Pedal mucus and its influence on the microbial food supply of two intertidal gastropods, Patella vulgata L. and Littorina littorea (L.

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Pedal mucus and its influence on the microbial food supply of two intertidal gastropods, *Patella vulgata* L. and *Littorina littorea* (L.)

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Abstract

The pedal mucus secreted by intertidal gastropods has been shown to be energetically expensive. Some of this energy may be recycled through ingestion. In this paper we show that mucus persists for long enough on the shore to allow for its re-ingestion and that it can adhesively trap microalgal food particles. The pedal mucus of *Patella vulgata* L. persists about twice as long (up to ≈80 days) as that of *Littorina littorea* (L.) in field and laboratory experiments. Persistence varies temporally and with location on the shore. Determination of chlorophyll a and direct observation of diatom number were used in field experiments as indices of organic matter adhering to pedal mucus. The

mucus of *P. vulgata* collected more microalgae than did the mucus of *L. littorea* or no mucus at all and more microalgae was collected on the most exposed of three shores tested. The chlorophyll a results suggest that the mucus loses its ability to trap microalgae with time of exposure while direct observations of diatom number suggest the contrary. Electron microscopy revealed a clumped microdistribution of diatoms which was independent of the presence of mucus or the capability of independent movement in diatoms. More raphed diatoms were observed on mucus-coated surfaces than on non-mucus-coated surfaces. The results are discussed in terms of the likelihood of intertidal gastropods using mucus trails to trap food particles and the wider implications of this phenomenon for community ecology.

Keywords

Benthos; Diatom; *Littorina*; Microalga; Mucus; *Patella*

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