

Detection of ions by XRF for use in the neonatal clinic

C. B. Zamboni, G. O. Souza, A. M. Alvarenga, D. N. S. Giovanni

Instituto de Pesquisas Energéticas e Nucleares

M. R. Azevedo, T. Konstantyner

Universidade de Santo Amaro

In this investigation we intend to introduce benefits to clinical practice in children, especially newborns and premature infants using an alternative procedure based on X-ray fluorescence technology (XRF). The establishment of alternative method, focusing on the use of small amounts of blood (a drop) for ions dosage, contributes with actions to humanize health care with minimal suffering in the sense of adding another alternative for laboratory analysis in the pediatric practice. The dimension of this problem can be evaluated when a 3 kg newborn is considered to have between 280 mL and 300 mL of blood, while a preterm of 1 kg is in the range of 180 - 200 mL. As a result, blood collections for laboratory and functional tests in pediatric practice are the main causes of transfusions in infants, especially premature babies, depending on the dysfunction or treatment the child may need two to three collections per day. Based on these facts, the objective of this work is to analyze blood of newborns, concomitant with the traditional collection ("foot test"). The Ca, Cl, Fe and K dosage in blood samples of were determined using XRF technique. The blood samples came from the nursery of the Hospital of Itapeirica da Serra (São Paulo city, Brazil). The X-Ray Fluorescence analysis was performed using X-Ray Spectrometer (X-123 SDD model - Amptek). The XRF analytical technique showed to be appropriate offering a new contribution to the neonatal clinic with actions to humanize health care, guaranteeing diagnostic accuracy with minimal suffering and exposure to risks in the pediatric practice.

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