



Chemical defense of the red tide dinoflagellate *Karenia brevis* against rotifer grazing

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ABSTRACT: In order to test whether phytoplankton such as the red tide dinoflagellate *Karenia brevis* negatively affect rotifer grazers and what mechanisms are involved in these interactions, we conducted laboratory feeding experiments using *K. brevis* cultured from Gulf of Mexico coastal waters and two species of rotifers, one cooccurring and the other from an inland sea in Russia. The co-occurring rotifer *Brachionus ibericus* did not ingest *K. brevis* as a sole diet but tolerated *K. brevis* in a diet mixed with *Rhodomonas lens*, whereas the allopatric rotifer, *Brachionus plicatilis*, rejected *K. brevis* in either diet, although *B. plicatilis* started feeding on the mixed diet after a delay of 4 days. The deterrence of *K. brevis* was mediated by its cellular organic extracts and not by exudates, with compounds other than brevetoxins PbTx-2, PbTx-3, and PbTx-9 implicated in deterrence. The finding that closely related rotifers respond differently to *K. brevis* and to its chemical defense suggests that a shared evolutionary history may have led *B. ibericus* to tolerate *K. brevis* in a mixed diet.

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