

Recovery of protein from dairy milk waste product using alcohol-salt liquid biphasic flotation

ABSTRACT

Expired dairy products are often disposed of due to the potential health hazard they pose to living organisms. Lack of methods to recover valuable components from them are also a reason for manufactures to dispose of the expired dairy products. Milk encompasses several different components with their own functional properties that can be applied in production of food and non-food technical products. This study aims to investigate the novel approach of using liquid biphasic flotation (LBF) method for protein extraction from expired milk products and obtaining the optimal operating conditions for protein extraction. The optimized conditions were found at 80% concentration ethanol as top phase, 150 g/L dipotassium hydrogen phosphate along with 10% (w/v) milk as bottom phase, and a flotation time of 7.5 min. The protein recovery yield and separation efficiency after optimization were 94.97% and 86.289%, respectively. The experiment has been scaled up by 40 times to ensure it can be commercialized, and the protein recovery yield and separation efficiency were found to be 78.92% and 85.62%, respectively. This novel approach gives a chance for expired milk products to be changed from waste to raw materials which is beneficial for the environment and the economy.

Keyword: Milk; Protein; Liquid biphasic flotation; Dairy waste; Recovery