

CHR HANSEN

Improving food & health

THE NEW DVS[®] FRESCO[®] 1000NG

Take advantage of the protein boom with cottage cheese





We are right at the start of the protein boom

Take advantage of it with cottage cheese

Protein boom

From USA to UK, from Germany to China, consumers are consuming more and more protein. Where in the past protein was associated with muscle building, today, it goes far beyond that. Consumers see it as part of a healthy diet, as their source of sustained energy.

Increasing milk supply

The production of milk continues to rise. In the EU and in USA, milk production has increased by 15-20% over the last decade. With the elimination of the EU quota, milk deliveries are expected to rise even further. Thus, both the supply of milk is present and so is the demand for high protein dairy products.

Cottage cheese

Cottage cheese is the original low fat, high protein product. It provides more protein than e.g. Greek yogurt or Skyr, and is very low in fat as well. There are cottage cheese products on the market with 20% protein levels, which is double that of Skyr and almost 3 times the amount of Greek yogurt. This unique combination makes cottage cheese extremely well suited to take advantage of the protein boom.

Are you able to take advantage?

Even though interest rates are low, capital investments are often not possible or not desirable. Still, you want the flexibility to grow with the market.

Reasons consumers are consuming more protein compared to a year earlier

	China	USA	UK	Germany
	%	%	%	%
To help maintain a healthy weight	51	46	47	39
To help lose weight	23	38	42	74
To help satisfy my appetite	34	43	31	25
To help me snack less	26	31	27	14

Source: Mintel, 2015

+850%

DVS® FRESCO® 1000 made it possible to move flexibility from machinery to ingredients

A new way of thinking

When we introduced the first generation of DVS® FRESCO® 1000 starter cultures back in 2006, it was a small revolution for cottage cheese producers. Back then, the majority of the market was using pure mesophilic starter cultures. Much has changed since then.

Almost halving the set time...

The inclusion of *streptococcus thermophilus* (ST) strains ensured that the set time of cottage cheese could be brought down significantly compared to pure mesophilic starter cultures.

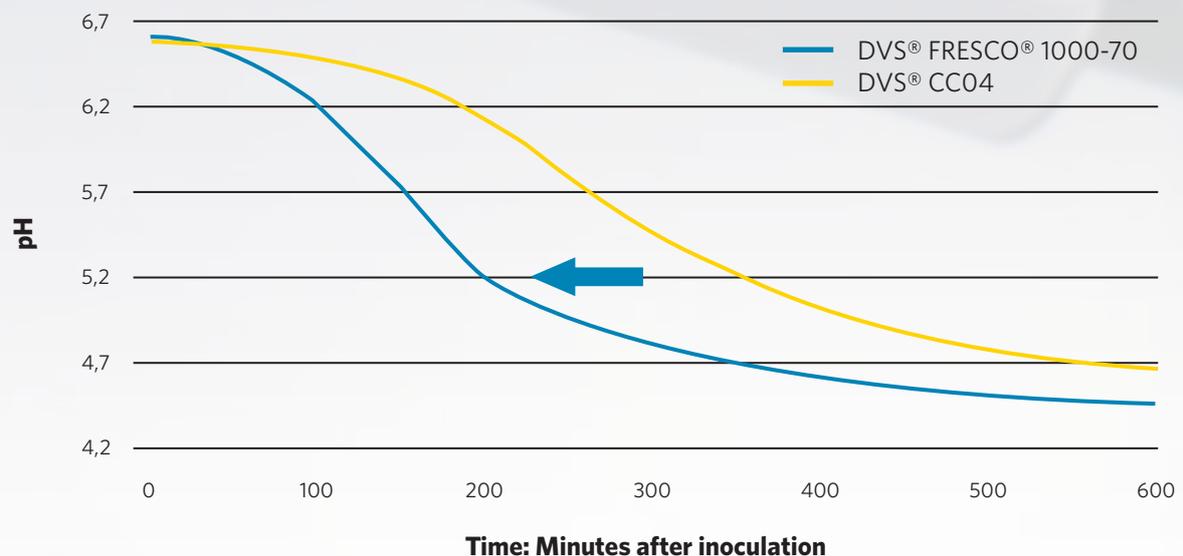
....nearly doubling production capacity

Faster set time meant increased amount of production runs, increasing the total plant capacity by up to 85%. In short, DVS® FRESCO® 1000 made it possible for cottage cheese producers to increase their production capacity without investing in stainless steel.

Increasing phage robustness

Another effect of the faster set time was the increased phage robustness of the cultures, i.e. faster set time means less time for phages to grow and thus, less risk of phage attacks.

Acidification curve





The new FRESCO® 1000NG provides three main benefits

Now, we have improved the DVS® FRESCO® 1000 even further: The new DVS® FRESCO® 1000NG. It is the Next Generation of the very successful DVS® FRESCO® 1000 series. Compared to its predecessor, DVS® FRESCO® 1000NG provides three main benefits:

1 Faster & more consistent set time

Compared to the old DVS® FRESCO® 1000, the new DVS® FRESCO® 1000NG has up to 5% faster set times and 50% less variation in set times. This means that cottage cheese producers can, with the same inoculation rate, further increase their production capacity by up to 5% without capital expenditure.

