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Clearance Rate Variations in the Rotifer, *Brachionus plicatilis*

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Poster Presentation P25

CLEARANCE RATE VARIATIONS IN THE ROTIFER, *BRACHIONUS PLICATILIS*

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The Rotifera is a group of free-swimming, parthenogenic animals that feed through the use of cilia that create a fluid flow into the mouth. We studied the marine rotifer, *Brachionus plicatilis*, in order to determine rates of particle capture and fluid flow through its digestive system. Prior to each experiment rotifers were starved for several hours to clear their guts and then incubated in saltwater containing either 6 μm or 0.5 μm polystyrene beads (or both together). After a specified time, the rotifers were relaxed in carbonated water and preserved with 2.5% paraformaldehyde. The rotifers were mounted onto slides and the number of ingested beads were counted and used to calculate clearance rates. Clearance rate represents the volume of water cleared of that number of beads in a given amount of time. The rotifers were found to have a high variation of clearance rates. The average clearance rate of 6 μm beads for the 268 tested rotifers was $4.91 \pm 5.8 \mu\text{l/h}$. Clearance rate did not have a significant relationship with the length of the rotifer's body ($p > 0.05$; $n = 221$) or duration of feeding exposure ($p > 0.05$; $n = 1$). The average length of the rotifers studied was found to be $0.22 \pm 0.03 \text{ mm}$. It was also noted that there was no significant difference between separate vials when the experiment was performed at the same time. There was a significant difference ($p < 0.001$) between the clearance rates of 0.5 μm beads and 6 μm beads. The average clearance rate for 0.5 μm beads is $0.819 \pm 0.8 \mu\text{l/h}$, which is considerably smaller than that of 6 μm beads. This suggests that there is a different mechanism used to collect these different sized beads. The larger beads (6 μm) may be actively concentrated and cleared while the smaller beads (0.5 μm) might represent passive fluid flow through the digestive system.