

# Accepted Manuscript

Comparative biotoxicity of N-Phenyl-1-naphthylamine and N-Phenyl-2-naphthylamine on cyanobacteria *Microcystis aeruginosa*

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1 **Comparative biotoxicity of N-Phenyl-1-naphthylamine and**  
2 **N-Phenyl-2-naphthylamine on cyanobacteria *Microcystis aeruginosa***

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10 **Abstract:** N-Phenyl-1-naphthylamine (P<sub>1</sub>NA) and N-Phenyl-2-naphthylamine (P<sub>2</sub>NA)  
11 are both widely used as antioxidant and plant secondary metabolites. In this study, growth,  
12 esterase, photosynthetic activity and cell membrane integrity were used as biomarkers to  
13 compare biotoxicity of P<sub>1</sub>NA and P<sub>2</sub>NA on *Microcystis aeruginosa*. According to the  
14 results, a dose-response relationship was observed only between P<sub>1</sub>NA concentrations and  
15 growth inhibition. The EC<sub>50</sub> (48 h) of P<sub>1</sub>NA calculated from growth inhibition was 16.62  
16 μM, while that of P<sub>2</sub>NA was not detected. When the esterase and photosynthetic activity  
17 were applied to evaluate the biotoxicity, it was found that a concentration of 20 μM P<sub>1</sub>NA,  
18 P<sub>2</sub>NA caused reduction of esterase activity and Fv/Fm of *M. aeruginosa* to 22.2 and 3.3%,  
19 97.5 and 92.1%, respectively, after 48 h exposure. The percentage of membrane-damaged  
20 cells was increased as P<sub>1</sub>NA exposure concentration increased, but that was not detected

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