

## Posters (14h20 - 15h20)

### AI - Applied Nuclear Physics and Nuclear Instrumentation

[10/09/2014 - P001]

**IRON INVESTIGATION IN SERUM AND URINE OF WISTAR RATS WITH ACUTE RENAL FAILURE USING PXRFS**, CIBELE B. ZAMBONI, , SABRINA METAIRON, *Instituto de Pesquisas Energéticas e Nucleares, IPEN - CNEN/SP*, MARCIA DE ALMEIDA RIZZUTTO, *Instituto de Física - Universidade de São Paulo, IFUSP, SP*, FERNANDA T. BORGES, *Departamento de Medicina - Universidade Federal de São Paulo, UNIFESP, SP*

The use of alternative analytical techniques to investigate specific trace elements in body fluids has increased in last year, presenting significant progress in clinical tests. In this study, LEER (Laboratório de Espectroscopia e Espectrometria das Radiações) at IPEN - CNEN/SP (Brazil) in collaboration with IFUSP (Instituto de Física de São Paulo- Brazil) performed measurements using a Portable X-Ray Fluorescence Spectrometry (PXRFS). In this investigation, Iron in serum and urine of control and acute renal failure (ARF) Wistar rats groups were quantified using EDXRF technique. The measurements were performed before, during and after the ARF caused by ischemia-induced (I/R). The samples were obtained from UNIFESP (Universidade Federal de São Paulo - Brazil). The ARF is characterized by a sudden stop of the functioning kidneys, which become unable to filter waste products from the blood. The kidneys have an important role in removing waste products; balancing out water, salt and other minerals from the blood. When kidneys lose their filtering ability, dangerous levels of wastes may accumulate and electrolytes may build up in the body. In most of the cases it is irreversible; therefore the rate of mortality in the world has increased in the last few decades. Due to its severity, investigations related to development of ARF have shown patients with Iron deficiency related to poor dietary intake or sometimes occult bleeding. The evaluation of Iron in these biological materials increases the knowledge of this disease. Although the urine test is not performed in the conventional renal treatment (clinical analyses in renal patients are performed using only serum), but the portable spectrometer showed to be suitable for these clinical tests and also offering an alternative procedure for Iron analysis (in body fluids) in renal treatment.

[10/09/2014 - P003]

**Sulfur status in long distance runners**, LUCIANA KOVACS, CIBELE B. ZAMBONI, *Instituto de Pesquisas Energéticas e Nucleares (IPEN / CNEN - SP)*, THIAGO F. LOURENÇO, DENISE V. MACEDO, *Laboratório de Bioquímica do Exercício - LABEX / UNICAMP*

Sulfur is the third most abundant mineral found in human body and is present in every cell. It participates in the structure and activities of molecules playing important roles in growth, energy transfer mechanism, metabolism, defense, transport, and detoxification processes. Sulfur is important in cartilage and is essential for collagen synthesis. The major source of inorganic sulfate for humans derived from proteins and of metabolism of several organic and inorganic sulfur compounds present in food and water. In sports medicine, sulfur plays an important role and its deficiency can cause muscle injury affecting the performance of the athletes. However, its evaluation is unusual in conventional clinical practice. In this study the sulfur levels were determined in Brazilian amateur athletes blood using Neutron Activation Analyses (NAA) technique. Twenty six male amateur runners, age 18 to 36 years, participated of this study. The athletes had a balanced diet, without multivitamin/mineral supplements. The blood collection was performed at LABEX (Laboratório de Bioquímica do Exercício) and the samples were irradiated for 300 seconds in a pneumatic station in the nuclear reactor (IEA-R1, 3-4.5MW, pool type) at IPEN. The results were compared with the control group (subjects of same age but not involved with physical activities) and showed that the sulfur concentration was 31% higher in amateurs athletes than control group. These data can be considered for preparation of balanced diet, as well as contributing for proposing new protocols of clinical evaluation.

[10/09/2014 - P005]

**Characterization of heavy metals in style accessories alloys by EDXRF technique**, ALESSANDRO LUIZ DE LARA, ALANA CAROLINE FRANÇA, CATARINA A. MONTENEGRO P. TORRES, MANOEL MARTINS NETO, PRISCILA RESMER, SERGEI A. PASCHUK, *Federal University of Technology - Paraná, UTFPR, Av. Sete de Setembro, 3165, Curitiba, PR, 80230-901, Brazil*

Contact with chemicals classified as heavy metals has to be monitored. Such metals are occasionally considered as toxic elements, which often are not eliminated naturally by the human body. It can be remembered that last year Brazilian media gave special attention to the aesthetic quality accessories such as earrings and jewelry from China, which could be freely purchased in Brazil. The main problem related to such kind of jewelry is that in those alloys is usually detected the presence of heavy metals such as nickel, lead and cadmium, which are potentially carcinogenic metals reaching significant concentrations. The aim of present work was to study the presence of such metals in the feminine style accessories. For this purpose it was employed EDXRF technique for the elemental characterization of 10 new and used earrings. This survey was conducted by the Laboratory of Applied Nuclear Physics of the Federal University of Technology - Paraná (UTFPR). Elemental analysis was performed using EDXRF technique. Each sample