Animal-Origin Peptones
Casein and Whey Peptones

Casein and whey peptones are hydrolysates of bovine milk proteins. Milk is a complex material, consisting of water, lactose, lipids, salts, and proteins. Casein (80%) and whey (20%) are the fundamental protein components in milk. After the cream, or fat, has been removed from bovine milk, hydrochloric or sulfuric acid is added to precipitate out casein, the insoluble portion.[1,2] The casein recovered is known as acid casein and is insoluble in water. Generally, the acid casein is dissolved in a suitable hydroxide such as NaOH, to make it soluble in water. The resulting sodium caseinate is then used as the basis for hydrolyzed caseins. Sodium caseinate typically consists of 87% to 90% protein.[3] Casein, which can make up about 3% of the total components in bovine milk, is one of the most nutritive of the milk proteins, since it contains all of the common amino acids and is rich in the essential ones. Casein peptones are manufactured by either acid or enzymatic hydrolysis (described in the Hydrolysis to Hydrolysate section).

The soluble supernatant material separated from milk after casein precipitates is whey, also called milk plasma. Whey contains the lactalbumin and lactoglobulin proteins and is a by-product of casein (and cheese) production. Whey protein concentrates and isolates are recovered using various separation technologies such as ion exchange and filtration. Lactalbumin is recovered by heat denaturing and then separation.[1] Whey peptones are manufactured using the process of enzymatic hydrolysis on the proteins isolated from whey. The whey peptones contain free amino acids and peptides, as well as carbohydrates, vitamins, and minerals.

References

1. Huffman and Harper. 1999. Maximizing the value of milk through separation technologies. J. Dairy Sci. 82:2238-2244.
2. Haurowitz. 1963. The chemistry and function of proteins, 2nd edition. Academic Press, New York.
3. Dziuba, Babuchowski, Smoczynski and Smietana. 1999. Fractal analysis of caseinate structure. Int. Dairy J. 9:287-292.

BD BBL™ Acidicase™ Peptone
BD Bacto™ Casamino Acids
BD Bacto™ Casamino Acids, Technical

Acid Hydrolysates of Casein Product Description

BD BBL™ Acidicase™ Peptone is a hydrochloric acid hydrolysate of casein. The manufacturing process produces a casein hydrolysate which has a high salt content of approximately 37% and nitrogen content of approximately 8%. The hydrolysis of the casein, a milk protein rich in amino acid nitrogen, is carried out until all the nitrogen is converted to amino acids or other compounds of relative simplicity. Casein contains little cystine, and is deficient in tryptophan, which is destroyed by the acid treatment.

BD Bacto™ Casamino Acids is an acid hydrolysate of casein, prepared according to the method described by Mueller and Miller.(1) The method described reduces the sodium chloride and iron content of the hydrolyzed casein. This hydrolyzed casein, supplemented with inorganic salts, growth factors, cystine, maltose, and an optimum amount of iron, was used by Mueller and Miller to prepare diphtheria toxin. BD Bacto™ Casamino Acids duplicate this specially treated hydrolyzed casein.

BD Bacto™ Casamino Acids, Technical is prepared similarly to BD Bacto™ Casamino Acids but is a less refined product, leaving a higher sodium chloride and iron content than in BD Bacto™ Casamino Acids.

Potential Applications

BD BBL™ Acidicase™ Peptone is intended for use as a nutritional supplement in vitamin assays, susceptibility testing, and other laboratory media and microbial fermentation in which the high salt content will not interfere.

BD Bacto™ Casamino Acids, due to the nearly complete hydrolysis of casein and the low sodium chloride and iron content, makes an excellent supplement for many media formulations for which nitrogen requirements are minimal. It has been recommended as a compromise for the replacement of pure amino acids in a defined medium for the growth of *Lactobacillus*, thus eliminating the complexity of preparation.(2) Additionally, it has been successfully used, along with BD Bacto™ Tryptone, in nutritional studies to determine a bacterium's growth requirement for peptides or amino acids.(3,4) It also works well as a component in laboratory media. It has been utilized in such diverse applications as TYI-S-33 media for the parasite *Entamoeba histolytica* and LCM medium for the growth of a nematode-bacterium complex.(5)

BD Bacto™ Casamino Acids, Technical provides similar benefits to BD Bacto™ Casamino Acids, for applications requiring a less refined hydrolysate.

Physical Characteristics

BD BBL™ Acidicase™ Peptone is a fine, homogeneous powder, free of extraneous material.

BD Bacto™ Casamino Acids is a very light, beige to tan, homogeneous, free-flowing powder.

BD Bacto™ Casamino Acids, Technical, is a very light beige, homogeneous, free-flowing powder.

Availability

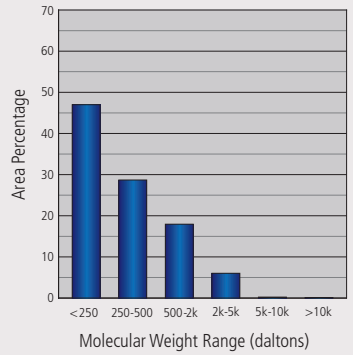
Product Description	Cat. No.	Qty.
BD BBL™ Acidicase™ Peptone	211843	500g
BD Bacto™ Casamino Acids	223050	500g
BD Bacto™ Casamino Acids	223020	2kg
BD Bacto™ Casamino Acids	223030	10kg
BD Bacto™ Casamino Acids, Technical	223120	500g
BD Bacto™ Casamino Acids, Technical	223110	10kg

References

1. Mueller and Miller. 1941. Production of diphtheria toxin of high potency (100 lf) on a reproducible medium. J. Immunol. 40:21-32.
2. Van Niel and Hahn-Hägerdal. 1999. Nutrient requirements of lactococci in defined growth media. Appl. Microbiol. Biotechnol. 52:617-627.
3. Takahashi, Sato and Yamada. 2000. Metabolic pathways for cytotoxic end product formation from glutamate- and aspartate containing peptides by Porphyromonas gingivalis. J. Bacteriol. 182:4704-4710.
4. Attwood, Klieve, Ouwerkerk and Patel. 1998. Ammonia-hyperproducing bacteria from New Zealand ruminants. Appl. Environ. Microbiol. 64:1796-1804.
5. Strauch and Ehlers. 2000. Influence of the aeration rate on the yields of the biocontrol nematode Heterorhabditis megidis in monoxenic liquid cultures. Appl. Microbiol. Biotechnol. 54:9-13.

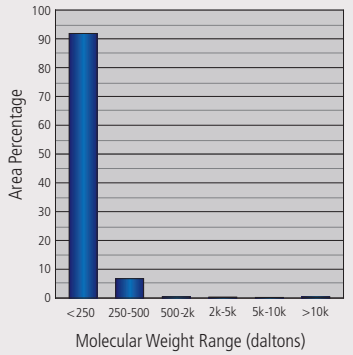
Molecular Weight

BD BBL™ Acidicase™ Peptone



Molecular Weight

BD Bacto™ Casamino Acids



Molecular Weight

BD Bacto™ Casamino Acids, Technical