

Allelopathic effect of cyanobacteria on endangered submerged macrophyte, *Ottelia acuminata*, a native species of southwestern China

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Ottelia acuminata, a native, ornamental and edible submerged macrophyte in southwestern China, had been dominant in the Dianchi Lake (the biggest lake in Yunnan Province and the sixth largest in China) before 1970s. However, it had been destroyed seriously and become the endangered species after that, with the introduction of grazing fish, over-harvest and cyanobacteria blooming (dominant by *Microcystis aeruginosa*). We hypothesize that *M. aeruginosa* allelochemicals may affect the disappearance and recovery of *O. acuminata*. We employed two variations of *O. acuminata* (*O. acuminata* var. *crispa*, OAC and *O. acuminata* var. *songmingensis*, OAS) to test the effect of exudates and extracts of *M. aeruginosa* on seed germination and early seedling growth of *O. acuminata*. We found that: (1) the *M. aeruginosa* exudates promoted seed germination of *O. acuminata*, whilst the extracts inhibited it; (2) both exudates and extracts significantly decreased the seedlings healthy of OAC and OAS; (3) exudates and extracts of *M. aeruginosa* inhibited the growth of *O. acuminata* seedlings, especially the root rates and the second true leaf growing rates; (4) allelopathic effects of *M. aeruginosa* exudates were stronger than those of extracts. Our results indicate that cyanobacteria can allelopathically inhibit this endangered plant. The early growth of seedlings rather than seed germination seems to be a sensitive phase for the impact of cyanobacterial allelochemicals, and the OAC showed stronger resistance than OAS.

Biography

Xuexiu Chang had completed her Ph.D. in July 2000. After that, she has worked in Yunnan University as a lecturer, an associate professor and a professor, in sequence. She had studied in Leibniz-Institute of Freshwater Ecology and Inland Fisheries (Berlin, Germany) as a visiting scholar. Now she is the director of Environmental Science Department, School of Life Science, Yunnan University. She has published more than 20 papers (in english or in chinese) and 4 higher education textbooks (in chinese) in reputed journals and presses. Also, she is serving as a reviewer member of reputed journals.

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