

# Metal contamination levels and biochemical stress responses in the catshark *Scyliorhinus canicula* off the Portuguese coast

Alexandre F. Marques<sup>1</sup>, Luís M. Alves<sup>1, 2</sup>, Marco F. Lemos<sup>1</sup> and Sara C. Novais<sup>1, 3\*</sup>

<sup>1</sup> Polytechnic Institute of Leiria, Marine and Environmental Sciences Centre (MARE), Portugal  
<sup>2</sup> Faculdade de Ciências, Universidade de Lisboa, Marine and Environmental Sciences Centre (MARE), Portugal  
<sup>3</sup> VU University Amsterdam, Institute of Ecological Sciences, Netherlands

Marine contamination is an ever-growing problem, with contaminants such as metals constantly being introduced in the ecosystems. To understand the effects these contaminants exert in marine organisms, there is a need to connect the measured contamination levels with biological endpoints that can give an indication of stress or susceptibility. Sharks tend to bioaccumulate and biomagnify different contaminants throughout their long lives, mainly by feeding on smaller animals containing different levels of such pollutants. Being very abundant and heavily fished, these animals have the potential to be used in marine biomonitoring studies. Moreover, the fact that they are used for human consumption ads further relevance to the study of their contamination levels. The present study aimed to assess the levels of metal contamination in the catshark *Scyliorhinus canicula* while also addressing stress effects using biochemical biomarkers to understand possible consequences of such contamination. The sharks were sampled right after being caught off the coast of Portugal, aboard a commercial trawling boat. Metals were quantified in different tissues and the levels of biochemical parameters related with detoxification, oxidative stress, and energy metabolism were measured for each individual. Some of the metals were preferentially accumulated in liver, when compared to muscle. Significant correlations were observed between physiological parameters and contaminant accumulation levels and some suitable biomarker candidates were identified. This study further highlights the effectiveness of combining biochemical parameters and pollutant body burden determinations to assess effects of contamination and demonstrates the great potential of sharks to be used in biomonitoring studies of the marine environment.

**Keywords:** biomarkers, biomonitoring, Marine pollutants, Metals, Sharks

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\* **Correspondence:** Mrs. Sara C Novais, Polytechnic Institute of Leiria, Marine and Environmental Sciences Centre (MARE), Leiria, Portugal, sara.novais@ipleiria.pt

