



**Apresentações Internas do CIIMAR**

**Data: 27/06/2005**

**Horário: 14:00 – 15:00**

**Local: Auditório CIIMAR, Rua dos Bragas 289**

**Coordenador: Dr. Rodrigo Ozorio**

**Programa:**

**14:00 - 14:15 Eutrophication of Torrão reservoir: health risks and remediation measures**

**Micaela Vale –LEAN - CIIMAR**

**14:20 - 14:35 Identification and organ expression of peroxisome proliferator activated receptors in brown trout (*Salmo trutta f. fario*)**

**Carla Batista-Pinto – Laboratory of Cellular and Molecular Studies, CIIMAR**

**14:40 - 14:55 The challenges of using acetylcholinesterase as an environmental biomarker**

**Manuela Frasco – Laboratory of Ecotoxicology**

## Eutrophication of Torrão reservoir: health risks and remediation measures

Micaela Vale

Nutrient and plankton annual dynamics were studied in Torrão reservoir, between Amarante and Marco de Canaveses (river Tâmega). The reservoir has shown a history of problems related to toxic blooms of cyanobacteria, which led several authors to conduct studies in this ecosystem. With this work we intent to contribute to the knowledge of the limnology of the reservoir, highlighting planktonic communities. The obtained data for chlorophyll, transparency, nutrients and abundance and composition of plankton, indicate that the reservoir is in the threshold of eutrophication. Since the reservoir is used for water supply, the clear signs of eutrophication should be of concern, as so should be the presence of toxic cyanobacteria.

Keywords: Eutrophication; cyanobacteria; Torrão

# Identification and organ expression of peroxisome proliferator activated receptors in brown trout (*Salmo trutta* f. *fario*)

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It was shown in vitellogenic *Salmo trutta* females that along with a volume decrease of the hepatocytic peroxisomes, the activities of some liver peroxisomal enzymes were also reduced [1]. Being peroxisome proliferator activated receptors (PPARs) involved in peroxisomal metabolism regulation [2], it is possible that they might be implicated in the alterations observed in brown trout liver. We identified three PPAR isotypes, encoded by separate genes and showing different tissue distribution. cDNA fragments encoding PPARs  $\alpha$ ,  $\beta$  and  $\gamma$  were amplified by PCR, and deduced sequences of the correspondent peptides were compared with other species sequences. Both the 183 amino acid sequence from PPAR $\alpha$  and the 103 amino acid sequence from PPAR $\beta$  shared high levels of homology with the correspondent peptides of other fishes and terrestrial vertebrates, whereas PPAR $\gamma$  108 amino acid sequence showed much less similarity with non-fish PPAR $\gamma$ . Two sequences for PPAR $\beta$  were found. After homology analysis, they both turned out to be closer to the PPAR $\beta$ 2 isoform of other species. According to semiquantitative RT-PCR, PPAR $\alpha$  mRNA predominates in heart and white muscle; PPAR $\beta$  is more expressed in heart, liver, trunk kidney, testis and white muscle; PPAR $\gamma$  was only detected in trunk kidney, liver and spleen. PPAR $\beta$  is the most strongly expressed, whereas PPAR $\gamma$  is the least one.

Keywords: Peroxisome; PPAR; Expression; Teleost

## References

- [1] E. Rocha, A. Lobo-da-Cunha, R.A.F. Monteiro, M.W. Silva, M.H. Oliveira. J. Submicrosc. Cytol. Pathol. 31 (1999) 91-105.
- [2] P. Escher, W. Wahli. Mutat. Res. 448 (2000) 121-138.

## The challenges of using acetylcholinesterase as an environmental biomarker

Manuela Frasco

The diversity of marine ecosystems provides a foundation for the quality of human life and the raw materials to enrich it. Biological diversity, or biodiversity, refers to the variety of and variability among living organisms, and among the ecological complexes of which they are a part. It covers all of living resources of the world. Living marine resources provide essential economic, environmental and cultural benefits to humanity. The aquatic organisms we eat represent the most widely recognized economic value. Currently, FAO estimates that global capture fisheries and aquaculture production is about 150 millions MT/year. Sixteen percent of all animal protein consumed worldwide comes from the oceans. Besides food, marine living resources provide products including ornamental marine life, raw materials, and medicines. Since 1985 the value of ornamental exports has increased at a growth rate of about 14%/year. Direct uses also include non-consumptive uses such as ecotourism, recreation, and research. The 1 million jobs, US\$ 7,3 billion in tax revenues and US\$ 30 billion in wages generated by recreational fishing are many times greater than those created by corporate giants such as Ford, Microsoft or Nike. However the growth of marine ecosystem exploitation is a mixed blessing. On one hand, the intensification of marine exploitation, obviously have increased the production of valuable commodities for mankind. On the other hand, as the exploitation continues to intensify, its increasing impact on ocean biodiversity is recognized as a fundamental problem. Without sustainable management, economic potential and resilience of marine ecosystems can diminish or be lost entirely.

Keywords: Biomarker, acetylcholinesterase, metals, *in vitro* studies