Allelopathic Effects of Berberine, a Plant Alkaloid, on the Algae, Microcystis aeruginosa (FACHB-905), at Different Initial Densities

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Abstract
Allelopathic effects of a plant alkaloid, berberine, on Microcystis aeruginosa (FACHB-905) at different initial densities were estimated. Berberine (0.005-0.0040, w/v) effectively inhibited the growth of M. aeruginosa at an initial density of 1.146 × 10^6 ind/ml in a 96-h acute toxicity test. In a 8-d toxicity test with different initial densities, curves of the growth and inhibition rate of M. aeruginosa 905 under different initial densities showed that berberine had concentration-dependent inhibitory effects on M. aeruginosa 905 growth, and that the inhibitory rate increased as the berberine concentration increased. The inhibitory effects of the berberine were weakened as the initial algae density increased. The microcystin content of the culture medium was positively related to the number of berberine-killed algae cells. Thus, when using berberine to control M. aeruginosa blooms, subsequent removal of microcystin released to the aquatic environment is needed.

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