

Modifying Foods and Feeding Regimes to Optimize the Performance of *Hyalella azteca* During Chronic Toxicity Tests.

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The amphipod *Hyalella azteca* is commonly used to assess the toxicity of sediments and waters. However, laboratories have reported varying success in maintaining healthy cultures and in obtaining consistent growth and reproduction (where applicable), especially during tests conducted for longer durations (i.e., 28 and 42 days). Even where control survival criteria are met during 10-d tests, poor growth and reproduction observed during longer tests under similar conditions may bring into question whether the results of shorter tests provide a reliable measure of toxicity. Some of the challenge to consistency in testing with *H. azteca* may stem from uncertainties regarding environmental conditions necessary for successful culture and testing of this species; an informal survey of laboratories indicated a wide variety of water types and feeding regimes in use. Until these uncertainties are resolved, it seems reasonable that laboratories could prove the adequacy of their test conditions for *H. azteca* by demonstrating good survival, growth, and reproduction in a 42-d control exposure using a neutral substrate, such as clean quartz sand. Previous work in our laboratory showed that 10-d amphipod growth could be markedly improved by amending Lake Superior water with 10 mg chloride/L (added as NaCl). As part of evaluating this water's suitability during 42-d tests as described above, we also included treatments using some different diets and ration sizes. Although the amended Lake Superior water did appear to support good organism performance, we found evidence that the standard feeding rate of 1 ml YCT/chamber/day (based on current EPA and ASTM guidance) was not sufficient to sustain optimal growth and reproduction for periods longer than the initial 10 days of the test. Following from this observation, additional studies were conducted to more thoroughly evaluate different foods, combinations of foods, feeding rates, and temporally increasing feeding rates (intended to account for the changes in organism mass over the course of the test). Detailed comparisons within and between experiments are discussed. While work to define a new feeding regime for use with *H. azteca* is not yet complete, we believe the results thus far strongly indicate that the standard feeding rate of 1 ml YCT/chamber/day should be increased in latter portions of 28-d or 42-d tests with *H. azteca*.