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Dibutyl phthalate on *scenedesmus sp.*: Risk assessment of natural occurring concentrationsCésar Cunha¹, Jorge Paulo¹, Marisa Faria¹, Manfred Kaufmann^{2,3} and Nereida Cordeiro^{1,3}^{1,2} University of Madeira, Portugal³University of Porto, Portugal

Phthalate esters are highly present in marine plastic litter, which can interfere with the biological processes in the wildlife. In this work, the commonly found freshwater microalga *Scenedesmus sp.* was exposed to environmental relevant concentrations (0.02, 1 and 100 $\mu\text{g L}^{-1}$) and to a higher concentration (500 $\mu\text{g L}^{-1}$) of dibutyl phthalate (DBP), which is an environmental contaminant. The *Scenedesmus sp.* growth inhibition and the effect on production of photosynthetic pigments and carbohydrates were evaluated as endpoint of the toxic effects. The main inhibition effect of DBP on the microalga growth was observed in the first 48 h of the exposition (EC_{50} : 41.88 $\mu\text{g mL}^{-1}$). A reduction in the photosynthetic pigments was observed for the 0.02, 1 and 100 $\mu\text{g L}^{-1}$ conditions indicated that DBP regulated the growth rate and affecting the photosynthetic process. A significant increase in protein production was observed only under 500 $\mu\text{g L}^{-1}$ DBP exposure. Extracellular carbohydrates production decrease slightly with the presence of DBP, with a sharper decrease to 500 $\mu\text{g L}^{-1}$. These results highlight the hazardous effects of DBP on the biochemical behaviour of microalgae and the importance of the real environmental concentrations study due to the DBP dose-dependent correlation effect.

Biography

César Cunha has completed his undergraduate degree in Biochemistry last summer in University of Madeira (UMa), Portugal. He started a professional internship in CIIMAR- Madeira, working as a Junior Researcher in LB3 (Laboratory of Bioanalysis, Biomaterials and Biotechnology) and in Madeira Algae Bank at University of Madeira.

cesar.cunha@staff.uma.pt

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