Inhibition mechanism of *Microcystis aeruginosa* under UV-C irradiation

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**ABSTRACT**

The inhibition of *Microcystis aeruginosa* in water with UV-C irradiation was investigated. Results revealed that 84% of *M. aeruginosa* were removed on the 5th day after UV-C irradiation at a dose of 2,117 mJ/cm². The SEM images of irradiated *M. aeruginosa* cells showed evidence of injury. However, the presence of CH₃OH, thiourea, and NO₃⁻ decreased the UV-C irradiation efficiency. Acidic conditions were more conducive to *M. aeruginosa* removal than neutral or alkaline conditions. H₂O₂ in the mM level was added into the *M. aeruginosa* solution to investigate the removal efficiency, and the results indicated that 94% of *M. aeruginosa* were removed. The phycocyanin photosynthetic pigment content in *M. aeruginosa* cells decreased with the increase of UV-C irradiation dose. Low UV-C irradiation doses enhanced the activity of superoxide dismutase (SOD) in the *M. aeruginosa* cells, whereas the SOD activity decreased with high doses.

**Keywords:** *Microcystis aeruginosa*; UV-C irradiation; Additive; Superoxide dismutase; Phycocyanin