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Metabolic Contribution of Particulate Matter (<µm) for Larvae of *Lytechinus variegatus*

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Poster Presentation P24

METABOLIC CONTRIBUTION OF PARTICULATE MATTER (<1µm) FOR LARVAE OF *LYTECHINUS VARIEGATUS*

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Echinoderm larvae possess an external band of cilia that beat in one direction for locomotion and undergo localized beat reversal when triggered by particles (≥ 2 mm), pushing these particles towards the mouth for ingestion. Particles below adequate size, if ingested, must be collected by passing seawater through the digestive system. We measured the ability of pluteus larvae of *Lytechinus variegatus* to capture bacteria-sized particles after exposing them to 0.513µm fluorescent beads ($9.5x10^5$ beads/mL) for 10 min. Beads were found in the digestive system in 75% (41 of 55) of larvae and the average ingestion rate was 39.4 (±42.7 SD) beads/h. From these ingestion rates we calculated clearance rates (mL/ larva-h) and used literature values for bacterial energy content and larval metabolism to estimate the energetic contribution of bacteria-sized particles. Assuming 100% assimilation efficiency and 10^6 cells/mL, we found that feeding on bacteria-sized particles could provide for only 0.16% of metabolic rate.