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DRY MILK WHEY

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Abstract: The article presents a review of studies devoted to dry whey, a valuable by-product of the dairy industry. Dry whey is a white powder obtained during the processing of cheese and milk. It is a by-product of the production of cheese, cottage cheese, and butter. Depending on the product being produced, cheese, cottage cheese, or butter whey is obtained.

Key words: Dry milk whey, properties, composition, application, agriculture, feed additive, biotechnology.

Introduction. During the production of cheese, curd and butter, approximately 50% of milk solids pass into whey, which depends on the fat content of the dairy product. What actions does the processing process consist of? The processing process consists of four stages.

1. Cleaning.
2. Pasteurization.
3. Condensation.
4. Drying.

Clarification: This is when the whey is cleared of milk fat and protein using separators, which allows the removal of milk fat and other compounds (at home, whey is separated when making homemade chakka) [1,2,3,4]. Pasteurization: This is the thermal treatment of whey, that is, heating it to a certain temperature to destroy various microorganisms. **Concentration: This is when the whey is heated to evaporate the water to increase** the concentration of proteins and lactose, which removes up to 70% of the water without the proteins losing their properties.

Drying: the whey is dried using the spray drying method, which turns the product into powder, after which the mass fraction of dry matter in the whey should be 60%. In the final version, the amount of moisture is no more than 5% [4,6,7,8,9].

Research. The product is very useful as it contains proteins and lactose, which has great biological value, including the production of food products for rapid muscle mass growth. Whey is not a genetically modified product as it contains only natural elements and vitamins are not lost during production, and they remain in the product but can differ in taste from cheese, curd and butter products. The whey itself mainly consists of water, it also contains a lot of useful components such as: amino acids, calcium, phosphorus, magnesium, potassium, ascorbic acid, nicotinic acid.

Nutritional value of the product per 1 kg. Caloric content 200 kcal, i.e. 20%, carbohydrates 2.4%, proteins 1%, fats up to 0.5%.

Benefits of whey. Whey normalizes the work of the gastrointestinal tract, eliminates unpleasant sensations in pancreatitis and gastritis, helps with digestion. Regulates the metabolism, strengthens the immune system, helps to resist infections and viruses. It has a positive effect on blood vessels, lowers blood pressure, strengthens the walls of blood vessels, improves the condition of the skin, and also strengthens the hair.

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Dry whey will help women with diseases such as colpitis and thrush, and will help men with baldness. Also, whey is useful for pregnant women, has a general strengthening effect, restores the digestive system, strengthens bones and the bones of the child.

It is not for nothing that our grandmothers always suggested that we drink a glass of whey in the summer instead of cold water in order to strengthen our bones and protect our skin from the sun's rays.

Negative properties of whey. The harm from whey is not great, but it exists. Whey is not recommended for people with intolerance to milk protein, if you drink a lot of whey, it leads to stomach upset. It is not recommended for people with stomach ulcers. Also, you can not eat spoiled or improperly prepared product, which will lead to poisoning.

How to dilute dry whey. The most common proportion of dry whey: for 1 g of dry whey add 10 - 12 g clean water at a temperature of 35 - 45 degrees.

Vitamins and minerals. Dry whey contains B vitamins. that is B_1, B_2, B_5, B_6, B_{12}, as well as vitamin PP, in addition to the minerals calcium, magnesium, zinc, iron and manganese. These minerals support the normal functioning of the nervous, immune and cardiovascular systems.

Biological value. The biological value of whey contains protein nitrogen compounds, carbohydrates, lipids, organic acids, enzymes, immune bodies, microelements, mineral salts, vitamins.

The amino acid composition of whey proteins is somewhat different, whey proteins serve as an additional source of arginine, histidine, methionine, lysine, threonine, trypophane, leucine. This allows them to be considered complete proteins used by the body for the exchange and regeneration of liver proteins, the formation of blood plasma and hemoglobin. Milk whey contains amino acids.

The total content of amino acids in curd whey is: free – 450 mg/l, including essential – 356.9 mg/l; in proteins – 5590 mg/l.

The total amino acid content of curd and cheese whey is approximately the same. However, curd whey contains 3.5 times more free amino acids and 7 times more essential and free amino acids (mainly valine, leucine, phenylalanine and isoleucine).

Curd whey is a low-calorie but nutritious product that is very useful for the health and vital functions of the human body and is widely used in various industries, such as:

1. Food industry – in the production of beverages and bakery products.
2. Pharmacology is a source of biologically active substances.
3. Agriculture – additives for various animal feeds.
4. Cosmetology – vitamins, minerals, serum are used for skin and hair care.

Conclusion. Dry whey is actually a useful product and is widely used in the food industry because it retains all the useful microelements and vitamins that have a positive effect on the health of the human body. Whey obtained during the processing of dairy products is also a valuable food product because the amino acids in cheese whey are 4 times more than in the dairy product itself, and in curd whey 10 times more than in the original milk.

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