



An overview of whey beverages

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Whey is the watery part of milk that remains after separation of curd / coagulated products that result from acid or proteolytic enzyme mediated coagulation of milk. It is major by-product of dairy industry, during manufacture of products like *paneer*, *channa*, *chakka*, cheese, casein, etc. In the manufacturing of these products, about 10- 20 per cent portion of milk is recovered as the desired end product and remaining 80-90 per cent liquid portion is the whey. It is considered to be reliable source of number of high quality and biological active proteins, carbohydrates and minerals. The current world production of whey is estimated at about 165 million tones. (Anonymous, 2010) in which about 68 per cent is produced in European countries and 24 per cent in north America. In India, nearly 5 million tones whey is produced of which *channa* and *paneer* whey contribute around 80 per cent of total whey (Gupta, 2008) and majority of it is disposed off as a waste.

These are two types of whey available, acid whey that is generated as a result of *paneer*, *channa*, *chakka* and acid casein manufacture and rennet whey, which is produced during cheese manufacture. The average composition of acid and rennet whey is presented in Table 1.

Whey – functional and nutritional ingredients:

Whey proteins are good tasting, versatile and highly

Table 1: Average composition of acid and rennet whey

Parameters	Acid whey	Rennet whey
Total solids(%)	6.06	6.87
pH	5.60	6.40
Lactose (%)	5.03	5.01
Protein (%)	0.30	0.98
Fat(%)	0.13	0.34
Ash(%)	0.60	0.54
Lactic acid (%)	0.21	0.14
Calcium (ppm)	710.65	501.50
Phosphorus (ppm)	560.50	441.50

functional ingredients and therefore provides essential benefits to food and beverage manufacture as they create nutritious and delicious products that consumers are demanding (Page, 2005). Whey proteins provide highest quality absorption characteristics as well as sulphur containing essentially branched chain amino acids like leucine, isoleucine and valine which are important in growth and repair of tissue, improved muscle strength and body composition (Khare *et al.*, 2007). Whey proteins referred to as “fast protein” for its ability to quickly provide nourishment to muscles. Additionally whey contains variable amount of lactic acid and nonsoluble nitrogen (Kosikowski, 1979). Whey has protective and curative facet to treat against different diseases such as jaundice, infected lesion of skin, gonorrhoea, arthritis, anemia, liver complaints, antioxidative action, anticarcinogenic activity and act against HIV infection (Gandhi and Dixit, 2008). Despite significant gains, more than 50 per cent of whey is being thrown away as waste in gutter, through which more than 50 per cent of milk solid losses as waste.

Now-a-days whey could be processed and used in various

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