

Recovery of Proteins from EDAM Whey Using Membrane Ultrafiltration

Authors : F. Yelles-Allam, A. A. Nouani

Abstract : In Algeria, whey is discarded without any treatment and this causes not only pollution problem, but also a loss in nutritive components of milk. In this paper, characterization of EDAM whey, which is resulted from pasteurised mixture of cow's milk and skim milk, and recovery of whey protein by ultrafiltration / diafiltration, was studied. The physical-chemical analysis of whey has emphasized on its pollutant and nutritive characteristics. In fact, its DBO5 and DCO are 49.33, and 127.71 gr of O2/l of whey respectively. It contains: fat ($1,90\pm 0,1$ gr/l), lactose ($47,32\pm 1,57$ gr/l), proteins ($8,04\pm 0,2$ gr/l) and ashes ($5,20\pm 0,15$ gr/l), calcium ($0,48\pm 0,04$ gr/l), Na (1.104gr/l), K (1.014 gr/l), Mg (0.118 gr/l) and P (0.482 gr/l). Ultrafiltration was carried out in a polyetersulfone membrane with a cut-off of 10K. Its hydraulic intrinsic resistance and permeability are respectively: 2.041.1012 m-1 and 176,32 l/h.m2 at PTM of 1 bar. The retentate obtained at FC6, contains 16,33g/l of proteins and 70,25 g/l of dry matter. The retention rate of protein is 97, 7% and the decrease in DBO5 and DCO are at 18.875 g /l and 42.818 g/l respectively. Diafiltration performed on protein concentrates allowed the complete removal of lactose and minerals. The ultrafiltration of the whey before the disposal is an alternative for Algéria dairy industry.

Keywords : diafiltration, DBO, DCO, protein, ultrafiltration, whey

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