



DAIRY INGREDIENTS FAX

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Nutrition Update

- ◆ New research shows that a natural component of milk, cheese and butter, conjugated linoleic acid (CLA), may reduce the risk of certain cancers. A new study showed that a diet enriched with naturally occurring CLA's (high-CLA butter) reduced mammary cancer risks in rats by approximately 50 percent when compared to rats fed a non-enriched diet (*Journal of Nutrition*, 129:2135-2142, 1999).
- ◆ The new draft of the Dietary Guidelines for Americans recommends lowfat dairy products as excellent sources of calcium, Vitamin D, protein and other essential nutrients and also foods that provide a great deal of variety and choice for Americans in consuming a varied diet. The guidelines specifically warn Americans who may be increasing their intake of soft drink and other beverages not to cut milk or other dairy foods out of their diets to the detriment of their calcium and nutrient intake. (National Dairy Council, Feb 4, 2000).
- ◆ Research supported by Mars Inc. suggest substances found in chocolate's ingredients help blood vessels relax and improve blood flow, reducing hardening of the arteries (*Prepared Foods e-Newsweekly*, Vol 2 Issue 9).



Milk Proteins

Nutritional beverages, energy bars, infant formulas, protein powders and protein fortified foods almost always have something in common: they contain some type of milk protein, whether it be a caseinate, whey protein and/or milk protein concentrate or isolate. These ingredients are highly functional and versatile and can be found in a wide variety of food and beverage formulations. Milk proteins are ideal for nutritious products due to the wealth of health benefits these ingredients can bring to the consumer. Milk proteins deliver taste, functionality and nutrition.

The following is a brief summary of milk proteins used in formulating healthy tasting, nutritious products:

- **Caseinate** - derived from casein by treatment with a suitable alkali. Unlike casein, caseinates are easily dispersible as well as being heat stable. Sodium caseinate acts as a natural emulsifier with high water absorption capacity, as well as having a clean flavor profile. Calcium caseinate also offers a clean flavor profile, good dispersibility and high opacity in water suspensions. Uses: nutritional products, infant formulas, desserts, dressings, soups, sauces coffee whitener, frozen dairy products and processed cheese.
- **Whey Protein Concentrate (WPC)** - product derived from whey by the removal of minerals and lactose, containing a minimum of 25% protein. Whey proteins are highly soluble from pH 2 to pH 8, while providing acid stability and low viscosity in food products. Uses: stabilizer and fat mimetic in yogurt, bakery mixes, dietetic foods, infant foods, and confections.
- **Whey Protein Isolate (WPI)** - produced by processes such as ion exchange and microfiltration methods. Protein content is greater than 90% and contains low lactose and very low fat. WPI provides an excellent source of protein and branched chain amino acids. It is believed that the whey protein isolate components (including alpha-lactalbumin, beta-lactoglobulin and lactoferrin, among others) may also stimulate immunity and enhance iron absorption. Uses: nutrition and sports beverages, frozen desserts and meats.
- **Milk Protein Concentrate (MPC)** - produced by ultrafiltration of skim milk with subsequent spray drying, ranging in protein from 56 to 82%. The protein content can vary depending on the application. MPC's in formulations can provide heat stability, emulsification, opacity, fortification and a very mild, milky flavor profile. Uses: frozen desserts, nutritional beverages and powders and non-standard cheese products.
- **Milk Protein Isolate (MPI)** - produced by a patented process that precipitates both casein and whey proteins and contains a minimum of 90% protein. This ingredient contains high amounts of protein and calcium and a very low level of lactose. Provides a good source of nutrition without adding bulk. The casein and whey ratios are similar to those present in natural milk. Primary functions

Calendar of Events

Cal Poly/U.C. Davis 12th Annual Cheese Short Course I, March 14-17, 2000. Located at Cal Poly Dairy Products Technology Center, San Luis Obispo, CA. For more information contact Laurie Jacobson, 805-756-6097 or E-mail, ljacobso@calpoly.edu

I wish to receive/continue to receive Dairy
Ingredients Fax YES N
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would like to receive a copy of Dairy Ingredients
Fax

include solubility, dispersibility, emulsification and heat stability. Uses: nutritional bars, liquid and dry nutritional supplements and frozen desserts.

*Source: Dairy Based Ingredients
(Chandan, 1997)*

Whey protein and caseinates differ in their functional and nutritional properties. Caseinates are used because of their emulsifying and stabilizing characteristics in nutritional beverages. Whey proteins are an important ingredient for infant formulas due to its favorable amino acid composition. Milk Protein concentrates contain both caseins and whey proteins.

dry nutritional powders

MPI contains whey proteins, provide some benefits whey offers, as well as being an excellent source of calcium. High amounts of protein and calcium and a very low level of lactose. Ca is readily absorbed because it's naturally bound with protein and phosphorus. The 80:20 casein to whey protein ratio makes..

Protein concentration utilized UF, electrodialysis and ion-exchange technologies soluble from pH 2 to pH 8, acid stability, acid emulsification, opacity or clarity, gelation. Uses include a.

Higher protein concentrates is especially suited for use in

, bakery products, meats.

Whey protein isolate - protein greater than 90%. Ideal for nutritional and sports products. High protein, low lactose, low fat

Whey proteins are soluble and have low viscosity. Can be used for gelation, salt tolerant gelation, low temperature, heat stability, aeration, dispersibility, opacity or clarity, acid stability. Produced by ion exchange method