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ABSTRACT BOOK

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T62 ESSENTIAL ELEMENTS IN PRE-TERM AND FULL-TERM HUMAN COLOSTRUM

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Deficiency of minor and trace elements can lead to various disorders in the early stages of child development. During early childhood trace element requirements, are more critical due to faster growth rates. Human milk is recommended as the only source of nutrients for infants up to 6 months. In this study, human colostrum samples from mothers of pre-term and term newborns were studied. Samples were collected by manual expression from the first to the fifth day after birth. After sampling, human colostrum samples were frozen and freeze-dried until the analyses. In this study, Ca, Cl, Fe, K, Mg, Mn, Na, Se and Zn were determined in 15 colostrum samples from each group by means of Instrumental Neutron Activation Analysis. About 100-200 mg of these powdered samples and the element standards were irradiated in the IEA-R1 nuclear research reactor at IPEN/CNEN-SP. For quality control of the results, NIST RM 8,435 Whole Milk Powder and NIST SRM 1549 Non Fat Milk Powder reference materials were also analyzed. The following results were obtained for the term and pre-term groups, respectively: Ca 224 ± 81 $\mu\text{g/mL}$ and 220 ± 73 $\mu\text{g/mL}$; Cl 746 ± 266 $\mu\text{g/mL}$ and 951 ± 294 $\mu\text{g/mL}$; Fe 0.52 ± 0.36 $\mu\text{g/mL}$ and 0.73 ± 0.38 $\mu\text{g/mL}$; K 651 ± 161 $\mu\text{g/mL}$ and 786 ± 244 $\mu\text{g/mL}$; Mg 16.6 ± 8.6 $\mu\text{g/mL}$ and 25.0 ± 11.2 $\mu\text{g/mL}$; Na 632 ± 424 $\mu\text{g/mL}$ and 834 ± 388 $\mu\text{g/mL}$; Mn 30 ± 14 ng/mL and 48 ± 23 ng/mL ; Se 18.9 ± 8.4 ng/mL and 37.9 ± 19.2 ng/mL ; Zn 8.0 ± 2.7 $\mu\text{g/mL}$ and 12.1 ± 6.3 $\mu\text{g/mL}$. For each element large concentration differences were observed in both term and pre-term groups. Multivariate analyses were applied and the results were separated in two clusters. However the separation was not related to the corresponding gestational age.