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Influence of titanium dioxide nanoparticles on the toxicity of arsenate in *Nannochloropsis maritima*

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1 **Influence of titanium dioxide nanoparticles on the toxicity of**
2 **arsenate in *Nannochloropsis maritima***

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11 **Abstract**

12 Interest is growing in the role that nanoparticles play in modifying the biological
13 effects of contaminants. This study aimed to determine whether nano-TiO₂ exhibited
14 pronounced influence on arsenate (*As(V)*) toxicity levels to the marine microalgae
15 *Nannochloropsis maritima*. We compared individual and combined toxicity levels of
16 *As(V)* and nano-TiO₂ by assessing the inhibition percentages of algal growth.
17 Compared to groups treated with *As(V)* alone, an EC₅₀ of 53.0 mg/L decreased by
18 28.8% after the addition of nanoparticles. This enhanced toxicity was attributed to the
19 inhibition of *As* methylation and the promotion of lipid peroxidation in the presence
20 of nano-TiO₂. Additionally, transmission electron microscopy (TEM) and scanning
21 electron microscopy (SEM) also showed that algal cells exhibited different degrees of

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