

Application of membrane separation technology for developing novel dairy food ingredients

Chenchaiah Marella

South Dakota State University, USA

In several processing industries, separation of different components from a mixture is an important unit operation. Sometimes the separated component is an important product and in some instances it is waste product. There are a variety of technologies available for use in separations, each operating based on physical and chemical properties of the mixture. One of the important separation processes that brought about sea change in processing of dairy co-product streams is membrane separation technology. Membrane separations work on the basis of differences in size and shape of the molecules. Today dairy industry accounts for lion's share in the total membrane area installed in food processing, accounting for about 300,000 square meters of membrane area installed worldwide. Reverse osmosis, nano filtration, ultrafiltration and microfiltration processes have been in use in dairy industry for about 4-5 decades. Each of these processes is used for specific application. The phenomenal growth in application of membrane separation technology in dairy processing brought into focus the need for novel membranes and processes that enable production of new dairy based ingredients. Now-a-days wide pore UF process is used to develop α -Lactalbumin enriched protein products, loose NF process is used to recover and purify oligosaccharides, high pressure UF process is used to replace the conventional NF process used for concentrating dairy product streams. In the present paper new developments in application of membrane separation in dairy industry will be presented.

Biography

Chenchaiah Marella obtained his Ph.D. in Agricultural and Bio-systems engineering. He worked as Assistant and then as Associate Professor of Dairy Engineering for about 15 years, in three agricultural universities in India. He published extensively in peer reviewed journals, presented in international conferences held in Thailand, China and India. He authored several book chapters and presently overseeing the commercialization of research for US dairy and food processors.

chenchaiah.marella@sdstate.edu