Copepod reproduction is unaffected by diatom aldehydes or lipid composition

Dutz, Jörg, Marja Koski, Sigrún H. Jónasdóttir

Limnol. Oceanogr., 53(1), 2008, 225-235 | DOI: 10.4319/lo.2008.53.1.0225

ABSTRACT: We investigated whether reduced reproductive success of copepods fed with diatoms was related to nutritional imbalances with regard to essential lipids or to the production of inhibitory aldehydes. In 10-d laboratory experiments, feeding, egg production, egg hatching success, and fecal pellet production of *Temora longicornis* were measured for six different diatom species as well as for a nondiatom control diet (*Rhodomonas* sp.). The experiments were accompanied by determinations of fatty acids, sterols, and polyunsaturated aldehydes (PUA) in the food. Although diatoms were generally ingested at high rates, they yielded a variable egg production response in copepods, ranging from high egg production in four species (two strains of *Thalassiosira rotula*, *Chaetoceros affinis*, and *Thalassiosira weissflogii*) to low egg production in two species (*Leptocylindricus danicus* and *Skeletonema costatum*). Egg hatching rates decreased after 4 d in all diatom treatments, irrespective of the egg production rate and without any relationship to diatom aldehyde production. Similarly, no evidence was found that diatoms are per se nutritionally inferior to nondiatom food. The lack of a distinct mechanism for the observed inhibitory activity of diatoms suggests that the cause(s) might be more complex. We suggest, as one possible explanation, that hatching-specific nutritional deficiencies might be induced by incomplete digestion following from the low gut passage time of diatoms, as indicated by a strong correlation between egg viability and fecal pellet production.

Article Links

Download Full-text PDF

Return to Table of Contents

Please Note