

Global regulators look set to approve a global standard for whey permeate powders, which should bring new opportunities for the product. Suzanne Christiansen reports

One hears a lot about whey products in the dairy industry, and as processors get more sophisticated about separating out the different products into fractions, new markets are opening up. One example of this is whey permeate, which is the by-product in cheese manufacturing. After cheese production, the resultant whey is predominantly lactose but also contains any protein not retained in the cheese.

Cheese manufacturers separate the protein from the whey and turn it into high protein powders such as WPC80 and whey protein isolate. The product can be dried into whey permeate powder, but the cost of drying may often outweigh the value of the product, according to research organisation, the UK Agriculture and Horticulture Development Board (AHDB).

Although whey and milk permeate powders were developed back in the 1980s with the advent of membrane filtration, the powders formerly lost out to lactose powders, as they suffered from an excess of amorphous lactose (sticky lactose). However, as the drying technology has advanced, the crystallisation has been controlled and this has resulted in a powder that is now easily blendable into products.

Whey permeate can be used as a fat-free carbohydrate ingredient, including as a bulk sweetener in chocolate, confectionery and bakery products.

Arla Food Ingredients notes, "What makes whey permeate outstanding is its ability to replace other, more expensive milk solids without altering the taste and texture of food products or requiring changes to processing parameters. Used as an alternative to whey powder, demineralised whey powder or lactose, whey permeate can optimise a variety of food applications."

The next step for WHEY



Arla Food Ingredients

The drawbacks

However, there is currently no international standard for permeate powder setting out composition and quality levels. As a result, authorities in a number of countries, including China, do not permit its use in foodstuffs. The international standards setting agency, the United Nations FAO Codex, is currently considering the position for permeate, including whey permeate powder.

A proposal by Denmark to develop an international standard for whey permeate was accepted and the Codex Alimentarius Commission agreed to establish a working group to revise the proposal at its 2015 annual meeting. The group is being led by Denmark and co-chaired by New Zealand. A final document is expected to be adopted by July 2017, but some in the industry are hopeful it could be fast tracked for adoption as early as July 2016.

Dan Meyer, the technical director for

the American Dairy Products Institute (ADPI), says that the Codex standard for whey permeate is currently at step three, where a draft text has been prepared, and is being sent to all member countries for comment. After this, the draft and comments will be reviewed at committee level, which is step four. Step five is where the commission reviews the progress made and agrees that the draft should go to finalization. The standard is also endorsed by the relevant general subject committees so that it is consistent with the Codex general standards. It can then go back to the governments and interested parties for a final check.

The ADPI, for its part, has already prepared a US whey permeate standard, which was developed with input from Danish industry counterparts. This may be due to the fact that North America is currently the top producer of both whey and milk permeate, as it produced

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470,335 metric tonnes of whey permeate powder in 2014, along with 24,993 metric tonnes of milk permeate powder, according to the International Dairy Federation. Globally, around 733,000 metric tonnes per year of the products are produced. The majority of the whey permeate in North America is used in animal feed, however.

International value

If the international markets are opened up, the value of whey permeate powder would be expected to rise considerably, making the drying process much more worthwhile. As a result, UK cheese makers that produce whey permeate as a by-product should see an increase in income, notes AHDB.

Meanwhile, producers are gearing up. Arla Foods Ingredients for example, has

invested in the manufacturing of food-grade permeate as a free-flowing powder with a pleasant and stable taste profile. It has a permeate production facility in Denmark, which manufactures kosher and halal certified whey permeate — demand for which is expected to increase in 2016. It also has joint venture facilities in Argentina (with Sancor) and in Norway (with Tine).

Morten Kaas, director general foods at Arla Foods Ingredients, says, "Permeate is a relatively new ingredient that has only been used in the food industry for the past 10 to 15 years. When the Codex standard for dairy permeate is agreed, the market will explode into life. Most significantly, we hope China will authorise its use — and if that happens it is possible that other markets in Asia will follow." **DI**

What is whey permeate?

Milk permeate is a by-product of the milk protein concentrate (MPC) production process, formed after the ultrafiltration of milk to extract protein and fat. The product is then dried using advanced spray drying techniques. Milk permeate powder is characterised by a clean, slightly salty taste and uniform particle size. It consists of lactose, water, vitamins and minerals, according to the ADPI.

Milk permeate powder is typically 80 per cent lactose (minimum 75 per cent), three per cent protein, 8.5 per cent ash plus a trace amount of fat. The total moisture level averages five per cent with free moisture at 1.5 per cent or below.

It can be used to standardise skim milk powder (SMP) and is a natural food ingredient with excellent functional and nutritional characteristics. It may be used as a direct replacement of other dairy solids in many food applications, including: bakery products and pizza crust dough; confectionery products; as a replacement for sucrose or corn syrups; to reduce the level of salt in formulated products; and for fermentation. Milk permeate can also be used for standardising skim milk or whole milk powders.

Permeate can also be a source of lactose and minerals required for the development of nutritional products for the feed sector, especially for baby animals.



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