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Zooplankton Health Status Monitoring in Bir Mcherga Dam (Tunisia)

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Abstract : Because dams are large semi-closed reservoirs of pollutants originating from numerous anthropogenic activities, they represent a threat to aquatic life and they should be monitored. The present work aims to use freshwater zooplankton (Copepods and Cladocerans) in order to evaluate the environmental health status of Bir M'cherga dam in Tunisia. Animals were collected in situ monthly between October and August. Genotoxicity (micronucleus test), neurotoxicity (acetylcholinesterase, AChE) and oxidative stress (catalase, CAT and malondialdehyde, MDA) biomarkers were analyzed in zooplankton. High frequencies of micronucleus were observed in zooplankton cells during summer. AChE activities were inhibited during early winter and summer. CAT and MDA biomarker levels showed high seasonal variability, suggesting that animals are permanently exposed to multiple oxidative stress. The results of this study suggest that the Bir Mcherga dam is subject to continuous multi-origin stress, probably amplified by abiotic parameters. It is then recommended to urgently monitor freshwater environments in Tunisia, especially those used for irrigation and consumption.

Keywords : Biomonitoring, Bir Mcherga Dam, cladocerans, copepods, freshwater zooplankton, genotoxicity, neurotoxicity, oxidative stress, Tunisia
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