

# Effects of toxic *Microcystis aeruginosa* on the expression of Hox genes in *Daphnia similoides sinensis*

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June 25, 2021

## Abstract

Lake eutrophication and cyanobacterial blooms have become worldwide environmental issues. Under cyanobacterial blooms (especially *Microcystis*), *Daphnia* spp. can transfer beneficial information to their offspring in order to improve adaptability. Hox genes are important regulatory factors of transcription in metazoans, and are involved in the growth and development of organisms. In this study, the effects of *Microcystis aeruginosa* on Hox gene expression in the mothers and offspring of *Daphnia similoides sinensis* were investigated using a mixed diet of *M. aeruginosa* and *Scenedesmus obliquus*, in two clones. There were significant differences in the survival rates of *D. similoides sinensis* under different food treatments. Our results suggest that the offspring produced by *D. similoides sinensis* mother pre-exposed to toxic *M. aeruginosa* had stronger adaptability to *M. aeruginosa* than those produced by previously unexposed mother. Additionally, Hox gene expressions of *D. similoides sinensis* had obvious differences between clones under stress of toxic *M. aeruginosa*.

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