2 More phage robust

Each culture has 50% more O-strains (*Lactococcus lactis* strains) than before, and all strains are phage unrelated. Phages are strain specific, thus, increasing the number of strains per culture, increases the robustness of the culture. The faster set time ensures that bacteriophages have less time to propagate, which further reduces the risk of phage attacks. All of this gives more phage robustness and - in the end - increased net operating time for your plant.

3 No floating curd

Starter cultures that contain ST strains (*Streptococcus thermophilus* strains) are known for being very phage robust, have fast acid production and a great flavor with no bitterness.

A side effect has been that plants could experience problems with excessive floating curd, especially if the plant, due to e.g. a valve leak, incorporated air into the milk. DVS® FRESCO® 1000NG is the one of two starter culture systems available that is not causing any floating curd; the other is the renowned DVS® FRESCO® 3000 series. The reason why there is zero risk of floating curds caused by the starter culture, when you use FRESCO® 1000NG, is that the new ST strains used in FRESCO® 1000NG are unable to produce urease - so-called "urease negative". Starter cultures that do produce urease - so-called "urease positive" - turn urea into carbon dioxide, which causes floating curds. Anyone that has experienced a floating curd knows what it leads to: you have to use extra manpower, and there will be significant yield loss due to more fines in the whey. No floating curds means that you can increase your production efficiency and avoid yield losses.



With taste and texture like this, the value is easy to see

Nice, fresh, clean taste

The DVS® FRESCO® 1000NG starter culture system provides the nice, fresh, clean taste that the DVS® FRESCO® 1000 series was already known for.

The DVS® FRESCO® 1000NG starter cultures are composed of carefully selected strains with special texture functionality. This ensures that cottage cheese plants that use DVS® FRESCO® 1000NG see a cottage cheese with predominantly nice large curd particles with excellent mouth feel.

Differentiate flavor with cultures

Many of our customers chose to add culture to their cream to add flavor and viscosity to their cream dressing. By using different cultures, the flavor of the cream can be taken into various directions.

For example, DVS® Flora Danica can be used to obtain a buttery flavor. Likewise, DVS® Creamy 1.0 can be used to get a more creamy flavor. Other cultures can be used as well. Ask your Chr. Hansen representative how we can help you to achieve the flavor profile that you are looking for.

Extending shelf life

Customers that have a desire to extend shelf life or are faced with an unreliable cold chain in retail, can use our bio-protective cultures, DVS® FreshQ®, to limit the growth of unwanted yeasts and molds. They also help to suppress any post acidification and increase the overall shelf life.

A trial is all that it takes to get started

If you would like to experience what DVS® FRESCO® 1000NG can do for you, we can arrange a trial, where we can agree to supply DVS® FRESCO® 1000NG during the trial phase at the same cost-in-use as your existing solution.

When you choose to work with Chr. Hansen, we offer you full support. For instance, we supply application support that is focused on optimizing process parameters to ensure best production outcomes. You will be assigned a dedicated Application Manager to help you on-site.

Whether you are already a customer or thinking about becoming one, providing us with just a few pieces of information about your current operations, will enable us to identify the benefits upgrading your starter culture to DVS® FRESCO® 1000NG will bring. Our team of dairy experts is available to meet at your request.

With Chr. Hansen, you get a partner with a range of ingredients that offer superior value supported by best-in-class application capabilities.

Every year, our customers engage in more than 1,000 development projects with us.

Our customers have access to individually adjusted solutions. To support them, we have located our application centers close to them. These 19 application centers are placed around the world and are complimenting our 3 major development centers in Denmark, France and USA. In total,

we spend around 7% of turnover on R&D. 14% of our employees work in R&D.

We engage in +300 scientific partnerships with universities, research institutions, PhD students etc. every year.

We are represented in +30 international scientific associations, advisory boards etc. We have written over 125 publications in scientific journals and text books since 1989. We often serve as referees on scientific articles, examiners on PhD committees and speakers at scientific conferences.



ABOUT CHR. HANSEN

Chr. Hansen is a global bioscience company that develops natural ingredient solutions for the food, nutritional, pharmaceutical and agricultural industries. The products include cultures, enzymes, probiotics and natural colors, and all solutions are based on strong research and development competencies coupled with significant technology investments. Revenue in the 2013/14 financial year was EUR 756 million. The company holds a leading market position in all its divisions: Cultures & Enzymes, Health & Nutrition and Natural Colors. It has more than 2,500 dedicated employees in over 30 countries and main production facilities in Denmark, France, USA and Germany. Chr. Hansen was founded in 1874 and is listed on NASDAQ OMX Copenhagen. For further information, please visit www.chr-hansen.com.