

COMPARATIVE STUDY OF INORGANIC ELEMENTS DETERMINATION IN WHOLE BLOOD FROM Dmd^{mdx}/J MICE STRAIN BY EDXRF AND NAA ANALYTICAL TECHNIQUES

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Several diseases are usually diagnosed by linking the concentration variation of specific electrolytes in blood and/or urine. Then the determination of metals and ions in body fluids, mainly the majority (such as: Ca, Cl, K and Na), are relevant for clinical chemistry. Considering the clinical chemistry relevancy of these elements their estimative are also important in Veterinary Medicine, specifically, in health area that uses animal model for medical diagnostic studies before testing in human beings. Based on this, it has motivated us to study in more details the anomalies caused by Duchenne Muscular Dystrophy (DMD), which is an illness of hereditary character. Its main characteristic is the degeneration of the membrane that involves the muscular cell, causing its death. Previously considered rare, currently at least thirty different types have been identified. All the forms of muscular dystrophy are genetic; they cannot be prevented or reverted. The Duchenne Muscular Dystrophy (DMD) is the most common of them. In normal muscle, sarcolemma injuries lead to accumulation of dysferlin (a protein present in muscles) and releasing of the membrane in the presence of Calcium. In this work, whole blood samples of Dmd^{mdx}/J (9 males and 10 females) dystrophic mice and C57BL/6J (10 males) control group mice's model (genetically modified) used for muscular dystrophy investigations were analyzed by EDXRF technique. The reference interval values were determined for the elements Ca, Cl, Cu, Fe, K, Mg, Na, S and a comparative study with NAA results was outlined. The samples were obtained from IPEN, Instituto Butantan and Centro de Estudos do Genoma Humano do Instituto de Biociências (Research Centers, Brazil). Both techniques (EDXRF and NAA) showed to be appropriate for whole blood sample analyses and offer a new contribution for applications in Veterinary Medicine related to biochemistry analyses of blood.