentiation from soy.

"Whey provides bioactive proteins such as immunoglobulin, lactoferrin and peptides in addition to functional proteins (alpha lactalbumin, beta lactoglobulin and bovine serum albumin). Soy provides primarily functional proteins (beta conglycinin and glycinin). It is a rich source of cysteine, known to help in preventing oxidative damage to body tissues. Whey protein is also a rich source of branched-chain amino acids (BCAAs) that helps reduce protein degradation during heavy exercise."

For this reason whey has become the protein of choice among athletes and gym users, Nnanna says. "BCAAs contribute to many athletic-improving factors, help decrease protein degradation and increase protein synthesis."

Whey has become the benchmark protein from a nutritional perspective, according to Phil Vanderpol, business director, nutrition at Washington-based whey specialist Inovatech USA. "Whey passes into the bloodstream the most quickly without any side effects like indigestion and gas," he says. "Eggs used to be considered the best, but research has shown that whey proteins are the most nutritionally complete."

## WHEY AWARENESS LAGS

The low-carb explosion has done wonders for business with so many mainstream food companies reformulating with increased protein levels, Vanderpol notes. But he believes whey players have to raise their profile to catch up with soy's main-

stream availability and public awareness.

"I don't think the dairy industry has done a good enough job of making the public aware of whey and why it is such a good protein, whereas the vegetable protein industry has been very effective at communicating the health benefits of soy. We think the Whey Protein Institute is a great idea to promote the health benefits of whey protein, but in this industry there are a lot of smaller players and I believe many of them are too production-driven rather than market-driven. In soy there are just a few large players who dominate and they have sophisticated marketing campaigns."

An increase in the number of research studies involving whey ingredients would help this situation, he says. Whey applications are also becoming more sophisticated. "There are so many components in whey that can be isolated to meet the needs of different groups from infant formula through to geriatric feeding. You manipulate the components of whey to come up with a product that is specifically geared toward target markets. The technology is there but now we need the clinicals to be done to show how each formulation works best."

The European whey market is seven to ten years behind the US, he estimates. "But Europe can leapfrog in some cases and we think the future looks good there."

This view is confirmed by Irish whey ingredient specialist Carberry. It has posted good results and recently launched a whey ingredient, Isolac Clear, aimed at beverage manufacturers. "This product represents a significant technical breakthrough and offers beverage manufacturers the opportunity of fortifying their drinks with protein without compromising on appearance and taste," the company says.

Of course, soy remains a strong player and, in the US at least, outsells the other protein ingredients – both plant and animal – by at least two-to-one, according to Burcon figures. It will be interesting to see what happens once the Burcon/ADM canola ingredient hits the market in 2006. **FFN**