

Effects of dairy processing on phospholipidome, in-vitro digestion and Caco-2 cellular uptake of bovine milk

ABSTRACT

Present work investigated the effects of processing (homogenization, sterilization) and cold storage on physicochemical properties, in vitro digestion and Caco-2 cellular uptake of bovine milk. Extreme heat sterilization and low temperature storage have significant impact on particle size and phospholipidome of bovine milk. In addition, cold storage of bovine milks led to formation of β' polymorphs crystals and endothermic peak with Toffset higher than body temperature. Processing and cold storage also increased the initial digestibility but reduced the overall digestibility of bovine milk. This might be related to the decreased particle size of the milk fat globules, changed in the phospholipidome of the MFGM and formation of β' polymorphs crystals in frozen milk. It is interesting to note that PE has relatively faster digestion meanwhile SM has relatively slower digestion. HTST milk which demonstrated lesser changed in terms of phospholipidome demonstrated highest cellular uptakes of most fatty acids.

Keyword: Milk fat globule; Gastrointestinal digestion; Intestinal absorption