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Dry Whey
Nutritional Value

Typical Composition of Dry Sweet and Acid Whey

	Moisture	Crude protein	True protein	Lactose	Fat	Ash
Sweet whey	3.2	12.9	-	74.4	1.1	8.4
Acid whey	3.5	11.7	-	70.0	0.5	10.8

The composition of whey varies considerably, depending on milk source and the manufacturing process involved. But in general, whey is rich in lactose, minerals, vitamins and "whey proteins."

Lactose, a disaccharide composed of glucose and galactose is the only significant carbohydrate present in whey. Research suggests that lactose promotes the growth of beneficial lactic acid producing bacteria that compete with undesirable putrefactive bacteria.

Major mineral components present in whey proteins include the monovalent sodium, potassium and chloride ions as well as the more reactive calcium, magnesium, citrate and phosphate ions. Lipids present in whey include the glycerides typical of milkfat and the phospholipids and lipoproteins that are responsible for the fat globule membrane in milk.

Both sweet and acid whey contain about 0.7%-0.8% protein on a liquid basis, with whey proteins only representing about 10%-12% of the total solids of whey. Acid whey contains a higher concentration of minerals than sweet whey due to the dissolution of the colloidal calcium phosphate component of casein micelles during acidification and/or culturing of milk with lactic acid bacteria.

A complete protein is defined as a protein that contains all the essential amino acids in amounts adequate for human use; it may or may not contain other amino acids. A high-quality protein is not merely complete: It contains the essential amino acids in amounts proportional to the body's need for them. It is also digestible, so that sufficient numbers of these amino acids reach the body's cells to permit them to make the proteins they need.

The proteins in milk and whey are complete and of exceptional quality. They contain, in varying amounts and in the right proportion, all the amino acids required by humans. They are also readily digestible and completely bio-available. Clearly, whey proteins are the most valuable component of whey.

Besides contributing to the overall amino acid profile, whey proteins supply additional nutritional benefits when used as a food ingredient. For example, alpha-lactalbumin, the second most abundant whey protein, has a high content of the amino acid tryptophan, a precursor of the vitamin niacin. Thus, because of its tryptophan content, it's an excellent source of niacin equivalents. One niacin equivalent is defined as 1 mg of niacin or 60 mg of tryptophan. Niacin functions as part of a coenzyme in fat synthesis, tissue respiration and utilization of carbohydrate. This vitamin promotes healthy skin, nerves and digestive tract, aids in digestion and fosters a normal appetite.

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Sometimes whey proteins are used in calf milk replacers, infant formulas, nutritional beverages, imitation dairy products and comminuted meat products. In many cases, the whey solids contribute little to the functionality of the product, offering only a comparatively low-cost source of protein, carbohydrate and calcium.

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