

NUCLEAR AND RELATED ANALYTICAL METHODS APPLIED IN BIOLOGY: PIXE AND ICP-AES

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Abstract. *With a particular Nuclear Analytical Method (NAM) we can make research activities on biology: trace element distribution and metabolism, effects and functions; nutrition and micronutrient deficiency; toxicology, epidemiological studies. Prominent features of NAMs are sensitivity, selectivity, multielement determination and linearity of the calibration function covering a concentration range of several orders of magnitude. In this article we present two analytical methods Particle Induced X-Ray Excitation (PIXE) and Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES) and their applications in trace elements analysis on Basella Plants and on Downer cow syndrome.*

Keywords: PIXE and ICP-AES methods, tropical plant, veterinary medicine

1. Introduction

Nuclear analytical methods (NAMs) are based on techniques in which use is made of the properties of the nucleus (like activation analysis), or a combination of nuclear and electronic properties (like X-ray fluorescence spectrometry and PIXE). The working principle of nuclear analytical methods (NAMs) is not influenced by the chemical bond. Consequently, they are independent counterparts to the well-known chemical procedures. NAMs obey fundamental laws or can be described and understood thoroughly. This qualifies them as candidates for reference methods. Although following similar nuclear reaction schemes, they comprise bulk analyzing capability (neutron and photon activation analysis) as well as detection power in surface near regions of solids (ion beam techniques). The researches based on advanced methods using particle beams and electromagnetic radiations have been imposed by the solving of some necessities with interdisciplinary character aroused during the economic-social development. Many fields like the biology and environment, use for solving different problems, the results of researches obtained by a series of methods of analysis and techniques of high and ultra-high sensibility, including profile methods [1][2]. Many fields like the biology and environment, use for solving different problems, the results of researches obtained by a series of methods of analysis and

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