EFFECTS OF PASTEURIZATION AND FREEZE-DRYING AND OF SHORT-TERM STORAGE ON THE ANTIOXIDANT CAPACITY OF HUMAN MILK

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Human milk (HM) is an excellent source of nutrition for infants because of its varied protective factors, such as antioxidants that might be affected by preservation methods and storage periods practiced in human milk banks. Freeze-drying seems an interesting preservation method for HM, alternative to freezing. The aim of this work was to investigate the effects of pasteurization combined to freezing or freeze-drying for preservation of the total antioxidant capacity (TAC) during short-term storage of HM (n = 17). TAC was assessed by FRAP (Ferric ion reducing ability), TEAC (Trolox equivalent antioxidant capacity) and ORAC (Oxygen radical absorbance capacity) assays, in the same day of HM collection, before and after pasteurization and storage at −20°C, or freeze-drying and storage at room temperature for 0 (control), and 7 (7d), 15 (15d) and 30 (30d) days. There was no effect (p > 0.05) of pasteurization on ORAC or FRAP values, whereas pasteurization increased (p <0.05) TEAC values in HM. There was no effect (p > 0.05) of freeze-drying on TAC of HM, considering the three assays tested. Concerning the storage, FRAP and ORAC reduced (p <0.05) between control and 30d, for both preservation methods. In contrast, TEAC reduced (p <0.05) only for HM stored at −20 °C, but not (p > 0.05) for the freeze-dried HM. Our results indicate that the TAC is more stable in HM after freeze-drying and 30-day storage at room temperature, indicating this process might be useful for human milk banks.

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