



Apresentações Internas do CIIMAR

Data: 18/07/2005

Horário: 14:00 – 15:00

Local: Auditório CIIMAR, Rua dos Bragas 289

Coordenador: Dr. Rodrigo Ozorio

Programa:

14:00 - 14:15 : Early warning systems of disturbances in the aquatic environment. *Daphnia magna* Straus as bioindicator.

José Carlos Martins - Laboratorio de Ecotoxicologia Augusto Nobre - LEAN

14:20 - 14:35 : Effects of dietary manipulation on growth and body composition of white sea bream (*Diplodus sargus*)

Ana Rita Ribeiro – Laboratorio de Nutrição, Crescimento e Qualidade de Peixes - LANUCE

14:40 - 14:55 : P450 Aromatase: finding a gene for invertebrate toxicology?

Filipe Castro – Laboratorio de Toxicologia Ambiental

Resumos:

Early warning systems of disturbances in the aquatic environment. *Daphnia magna* Straus as bioindicator.

José Carlos Martins– Laboratorio de Ecotoxicologia Augusto Nobre - LEAN

Understanding the problems associated with the degradation of water quality requires detailed knowledge of the state of the aquatic system and the ways in which it changes in real time. The constant reach for new methods to identify and control water quality is extremely important to guarantee a continuous supply of high quality water suitable for human consumption. The main aim of this work consisted in developing an experimental model to detect the presence of toxic contaminants in treated and untreated water continuously. Oxygen consumption and phototactic behavior of *D. magna* were studied as possible indicators for 16 compounds. These compounds were representative of the main chemical classes that contaminate hydrographic basins of Portugal and have major ecological relevance and risk increased for the public health. According to the results obtained with the phototactic assays, it was possible to verify that, with the exception of Simazine, the experimental method used in this study could be used to detect low concentrations of various toxic compounds. This was verified using several different exposure times. The assay, which was based on the measurement of oxygen consumption by *D. magna* verified that with the exception of Benzo(b)fluoranthene and Dimethoate, all toxics could be detected after different exposure times. Combining both contaminant indicators, all the 16 toxics were detected after 24 hours of exposure and almost all (14 in 16) were detected after only 15 minutes of exposure.

Keywords: Phototactic behavior, oxygen consumption, *Daphnia magna*, early warning systems

Effects of dietary manipulation on growth and body composition of white sea bream (*Diplodus sargus*)

Ana Rita Ribeiro (estagiaria) – Laboratório de Nutrição, Crescimento e Qualidade de Peixes - LANUCE

The Mediterranean and Portuguese aquaculture has been facing a quick development during the last decade, especially with the production of gilthead seabream (*Sparus aurata*), sea bass (*Dicentrarchus labrax*) and turbot (*Scophthalmus maximus*). Nevertheless, the mass production of these species has congested the market, demanding the change and diversification of the production. Based on this, we carried out an experiment to determine the aquaculture potential of white sea bream (*Diplodus sargus*). After 7 days of acclimatization, 253 juveniles ($10,7 \pm 2.0$ g), were randomly distributed in 12 tanks of 50-L, and hand-fed to satiation four isoenergetic diets (20 KJ. Kg⁻¹), for 83-d. Diets were formulated to contain different protein (15% and 28%) and lipid (12% and 16%) levels. It has been observed that the final body weight, the specific growth rate (SGR) and the feed conversion ratio (FCR) were significantly higher ($p < 0,05$) in fish fed with diets containing 28% protein, when compared with fish fed with diets containing 15% protein. Concerning FCR, we noted a protein-sparing action by raising the lipid level from 12% to 16%. Still, the fish that were fed with 15% protein and 12% lipid have reached a better protein conversion compared to the other groups. We concluded that the white sea bream has a low specific growth rate (SGR) and is not very efficient in converting dietary nutrient into body components.

According to these results and the previous studies on this species, we concluded that white sea bream is not yet a good choice for aquaculture production. Nevertheless, more investigation regarding the nutrition requirements of white sea bream is warranted.

Keywords: white sea bream, nutrition requirement, new aquaculture species

P450 Aromatase: finding a gene for invertebrate toxicology?

L. Filipe C. Castro, Miguel M. Santos and Maria A. Reis-Henriques

The cytochrome P450 aromatase (*CYP19*), catalyses the aromatisation of androgens to estrogens, a key mechanism in vertebrate reproductive physiology. Current evolutionary hypothesis suggest that *CYP19* gene arose at the origin of vertebrates, given that it has not been found outside this clade. The human *CYP19* gene is located in one of the proposed MHC-paralogon regions (HSA15q). At present it is unclear whether this genomic location is ancestral (which would suggest an invertebrate origin for *CYP19*) or derived (genomic location with no evolutionary meaning). The distinction between these possibilities should help to clarify the timing of the *CYP19* emergence and which *taxa* should be investigated. Here we determine the “genomic environment” around *CYP19* in three vertebrate species *Homo sapiens*, *Tetraodon nigroviridis* and *Xenopus tropicalis*. Contrary to previous suggestions, our data indicates an invertebrate origin for the aromatase gene, given the striking conservation pattern in both gene order and gene content, and the presence of aromatase in amphioxus. Finally, we suggest that agnathans and lophotrocozoan protostomes (e.g. molluscs) should be investigated for the presence of aromatase