



Lisbon, Portugal - 7-12 September, 2008

9th International Conference on Nuclear Analytical Methods in the Life Sciences - NAMLS 9

## 9<sup>th</sup> International Conference

# Nuclear Analytical Methods in the Life Sciences

Instituto Tecnológico e Nuclear  
Lisbon, Portugal.

7<sup>th</sup> September - 12<sup>th</sup> September, 2008

## Programme

ORGANISED BY:

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**EVALUATION OF MERCURY AND SELENIUM ACCUMULATION IN FISH  
CONSUMED BY CANANÉIA COMMUNITY, SÃO PAULO, BRAZIL**

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The high correlation between mercury (Hg) and selenium (Se) in fish organs has been documented in some studies. This behavior is explained by the association between these two elements that occur in the different fish organs by way of detoxification mechanisms. In this study, 53 individuals of four fish species most commonly consumed by the Cananéia city population, São Paulo State, Brazil were analyzed. The Cananéia city is surrounded by an important estuarine system that supports a diversity of aquatic life and represents an important food source to the local community. These samples were acquired from local fisheries and carnivorous species such as *Centropomus parallelus* (Robalo Peba), *Macrodon ancylodon* (Pescada) and *Micropogonias furnieri* (Corvina) and omnivorous species *Mugil Platanus* (Tainha) were analyzed. Considering that the muscle and the glands can accumulate toxic elements, mercury was evaluated in muscle, liver and kidney tissues and selenium in liver tissues. Mercury determination was performed using Cold Vapor Atomic Absorption Spectrometry (CV AAS) and selenium by Instrumental Neutron Activation Analysis (INAA). Methodology validation for the determination of these elements was carried out by means of reference materials analyses. The concentration variation of the analyzed elements were: muscle-Hg (0.06 to 2.01 mg kg<sup>-1</sup>); liver-Hg (<0.01 to 2.66 mg kg<sup>-1</sup>); kidney-Hg (<0.01 to 2.048 mg kg<sup>-1</sup>); and liver-Se (2.60 to 14.30 mg kg<sup>-1</sup>). Selenium concentrations were higher than those of Hg in the liver, on a molar basis, Se/Hg = 4:1. In general, glands showed the highest levels of Hg concentration in relation to muscle and among the glands, the kidney showed the highest values. The different concentrations observed are related to the biochemical responses involved in the accumulation processes and the detoxication reactions as well as, the physiological state, degree of maturity, sex and other factors that can contribute to differences in levels of total Hg content and Se.

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