



## **Apresentações Internas do CIIMAR**

**Data: 17/01/2005**

**Horário: 14:00 – 15:00**

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

### **Programa:**

**14:00 - 14:15 Evolution due to Pollution (MEdP): Eco-toxicology beyond "snapshot time" ecological aspects.**

**Matias Medina. Laboratório de Ecotoxicologia. CIMAR. Universidade do Porto.**

**14:20 - 14:35 Effects of Organochlorinated Compounds in Nile Tilapia, *Oreochromis niloticus*.**

**Ana Coimbra. Laboratório de Toxicologia Ambiental. CIMAR. Universidade do Porto**

**14:40 - 14:55 Ammonia tolerance in the teleost fish *Misgurnus anguillicaudatus*.**

**Joana Silva. Laboratório de Ecofisiologia. CIMAR. Universidade do Porto**

### **Resumos:**

**Evolution due to Pollution (MEdP): *Eco-toxicology* beyond “snapshot time” ecological aspects.**

**Matías Medina. Laboratório de Ecotoxicologia. CIMAR. Universidade do Porto.**

Anthropogenic contamination of natural environments can generate changes in community structure and function. Depending on the level and duration of pollution events, these changes could theoretically result from: 1) replacement of sensitive species by less sensitive ones (*Pollution Induced Community Tolerance*), 2) physiological plasticity of individuals, and 3) selection of genetically inherited tolerance in exposed populations. While the first process has been studied and described by emphasizing the application of ecology in *eco-toxicology*, community changes due to the second and third possibility involve long-term responses that could lead to small-scale evolutionary processes. The latter was called *Microevolution due to Pollution* (MEdP), and because it

includes the analysis of multi-generational effects, it goes beyond the “snapshot time” ecological aspects applied in eco-toxicology. Through the review of scientific literature, this presentation attempts to clarify if MEdP is occurring in human-impacted ecosystems. Although point mutations, gene frequencies alterations and an increase in inherited tolerance have been observed in field and laboratory populations exposed to toxic substances, the significance of these effects as evolutionary processes has not been clarified. In this work, the fraction of the phenotypic variation that should be attributed to genetic variance, the existence of between-environment genetic trade-offs and pollution-induced genetic bottlenecks, are analyzed in relation to the possible implications of MEdP on community changes and ecosystem resilience and recovery.

### **Effects of Organochlorinated Compounds in Nile Tilapia, *Oreochromis Niloticus***

Ana Coimbra. Laboratório de Toxicologia Ambiental. CIMAR. Universidade do Porto

Polychlorinated compounds used by the industry and agriculture are present on aquatic ecosystems. These lipophylic chemicals are known for their environmental persistence and capability of entering the food chains, to bioaccumulate on tissues and for being able to cause disruption of the endocrine systems.

In these studies Nile tilapia (*Oreochromis niloticus*) was used to evaluate some effects of two organochlorinated environmental contaminants, Endosulfan and Aroclor 1254. The objectives were to evaluate alterations caused by Endosulfan and Aroclor 1254 on thyroid hormones levels, binding to plasma proteins and peripheral metabolism and to observe the effects of Aroclor 1254 on tilapias reproduction.

### **Ammonia tolerance in the teleost fish *Misgurnus anguillicaudatus***

J. Moreira da Silva. Laboratório de Ecofisiologia. CIMAR. Universidade do Porto

The weather loach *Misgurnus anguillicaudatus* is an ammonia tolerant fish that lives in rice fields in Southern China. During its life it is subjected to drought conditions during the summer and to high environmental ammonia during fertilization. To address the ammonia tolerance in this teleost fish, five main objectives were proposed: 1. Determine the sensitivity of the fish to ammonia; 2. Determine the relative contributions of the

gill, skin and the gut to total ammonia excretion; 3. Elucidate the mechanisms of transepithelial ammonia movement across the loach gill, skin and gastrointestinal tract; 4. Elucidate the mechanism of anterior gut lumen alkalinization; 5. Evaluate the mentioned changes during aerial exposure in drought conditions.