Importance of whey

S. Mahadik[1*], F. Shaikh[2]
[1*, 2] *Department of Zoology, Milliya Arts, Science and Management Science College, Beed-431122, Aurangabad (M.S.) India.*

Abstract: **Present paper shows some Significance of whey. Because of whey's strong polluting properties disposal of whey is a measure problem, to overcome this it can be convert into some by products like whey ethanol, whey protein, whey drinks, wine, fermentation purposes etc. so it reduces effect of disposal.**

Keywords: **whey, ethanol, whey protein, whey drinks, wine, fermentation.**

INTRODUCTION

About 6 billion people rely on milk as a staple food. 730 million tons of milk are produced annually worldwide Humans continue to drink milk throughout their lives in many parts of the world, despite the fact that mammals create it to feed their young. It is important to note, though, that lactose sensitivity is common worldwide and that many people would not benefit from the supposed health benefits of milk. Since ancient times, people have manufactured and consumed a variety of dairy products, including cheese, kefir, yogurt, cream, and butter, in addition to milk. As a result, the effects of milk and dairy products on human health are quantitatively significant and have been the focus of several studies (Anil Batta, 2016).

Whey, a yellow-green liquid with a sour, somewhat salty aftertaste that separates from the curd during the cheese-making process, is divided into two types according to the milk coagulation process: acid whey and sweet whey (Papademas P, Kotsaki P, 2019).The cheese manufacturing produces whey as a byproduct. During the cheese making process, about 9 L of whey are created from 10 L of milk (Manso and Lopez, 2004).

Whey is also a by-product of the production of paneer and chhana in India. It is an excellent and reasonably priced source of high-quality protein that can be used as a component in functional foods. Whey proteins, enzymes, lactose, glycomacropeptides, and minerals are among its constituents. Caseins and whey proteins are the two main protein sources found in milk (Kadam, B. et al., 2018).

Due to its extremely high BOD (30,000–50,000 mg/lit) and chemical oxygen demand (60,000–80,000 mg/lit), whey is a major pollutant. Because of its strong polluting properties, environmentalists and technologists have taken whey seriously, as it represents a substantial loss of potential nutrients and energy. Additionally, the dairy business is negatively impacted financially by the many treatment expenses associated with appropriately disposing of whey. Even though there are a number of potential uses for cheese whey, a significant amount of the global cheese whey output is thrown away as wastewater. When it is disposed of as waste, the ecosystem is seriously contaminated (Marwaha & Kennedy, 1988; GonzalezSiso, 1996).

Fascinatingly, over the past few decades, the dairy industry has processed cheese whey using various technologies, which has led to its separation into its main components, which include fractions that are high in minerals, lactose, and proteins. The advent of novel separation technologies like ion exchange, electrodialysis, and membrane filtration made it possible to produce a variety of new goods based on whey, such as products for the pharmaceutical and medical sectors and functional food ingredients with added value (Nielsen *et al*., 2002).

The Nutritious Potential of Whey

Whey's large production quantities and high organic matter content make it a significant environmental concern (Jorge, M. *et. al.*, 2006). Due to its high water content, whey is not cost-effective to transport. Whey must be dried with a significant capital expenditure, a lot of energy, and little financial gain (Bernstein, D., and T. C. Everson (1973) and Keller *et al*.,(1975).Without first being treated, this industrial effluent can alter the physical and chemical makeup of the soil, decreasing crop yields and water oxygen availability.(Valencia, E. and Ramírez, M.L.(2009), (Morales, J., (2006) and Parra Huertas, R.A., (2009).

Significant environmental and public health issues including global warming, acidification, oxygen

depletion, eutrophication, stink, etc. are caused by the uncontrolled disposal of whey, but it should also be considered an economic loss. The transformation of these wastewaters and wastes into industrial chemicals will lessen our reliance on foreign sources, provide significant ecological and economic benefits, and revitalize rural economies with fresh investments and viewpoints (Srinath, D. and Swaroopa, G., 2017).

Applications in the food

Because of its superior nutritional and functional qualities, whey proteins are regarded as a flexible component of whey (Huffman, L. M., (l996), Jayaprakasha, H. M. and H. Brueckner, (l999). Whey proteins are utilized as functional elements in foods as well as nutritional supplements (Morr, C.V. and Foegeding, E.A., (1990).

Whey drinks

India has produced a variety of energizing whey drinks and beverages, such as acid whey, whey-based fruit drinks, whey-based soups, whey-based lassi, and whey-based sports drinks. The ideal ingredient for these drinks is paneer or chhana whey, which is sour and contains only 0.4% protein. Whey-based soups and beverages have been produced by a few organized businesses in India, and the items are quickly gaining popularity (Vijay Kumar, By-Products Technology). The leftover dairy whey from producing cheese at home can be used in a variety of ways. This is a conditioner for dough (Whey, Wikipedia, free encyclopedia).

Whey protein.

A health food store selling whey protein containers commonly sold as a dietary supplement, whey protein has been linked to a number of health benefits in the field of alternative medicine (EFSA Panel on Dietetic Products, Nutrition and Allergies, October 2010).

Whey ethanol

Ethanol was produced from whey protein using a yeast strain known as Kluyveromyces marxianus at temperatures higher than 40°C (Anderson, P. J. et. al., (1986).

Wine

Additionally, modest cheese facilities can ferment whey to produce wine because no complex or costly equipment is needed. Minimal energy resources are needed to produce wine from whey (Srinath D.* and Swaroopa G. 2017). There is no need to remove the water because the entire whey is used. The capital outlay for wine production is minimal because no sophisticated or costly equipment is needed (Srinath D.* and Swaroopa G. 2017). \

Fermentation

Baker's yeast or probiotic starter cultures for fermented milk products and cheese ripening can be made from whey (Koutinas A. A., et. al.,2009).

CONCLUSION

This study shows investigations were carried out on the physicochemical characteristics of various milk samples located in Kangaon. These findings may be helpful to check quality of the milk samples in Kangaon.region.

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