

Abstract

Ecotoxicological Behavior of Functionalized Magnetic Nanohybrids in Water Flea *Daphnia magna* and Their Recovered Physicochemical Properties [†]

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Magnetic nanoremediation is quite advantageous due to its fast kinetic adsorption response, high specific surface area, catalytic response, and multifaceted surface adsorption mechanism [1]. However, their industrial application will require the spread of magnetic nanohybrids into the environment. Specifically, water effluents are the main target for the final cycle of magnetic nano-adsorbents. In light of this, the ecotoxicological evaluation of nanomaterials' lines and derivatives is mandatory. The main worry is the possible source of contamination that these nanomaterials represent, despite their potential applications. In this work, the 24-h lethal dose concentration (24 h-LC₅₀) and morphological effects produced by magnetic nanohybrids were studied in *Daphnia magna* (*D. magna*) biomarkers. For this purpose, culture optimization was carried out first. Then, 24 h-LC₅₀ values were determined for various magnetic nanohybrids and compared to other parent systems in the literature [1,2]. Morphological damage was compared to the negative control for duplicate experiments, and statistical significance was also evaluated. In addition, the after-exposure properties of magnetic nanohybrids were assessed by means of various physicochemical techniques [3], and it was observed that all of their properties remained unchanged.

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