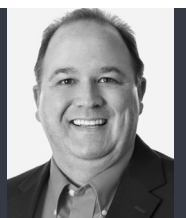


Protein Standardization and Concentration of Milk

Protein standardization and concentration by ultra- and microfiltration, the natural way of adding value to your dairy products.



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Protein standardization and concentration of milk is done by using two types of membrane systems: ultrafiltration and microfiltration. These two types of membrane systems standardize the protein in milk and milk products. Ultrafiltration is used to standardize the total protein and microfiltration is used to standardize the casein.

Cheese production

The standardization of the protein using ultrafiltration or microfiltration evens out the seasonal variation of the protein content and creates a more stable cheese making process.

The membrane systems can standardize raw or pasteurized whole or skim milk.

Both membrane systems lead to many advantages to the cheese making process. Some of these advantages include:

- stable ingredient control of the cheese making process
- improved utilization of the cheese vats
- repeatable process parameters day-to-day
- uniform high-quality cheese
- same cheese volume from each vat
- reduced rennet consumption
- reduced operational costs
- increase in cheese making capacity
- increased yield of cheese per mass of milk

These advantages give more control of the production process with less quality variations in the final product due to stable process parameters and standardized protein levels. Incorporated with these types of membrane systems in this process is typically the use of NIR technology to optimize the overall membrane system process.

Concentration of milk protein in powder production

Ultrafiltration of skim milk produces different milk protein concentrates (MPC) and milk protein isolate (MPI) products with polymeric spiral membranes. These products have a higher value than the original milk as they are concentrated protein products.

The ultrafiltration membrane system fractionates the milk stream into a protein rich stream, retentate, and a protein free stream – the permeate.

Microfiltration of skim milk produces casein concentrate with polymeric spiral membranes or ceramic membranes depending on the specific application.

The microfiltration membrane system fractionates the milk stream into a casein protein-rich stream, retentate, and a whey protein rich stream – the permeate.

In these ultrafiltration and microfiltration systems, diafiltration is used to help transport lactose and minerals at

higher levels from the ultrafiltration or microfiltration retentate to the permeate side of the membrane. Diafiltration is more efficient when used in the higher concentration areas of the membrane system.

Permeate products from milk concentration and standardization

The permeate products derived from ultrafiltration and microfiltration of milk are also valuable products.

The permeate stream from the ultrafiltration system is primarily lactose and this stream is an ideal product for standardization of milk powders.

The permeate stream from the microfiltration system contains native whey proteins that can be further processed into higher value protein products such as whey protein isolate or other whey protein concentrates. These whey protein products are used in many food drinks and protein-enriched foods.

Additionally, water from these product streams can be polished in RO systems and utilised as process and/or CIP water inhouse and thereby improve the water footprint of the whole dairy production.

THE NATURAL WAY TO OPTIMIZE THE VALUE OF YOUR DAIRY PRODUCTS

PROTEIN STANDARDIZATION BY ULTRA- AND MICROFILTRATION

Standardization by ultra- and microfiltration protects proteins and brings out the best in your fermented dairy products: native proteins with excellent emulsion properties.

Ask our experts – we have the solutions.

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