

## **Detecting the exposure to Cd and PCBs by means of a non-invasive transcriptomic approach in laboratory and wild contaminated European eels (*Anguilla anguilla*)**

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### **Abstract:**

Detecting and separating specific effects of contaminants in a multi-stress field context remain a major challenge in ecotoxicology. In this context, the aim of this study was to assess the usefulness of a non-invasive transcriptomic method, by means of a complementary DNA (cDNA) microarray comprising 1000 candidate genes, on caudal fin clips. Fin gene transcription patterns of European eels (*Anguilla anguilla*) exposed in the laboratory to cadmium (Cd) or a polychloro-biphenyl (PCBs) mixture but also of wild eels from three sampling sites with differing contamination levels were compared to test whether fin clips may be used to detect and discriminate the exposure to these contaminants. Also, transcriptomic profiles from the liver and caudal fin of eels experimentally exposed to Cd were compared to assess the detection sensitivity of the fin transcriptomic response. A similar number of genes were differentially transcribed in the fin and liver in response to Cd exposure, highlighting the detection sensitivity of fin clips. Moreover, distinct fin transcription profiles were observed in response to Cd or PCB exposure. Finally, the transcription profiles of eels from the most contaminated site clustered with those from laboratory-exposed fish. This study thus highlights the applicability and usefulness of performing gene transcription assays on non-invasive tissue sampling in order to detect the in situ exposure to Cd and PCBs in fish.

### **Full text:**

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