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Brachionus Plicatilis Ability to Ingest, Digest, and Assimilate Dissolved Organic Matter

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Poster Presentation P13

BRACHIONUS PLICATILIS ABILITY TO INGEST, DIGEST AND ASSIMILATE DISSOLVED ORGANIC MATTER

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Brachionus plicatilis is a marine rotifer that feeds on particles ranging from ~1-20 μm in size. The abundance of such particulate organic materials in marine environments is exceeded by the amount dissolved organic materials (DOM) by a factor of ten. We tested the hypothesis that *B. plicatilis* can use DOM as food by investigating their ability to consume iron-containing molecules from seawater. Rotifers were incubated for five hours in filtered seawater (0.2 μm pore size, FSW) containing 1 mg / mL of an iron-containing protein ferritin, an iron-containing polysaccharide iron dextran (ID), and ferrous gluconate (FG); FSW acted as an experimental control. The presence of iron atoms in rotifers was detected after a one hour incubation in a 3:2 mixture of 1% potassium ferrocyanide and 2% hydrochloric acid; ferrocyanide ions react with iron atoms to form an insoluble product called Prussian Blue (PB). PB was present in the lumen of the digestive system of rotifers exposed to all iron-containing molecules; controls had notably lower levels of PB in their digestive systems. Stomach cells of rotifers incubated in ferritin and FG, but not ID or controls, contained PB as a uniformly distributed blue color and as discrete spots. These data reveal that some DOM, present within ingested water, can be absorbed by the cells of the digestive system of *B. plicatilis* and represent a potential source of food for rotifers.