CLEARANCE RATES OF VILLOSA IRIS (BIVALVIA: UNIONIDAE) FED DIFFERENT RATIONS OF THE ALGA NEOCHLORIS OLEOABUNDANS

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ABSTRACT

We investigated effects of algal cell concentration and mussel size (shell length) on the clearance rate (CR) of the rainbow mussel, *Villosa iris*. Mussel were either batch-fed a single ration of algae for 24h, or were fed three different algal rations that were replenished every hour for 3 hours. Mean CR of *V. iris* batch fed a single ration (1.3 x 10⁶ c/mL, 8.8 mg/L) of algae (*Neochloris oleoabundans*) decreased with time and the concomitant decline in cell concentration, but never reached zero. As length increased, so did clearance rate (p<0.0001). Pseudofeces were produced by all individuals in the first three hours of feeding, and were irregularly produced as algal cell concentration dropped later in the test.

Mussels fed the lowest ration (0.34 mg dry wt/L) maintained elevated CRs over time with no production of pseudofeces; CR of mussels fed the middle ration (1.02 mg dry wt/L) decreased with time, and produced pseudofeces – intermittently. CR's of mussels fed the high ration (3.4 mg/L) increased with time, and produced a large amount of pseudofeces throughout the test. Following the premise that the optimum ration yields greatest net particle ingestion without incurring sorting costs of pseudofecal production, we estimated that *V. iris* would require 2.8 mg dry wt of algae (4.2 x 10⁸ cells of *N. oleoabundans*) on a daily basis, based upon CR's measured for the middle ration in this study.