

HOMOGENEITY STUDY ON BIOLOGICAL CANDIDATE REFERENCE MATERIALS: THE ROLE OF NEUTRON ACTIVATION ANALYSIS

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Instrumental Neutron activation Analysis (INAA) is a mature nuclear analytical technique able to accurately determine chemical elements without the need of sample digestion and, hence, without the associated problems of analyte loss or contamination. This feature, along with its potentiality use as a primary method of analysis, makes it an important tool for the characterization of new references materials and in the assessment of their homogeneity status. In this study, the ability of the comparative method of INAA for the within-bottle homogeneity of K, Mg, Mn and V in a mussel reference material was investigated. Method parameters, such as irradiation time, sample decay time and distance from sample to the detector were varied in order to allow element determination in subsamples of different sample masses in duplicate. Sample masses were in the range of 1 to 250 mg and the limitations of the detection limit for small sample masses and dead time distortions for large sample masses were investigated.

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TRACE ELEMENTS DETERMINED IN MINERAL WATERS USING INAA FROM PARQUE DAS ÁGUAS DE LAMبارI AND CONTENTAS

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Mineral water, according to the Brazilian Law N 7.841 of August 8, 1945, "are those from natural springs or springs artificially captured that have chemical composition or physical or physicochemical properties other than ordinary waters, with characteristics that give them a drug action". In this same law, mineral waters can be classified according to their chemical composition in: oligomineral, radiferous, alkaline-bicarbonated, alkalineearthy, sulfated, sulphurous, nitrated, chlorinated, ferruginous, radioactive, thorioactive and carbogasous. In several Brazilian hydromineral resorts, springs of radioactive mineral water are commercially exploited and are consumed by the population that believes this practice is beneficial. For example, in thermal parks like Caxambu, Cambuquira, São Lourenço and Lambari (MG), the waters of the various springs are used for human consumption and are often associated with medicinal use, like diuretic and cathartic waters (with properties of cleaning, purification, facilitating hepato-biliary functions and stimulating intestinal function directly or indirectly), and waters with antiphlogistic properties (anti-inflammatory). Therefore, due to the recommendation of these waters as a form of treatment spent