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ZOOPLANKTON COMPENSATE BAD FOOD QUALITY PROVIDED BY ALGAE FOR FISH IN CARP PONDS

Matthias Pilecky, Samuel K. Kämmer, Margaux Mathieu-Resuge, Leonard I. Wassenaar, Sami J. Taipale, Dominik Martin-Creuzburg, and Martin J. Kainz

Long-chain omega-3 polyunsaturated fatty acids (PUFA) are important for animals, including humans, to maintain their nervous system. These are almost exclusively produced by plants and algae, however, some algae species, particularly growing under warm, nutrient rich conditions, such as cyanobacteria, only provide a precursor short chain variant. Conversion of short-chain to long-chain omega-3 PUFA requires significant amounts of energy, cannot be efficiently performed by some species and can thus is a growth limiting factor for fish in aquaculture. This study shows that in ponds with algal compositions not producing substantial amounts of long-chain omega-3 PUFA zooplankton is able to compensate, by increasing its conversion rate of short-chain to long-chain omega-3 PUFA, providing these valuable micronutrients to fish in aquaculture and eventually to humans. It is the first study using and quantifying the content of stable hydrogen isotopes of individual fatty acids to investigate metabolic processes.