

P94 NEUTRON ACTIVATION ANALYSIS APPLIED TO NUTRITIONAL AND FOODSTUFF STUDIES AT IPEN-CNEN/SP

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Instrumental Neutron Activation Analysis, INAA, has been successfully used on a regularly basis in several areas of nutrition and foodstuffs. INAA has become an important and useful research tool due to the methodology's advantages. These include high accuracy, small quantities of samples and no chemical treatment. This technique allows the determination of important elements directly related to human health. In this paper some studies in the area of nutrition which had been carried out at the Neutron Activation Laboratory of IPEN/CNEN-SP are presented: Brazilian Total Diet Studies, trace elements in maternal milk, baby foods, edible mushrooms and wine samples. Total Diet Study (TDS) is considered as the most adequate study to assess the dietary intakes of nutrients of a population. TDS is based in assessment of groups of food, represented by a Food List, which reflects the food consumption of the population. Three Brazilian TDS have been carried out: 2 TDS of the São Paulo city and one of the Poços de Caldas city, region that is considered as a high background radioactive area, HBA. Deficiency of minor and trace elements can lead to various disorders in the early stages of child development. The essential element level in thirty human colostrum samples from mothers of pre-term and term newborns were studied by INAA. Eating habits are important determinants of health conditions during childhood. Commercial infant food is an important part of the diet for many babies. Inadequate complementary feeding is a major cause of high rates of malnutrition throughout the world. Essential elements: Ca, Cl, Co, Cr, Fe K, Mg, Mn, Na, Se and Zn were also determined in 27 commercial infant food samples by INAA. Mushrooms and algae are excellent nutritional sources since they provide proteins, fibers and mineral. They have also been the focus of medical research. In Brazil these kind of foods are not consumed in large quantities by the general population since people know little about their nutritional and medicinal benefits. Hence, the study of mushrooms and algae intends to contribute to a better understanding of their essential element contents, which are currently commercialized in São Paulo state. Trace elements are good indicators of the origin of wines. Three procedures of wine sample preparation (freeze-drying, evaporation and dry-ashing) to determine essential elements by INAA.
