

Cyanobacteria-derived nitrogen uptake by benthic invertebrates in Lake Taihu: a mesocosm study using



Eutrophication of lakes can lead to dominance by cyanobacteria, which are hardly used by zooplankton due to their low nutrition value. However, sedimented cyanobacterial detritus may be a useful source for benthic invertebrates. We studied the Microcystis-derived nitrogen incorporation in benthic invertebrates in Lake Taihu using stable isotopic nitrogen (^{15}N) as a tracer. The $\delta^{15}\text{N}$ of all organisms increased significantly with time after addition of the labeled Microcystis detritus. $\delta^{15}\text{N}$ values of POM and periphyton peaked earlier than for benthic invertebrates, and the maximum levels were also higher than bivalves, snails and worms (*Limnodrilus* spp.). Among benthic invertebrates, *Radix swinhoei* peaked later than other invertebrates, but the maximum level and the excess ^{15}N of the last sampling day were higher. At the end of the experiment, approximately 70% of the added ^{15}N was retained in the benthic food web, while only a small fraction (less than 1%) of the added detritus ^{15}N occurred in the pelagic food web. Our results suggest that nitrogen from cyanobacteria can be incorporated more in benthic than pelagic food webs and cyanobacterial blooms may contribute to the development of benthic animals.

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