COPEPODS CONTROLLING BACTERIAL COMMUNITIES ON FECAL PELLET

Cnudde C.[1], A. Willems[2], A. Vanreusel[1] and M. De Troch[1]

[1] Biology Department, Marine Biology, Ghent University, B-9000 Ghent,
[2] Belgium Laboratory for Microbiology (LM-UGent), Department of Biochemistry, Physiology and Microbiology, Ghent University, B-9000 Ghent, Belgium

clio.cnudde@ugent.be

The traditional view of the marine food web depicts bacteria and copepods (mainly planktonic species) as separate units, indirectly connected via nutrient cycling and trophic cascade processes. In contrast, several recent studies have demonstrated that zooplankton and bacteria directly interact, physically, e.g. bacteria attached to zooplankton bodies and biologically, e.g. zooplankton feeding supports bacterial growth through their excretions. Copepods produce large numbers of fecal pellets in the marine environment. Almost immediately after egestion, pellets host extensive bacterial communities. Low amounts of fecal material in sediment traps indicate most part of fecal pellet production is retained in the water column as a result of high microbial degradation rates and planktonic copepods reworking the fecal pellets. First observations on the re-use of feces by benthic copepods points out that these crustaceans profit in a yet unknown way from fecal pellet bacteria. Recently it was illustrated that the benthic species *Paramphiascella fulvofasciata* increases its fecal pellet production according to its food source. Presumably the bacteria associated with fecal pellets create a trophic upgrading of the fecal material. A detailed characterization of these bacteria is crucial to understand the trophic pathways in the lower marine food web. Culture-independent molecular techniques (e.g. DGGE) showed the specificity of these communities. Shifts in the bacterial communities are caused by age, original food source (e.g. diatoms) and producer of the fecal pellet. Moreover, an additional grazing experiment illustrated the importance of the freshness of the initial food source for grazing preferences but also for the bacterial communities on the fecal pellets. Food of low quality was compensated by more diverse bacterial communities that were available for additional grazing. These results illustrated the importance of fecal bacteria in the transformation of organic matter and energy transfer in marine sediments.

Oral
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