Polyethylene terephthalate (PET) nanoplastics affect the behavior and physiology of *Artemia franciscana*

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Nanoplastics (NPs) are increasingly recognized as a significant environmental and health concern. Studying the responses of living organisms to nanoplastic exposure is crucial for understanding the environmental and health impacts of NP pollution. The present study aims to evaluate the behavioral and physiological response of the model microcrustacean organism *Artemia franciscana* to exposure to polyethylene terephthalate (PET) nanoparticles, which are widely diffused in the environment due to the extensive use of PET products and the degradation of larger plastic items.

The study used environmentally relevant model PET NPs characterized by an intrinsic autofluorescence. They were obtained from PET bottle degradation by a fast top-down approach based on mechanical fragmentation, a process close to the mechanical abrasion of microplastics occurring in the environment. The study was carried out by real-time integration of behavioral recordings with measurements of physiological outcomes during acute exposure (24h and 48h) of *A. franciscana* at two different life stages, newborn and adults, to several concentrations of PET NPs ranging from 0.5 to 50 ng/L. PET NPs exerted a significant impact on the motile behavior of the studied organism such as alterations in mean acceleration and trajectories of movement. Results contribute to elucidating how nanoplastics affect neurological and physiological functions in invertebrates.